

CLIMATE CHANGE, GREEN JOBS AND THE ROLE OF TRADE UNIONS

AN EDUCATION AND TRAINING MANUAL FOR TRADE UNIONS IN ZIMBABWE

The Labour and Economic Development Research Institute of Zimbabwe
(LEDRIZ)

&

Zimbabwe Congress of Trade Unions (ZCTU)



Friedrich-Ebert-Stiftung
Zimbabwe Office
6 Ross Avenue
Belgravia
Harare
Zimbabwe

© Friedrich-Ebert-Stiftung, 2016
© The authors

All rights reserved.

No part of the publication may be reproduced, stored in a retrieval system or transmitted in any form by any means – electronic, mechanical, photocopying, recording, or otherwise – without the express written permission of the publisher or author.

The commercial resale of published brochures, books and general printed matters by the Friedrich-Ebert-Stiftung is prohibited unless the Friedrich-Ebert-Stiftung gives its explicit and written approval beforehand.

The views expressed herein are those of the author and not necessarily those of the Friedrich-Ebert-Stiftung or the organisations for which the authors work.

ISBN: 978-0-7974-7674-5

CLIMATE CHANGE, GREEN JOBS AND THE ROLE OF TRADE UNIONS

*An Education and Training Manual
for Trade Unions in Zimbabwe*

The Labour & Economic Development Research Institute of Zimbabwe (LEDRIZ)
&
Zimbabwe Congress of Trade Unions (ZCTU)

Contents

<i>List of Figures</i>	v
<i>List of Tables</i>	v
Acknowledgements	vii
Foreword	ix
Objectives of the manual	x
Acronyms	xi
Glossary	xii
MODULE ONE: INTRODUCTION TO CLIMATE CHANGE	1
Unit 1: Defining key concepts	1
Unit 2: Causes and evolution of climate change	2
Unit 3: Perspectives on climate change	4
Unit 4: Why is climate change a trade union issue?	7
Conclusion	8
Key learning points	9
MODULE TWO: THE IMPACT OF CLIMATE CHANGE	10
Unit 1: The environmental and socioeconomic impacts of climate change	10
Unit 2: Climate change and employment	13
Unit 3: Climate change and gender impact	14
Unit 4: Climate Change and the Decent Work Agenda	16
Unit 5: The economics of climate change	16
Conclusion	17
Key learning points	18
MODULE THREE: GOVERNING STRUCTURES OF CLIMATE CHANGE	19
Unit 1: Governing Structures of Climate Change at Global Level	19
Unit 2: The Conference of Parties (COP)	25
Unit 3: Actors in Governance	29
Unit 4: Trade Unions and the UNFCCC Process	30
Unit 5: Climate Change Instruments: International, Continental, Regional and National levels	31
Conclusion	36
Key Learning Points	36

MODULE FOUR: NATIONAL ACTION ON CLIMATE CHANGE: INSTITUTIONS, POLICIES AND STRATEGIES	38
Unit 1: National institutions on climate change	38
Unit 2: National policies related to climate change in Zimbabwe	39
Unit 3: National strategies on climate change	39
Unit 4: The role of trade unions in policies and strategies related to climate change	43
Conclusion	44
Key learning points	44
 MODULE FIVE: CLIMATE CHANGE, GREEN ECONOMY AND GREEN JOBS	 45
Unit 1: Climate change and the green economy	45
Unit 2: Green and decent Jobs	47
Unit 3: A sectoral approach to green jobs	49
Unit 4: Just transition towards green economy	51
Unit 5: The role of trade unions in the green economy and creation of green and decent jobs	51
Conclusion	51
Key learning points	52
 MODULE SIX: CLIMATE CHANGE MITIGATION	 54
Unit 1: Defining climate change mitigation	54
Unit 2: Aspects of mitigation	54
Unit 3: The role of climate change mitigation in employment	65
Unit 4: Climate change mitigation and gender approaches	67
Unit 5: The role of trade unions in climate change mitigation	69
Conclusion	72
Key learning points	72
 MODULE SEVEN: CLIMATE CHANGE ADAPTATION	 74
Unit 1: Defining climate change adaptation	74
Unit 2: Aspects of climate change adaptation	74
Unit 3: Understanding human rights in the context of adaptation policies	79
Unit 4: Climate change adaptation and employment	79
Unit 5: Strategies and approaches to climate change adaptation	81
Unit 6: Gender approaches to climate change adaptation	83
Unit 7: The role of trade unions in climate change adaptation	85
Conclusion	86
Key learning points	86

List of Figures

Figure 1:	The difference between weather and climate	1
Figure 2:	Causes of climate change	2
Figure 3:	Trends in carbon emissions from fossil fuel, 1990-2010	5
Figure 4:	Sectoral distribution of emissions in Zimbabwe	7
Figure 5:	The interconnectedness of tourism sector with other economic sectors	14
Figure 6:	Parties to the UNFCCC	21
Figure 7:	The structure of the IPCC	24
Figure 8:	The social dimension of green jobs	48
Figure 9:	The estimated number of direct and indirect jobs in the renewable energy sector worldwide, by industry, 2013 and 2014	49
Figure 10:	Share of jobs in the renewable energy sector by country	50
Figure 11:	Job creation in the renewable energy value chain systems	50
Figure 12:	The role of trade unions in the green economy	52
Figure 13:	Climate change mitigation policy options	55
Figure 14:	Examples of climate change adaptation strategies	75
Figure 15:	Tools for gender analysis of adaptation strategies	83

List of Tables

Table 1:	Types of greenhouse gases (GHGs)	3
Table 2:	Types of human activity and their various climatic effects	3
Table 3:	Six largest carbon emitting countries/regions in 2014	5
Table 4:	The socioeconomic impacts of climate change: A sectoral analysis	11
Table 5:	The impact of climate change on socioeconomic rights and the implications concerning international legal instruments	12
Table 6:	The effects of climate change on employment, by sector	13
Table 7:	The impact of climate change on the four pillars of the Decent Work Agenda	15
Table 8:	Taking action versus not taking action on climate change	16
Table 9:	Indicative costs of mitigation strategies in Zimbabwe's INDC 2015	17
Table 10:	Additional bodies created under COP and CMP	23
Table 11:	Actors in climate change governance	29
Table 12:	International instruments and frameworks on climate change	32
Table 13:	Continental instruments and frameworks on climate change	33
Table 14:	Regional instruments and frameworks on climate change	33
Table 15:	Zimbabwe's national legislation on climate change	35
Table 16:	National institutions on climate change	39
Table 17:	Government policies related to climate change	40
Table 18:	The social, economic and environmental dimensions of the green economy and green growth	47
Table 19:	Describing decent and green jobs	48
Table 20:	Sectoral climate change mitigation strategies	67
Table 21:	Gender assessment of climate change adaptation approaches	84

ACKNOWLEDGEMENTS

This education and training Manual was written and edited by Naome Chakanya (LEDRIZ), Mr Nyasha Muchichwa (LEDRIZ), Ms Miriam Assumpta Chikamba (ZCTU), Ms Fiona Magaya (ZCTU) and Mr Nathan Banda (ZCTU). The work was co-ordinated by Ms Naome Chakanya.

Special thanks goes to the external reviewers, Dr Anthony Phiri (Harare Institute of Technology) and Ms Maureen Sigauke and Ms Fortune Jegede (FES), whose comments added great value to the production process. Thanks also to Mr Tony Namate for his cartoon drawings.

The process of developing this manual included producing three drafts. The final draft was considered by external reviewers and subjected to a pre-test, which obtained inputs from selected educators from ZCTU Affiliates. We owe our most sincere gratitude to the latter.

We are very grateful for the financial support and commitment provided by our co-operating partner, Friedrich-Ebert-Stiftung (FES) Zimbabwe Office, which contributed to the successful production of the manual.

Special thanks is extended to the ZCTU leadership, especially the Secretary General, Mr Japhet Moyo, for the political support on climate change and, in particular, the production of this manual.

Finally, we are grateful to CASHA Designs for their professional printing.

FOREWORD

The evidence of the devastating impacts of climate change on countries like Zimbabwe is there for all to see. The country is heavily reliant on rain-fed agriculture and rainfall patterns have become less and less predictable, which have threatened food security, jobs, incomes and socioeconomic development. It is argued that Africa contributes less in terms of emissions but it has suffered some of the greater impacts of climate change, meaning, the world's poorest people are paying the highest price for carbon production in other parts of the world. Workers in many sectors are affected by the impacts of climate change as industries have not adjusted fast enough and agricultural production has gone down severely.

As the efforts to mitigate against climate change and also adapt to its impacts, many sectors of the economy have been called into play. One of the affected areas is the energy sector which is on the world radar with respect to carbon emissions. With calls for a transition from carbon emitting sources to clean energy sources, it is important to consider the impact on the jobs in these sectors. It could mean creation of green jobs. Thus climate change and green jobs have become a global concern and trade unions cannot afford to be left out of this discourse. The International Trade Union Confederation (ITUC) is calling for a just transition to low carbon economies through investment in new green jobs, skills, income protection and other necessary measures implemented, with adequate funding for the poorest and most vulnerable of nations. The Labour and Economic Development Research Institute of Zimbabwe (LEDRI) indicated, in a study on the Situational Analysis of Zimbabwe's Potential in Green Jobs and Skills Development in the Energy Sector (FES, 2015), that there is lack of knowledge of climate change and green jobs within trade unions. This means that there is need for extensive education and training for trade unions on climate change and green jobs.

The Friedrich-Ebert-Stiftung (FES), together with LEDRI and the Zimbabwe Congress of Trade Unions (ZCTU), has taken steps to enhance the efforts for trade unions to develop their knowledge on climate change issues and take part in development policies that will ensure a just economic transition. With this training manual – 'Climate Change, Green Jobs and the Role of Trade Unions' – we hope to contribute to the knowledge development on climate change and the role that workers need to take in this discourse.

Brigitte Juchems
Resident Representative
Friedrich-Ebert-Stiftung Zimbabwe
Harare

December 2016

OBJECTIVES OF THE MANUAL

The objectives of this manual are to:

1. Build the capacity of trade unions and workers regarding climate change and how it affects the economy and the world of work.
2. Create awareness and raise consciousness on climate change, its effects, challenges, opportunities and the role of trade unions can play in its mitigation.
3. Impart knowledge and skills by training workers on climate change, effects, and the related challenges and opportunities for trade unions.
4. Promote trade union- and worker-activism and collective action around climate change in order to promote decent work.
5. Advocate for pro-worker climate policies and strategies in Zimbabwe.
6. Give an overview on international structures and the UNFCCC process.

ACRONYMS

BSTA	Body for Scientific and Technological Advice
CBA	Collective Bargaining Agreement
CDM	Clean Development Mechanism
CEDAW	Convention on the Elimination of all Forms of Discrimination Against Women
CER	Certified Emission Reduction
CH4	Methane
CMP	Conference of the Parties serving as the meeting of the Parties
CO2	Carbon Dioxide
COMESA	Common Market for Eastern and Southern Africa
COP	Conferences of the Parties
DRR	Disaster Risk Reduction
DWCP	Decent Work Country Programme
ECOWAS	Economic Community of West African States
EAC	East African Community
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GBM	Green Belt Movement
GHG	Greenhouse gas(es)
ICCPR	International Covenant on Civil and Political Rights
ICESCR	Covenant on Economic, Social and Cultural Rights
ICRC	International Committee of the Red Cross
ILO	International Labour Organisation
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
ITUC	International Trade Union Confederation
JT	Just Transition
MGFC	Major Groups Facilitating Committee
MoEWC	Ministry of Environment Water and Climate
MRV	Measurement, Reporting and Verification
REDD	Reduction of Deforestation and Degradation
SADC	Southern African Development Community
SBI	Subsidiary Body for Implementation
SME	Small and Medium Enterprises
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Organization for Education, Science and Culture
UNFCCC	United Nations Framework Convention on Climate Change
WMO	World Meteorological Organisation

GLOSSARY

Adaptation: The process through which societies increase their ability to cope with an uncertain future, which involves taking appropriate action and making the adjustments and changes to reduce the negative impacts of climate change.

Biofuel: Ethanol, diesel and methane made from fresh plant or other organic material, including human or animal waste.

Carbon dioxide (CO₂): One of the main greenhouse gases in the atmosphere that is causing climate change. It is produced by burning fossil fuels, cutting down or burning forests and various other sources.

Carbon footprint: The total amount of greenhouse gases produced to directly and indirectly support a human activity, usually expressed in equivalent tonnes of carbon dioxide (CO₂). Such activity includes fuel consumption, home cooking and the purchase and production of goods and services.

Carbon sequestration: Methods for reducing the level of CO₂ in the atmosphere, for example, by conserving and planting forests.

Carbon trading: A mechanism by which developed countries can meet their mitigation obligations. A country with high carbon emissions can purchase a permit, from a less developed country that has low emissions, thus securing the right to emit more carbon.

Clean Development Mechanism: One of the flexible mechanisms defined in the Kyoto Protocol that provides for emissions reduction projects that generate Certified Emission Reduction (CERs) that may be traded in emission-trading schemes, for example, by investing in projects that reduce emissions, such as forest conservation in developing countries.

Climate change: The long-term change in the climate caused by the release of greenhouse gases – notably carbon dioxide and methane – that trap heat in the atmosphere.

Conference of Parties (COP): The supreme decision-making body of the UNFCCC. **Conservation agriculture:** A farming method that involves minimum tillage and encourages protection with crop residues. It has been shown to give higher yields than other methods during low rainfall years and increases long-term soil fertility.

Ecosystem: A community of plants, animals and other living organisms and the environment – soil, rocks and water – in which they live.

Ecosystem services: services provided by ecosystems that benefit humans, such as purification of air and water, food and fertile soil.

Fluorinated gases: Also known as F-gases, these can stay in the atmosphere for centuries and contribute to a global greenhouse effect. There are four types: hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, and nitrogen trifluoride.

Food security: When a family, community or nation has sufficient nutritious food in order to lead a healthy, active life.

Fossil fuel: Any combustible organic material, as oil, coal, or natural gas, derived from the remains of former life.

Global warming - The heating of the planet caused by climate change.

Green jobs: Jobs are 'green' when they help reduce negative environmental impact, and lead to

environmentally, economically and socially sustainable enterprises and economies.

Greenhouse effect: A greenhouse is a glass building that allows light and heat in, but prevents heat from escaping. The gases in the Earth's atmosphere act like a greenhouse, forming a layer to keep the planet warm. Human activity has caused excessive greenhouse gases to build up in the atmosphere, causing the planet to heat up too much (global warming).

Greenhouse gases: Those that contribute to the greenhouse effect. The main gases responsible are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (NO) and fluorinated gases.

Intergovernmental Panel on Climate Change (IPCC): An inter-governmental body, set up in 1988 by the World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP) to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation. Membership to the IPCC is open to all UN member states and the WMO.

Integrated pest and disease management: An environmentally sensitive approach to controlling pests and diseases through cultural, biological and mechanical methods in order to reduce dependence on pesticides.

Kyoto Protocol – a protocol adopted in 1997 which established legally binding obligations for developed countries to reduce their GHG emissions during the period 2008–2012.

Mitigation: Actions that reduce greenhouse gas emissions which lead to climate change.

REDD: A mechanism under the UNFCCC with the objective of mitigating climate change through net emissions from GHGs. It was first discussed at COP11 with the aim of enhancing forest management in developing countries.

REDD+: A mechanism to create a financial value for the carbon stored in forests through offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. The 'plus' relates to an addition of inclusion of sustainable management of forest conservation of forest carbon stock and enhancement of forest carbon stocks.

Resilience: The ability of any living entity such as a family, community, forest or farm to recover from shocks and hazards, thus enabling it to adapt better to hazards and shock in the future.

Species: Any living organism.

Sustainable development: Development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

United Nations Framework Convention on Climate Change (UNFCCC): The international environmental treaty negotiated at the UN Conference on Environment and Development was developed to address the problem of climate change. The UNFCCC entered into force on 21 March 1994.

Vulnerability: The degree to which an individual, household or community is exposed to risk or harm.

Wetland: An area that is permanently or seasonally saturated with water that contains characteristic plants.

MODULE ONE: INTRODUCTION TO CLIMATE CHANGE

INTRODUCTION

This module starts by introducing the main concepts in the climate change discourse. It also provides the difference between climate and weather. The module details the origins of climate change, its evolution and causes. It further explains the global, continental, regional and national perspectives on climate change. Greenhouse gases (GHGs) and the role they play in climate change is further illustrated.

Objectives of the module

The objectives of the module are to:

1. Define key concepts in climate change discourse.
2. Articulate causes and the evolution of climate change.
3. Understand national, regional, international and continental perspectives on climate change.
4. Appreciate the role of trade unions concerning climate change issues.

UNIT 1: DEFINING KEY CONCEPTS

1.1 What is 'Weather'?

Weather is the day-to-day state of temperature, moisture content and air movements experienced by a particular person at a particular place.

1.2 What is meant by 'Climate'?

Climate is defined as a category of typical conditions of temperature, relative humidity, cloudiness precipitation, wind speed, direction, and other meteorological factors that prevail globally, regionally and nationally. It deals with statistics such as the averages of all weather patterns over a long period (normally 30 years). The difference between weather and climate is a measurement in the given time. Figure 1 summarises the difference between weather and climate change.

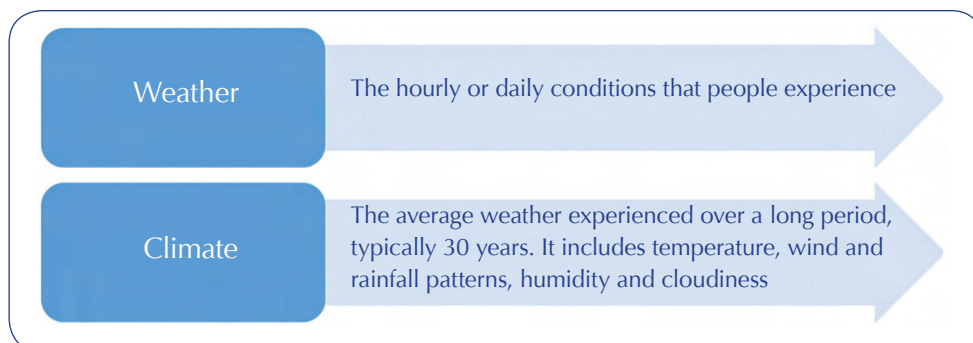


Figure 1: The difference between weather and climate

1.3 What is Climate Change?

Climate change is defined as the change in the state of weather patterns and persists for an extended period, typically decades or longer.

UNIT 2: THE CAUSES AND EVOLUTION OF CLIMATE CHANGE

2.1 Causes of Climate Change

There are two main causes of climate change which are natural causes and human causes. This is illustrated in Figure 2.

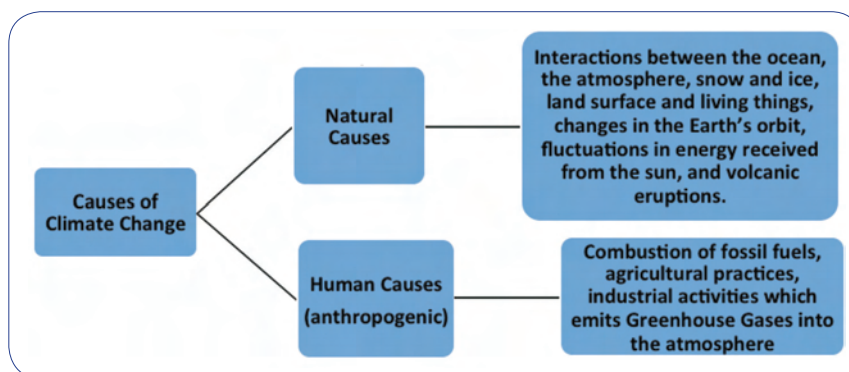


Figure 2: Causes of climate change

2.2 The Role of Greenhouse Gases in Climate Change

Greenhouse gases include carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and chlorofluorocarbons (CFCs). These gases prevent most of the earth's heat from leaving the atmosphere.

Water vapour – Water vapour increases as the earth's temperature rises. When human beings release CO₂ into the atmosphere, it causes warming, which boosts evaporation, which in turn increases the warming.

Carbon dioxide (CO₂) – An important component of the atmosphere, carbon dioxide is released through natural processes such as respiration and through human activities such as deforestation, land use changes, and burning fossil fuels. Humans have increased atmospheric CO₂ concentration by a third since the Industrial Revolution. This remains the most important and long-lasting 'forcing' behind climate change.

Methane – This is a hydrocarbon gas produced naturally as well as through human activity, to include the decomposition of wastes in landfill sites, agriculture – expressly rice cultivation – as well as ruminant digestion and manure management associated with domestic livestock.

Nitrous oxide – A powerful GHG produced by soil cultivation practices, expressly the use of commercial and organic fertilisers, fossil fuels, nitrous-related production and burning biomass.

Chlorofluorocarbons – These GHGs are synthetic compounds of industrial origin that have a number of applications. See Table 1 for a comparison of GHGs.

The greenhouse effect is the natural process of the atmosphere letting in some of the heat from the sun (ultraviolet and visible light) and stopping it being transmitted back out into space (infrared radiation or heat). This keeps the planet warm enough to sustain life. If the greenhouse effect did not exist, the earth would be frozen and lifeless. However, successive generations of human activity have disturbed the once stable levels of GHGs, resulting in climate change. These are further explained in Table 1.

2.3 Human activity and effects on the climate

Table 2 illustrates different types of human activity and their scale and effect on the climate.

Carbon dioxide	Methane	Nitrous oxide	Fluorinated gases
Average lifetime – five to tens of thousands of years	Average lifetime – 12.4 years	Average lifetime – 121 years	Average lifetimes– A few weeks to thousands of years
Fossil fuel combustion Energy intensive industries Biomass combustion/ organic decay Deforestation Forest fires Volcanoes Land-use change	Agriculture and wetlands Coal mining Ruminants Biomass combustion Waste, refuse and landfill Wetlands Organic decay Natural gas and oil extraction	Combustion of fossil fuels by automobiles and planes Production of nylon and polyurethanes Fertilisers Grasslands Biomass burning	Electrical equipment Refrigeration systems Aluminium production Aerosprays and propellants Cleaning solvents

Table 1: Types of greenhouse gases (GHGs)

Table 2: Types of human activity and their various climatic effects

Human activity	Climatic effect	Scale and importance of the effect
Release of carbon dioxide by burning fossil fuels	Increases the atmospheric absorption and emission of terrestrial infrared radiation (greenhouse effect), thus warming the lower atmosphere cooling the stratosphere	Global: potentially a major influence on climate and biological activity
Release of chlorofluoromethane, nitrous oxide, carbon tetrachloride, carbon disulphide through industrial manufacturing processes	Similar climatic effect as carbon dioxide since these are also infrared-absorbing and fairly chemically stable trace gases	Global: potentially significant influence on climate
Release of heat (thermal pollution)	Warms the lower atmosphere directly	Locally important now, could become significant regionally and could modify large-scale circulation

Group discussions: Understanding GHGs

Discuss the greenhouse effect and identify the major sources of CO₂ and methane.



UNIT 3: PERSPECTIVES ON CLIMATE CHANGE

3.1 The Global Perspective

Global climate change, once called global warming, is based on the average yearly increase of the earth's temperature. The overall increase has resulted in the reduction of the polar ice caps and an increase in natural disasters such as hurricanes, tornadoes and droughts. Scientists have linked the increase in temperature to an overall increase in the proportion of GHGs.

Why is global climate change controversial? It cannot be disputed that the global temperature is increasing. However, it remains a controversial subject as many people do not believe that human activity is increasing the speed of global climate change, as some scientists are suggesting. Many opponents of this idea acknowledge that the earth becomes hotter and colder over long periods of time at comparatively regular intervals and has done so prior to the evolution of mankind.

The noticeable impacts of climate change have been seen in a shift in the locations of some of animals and their reduction in numbers. With the gradual rise in temperatures water tables in some areas have dropped. As a result, various plants and animals have relocated in order to survive. This has not always been successful; there has been a 52% decline in representative populations of mammals, birds, reptiles, due to human activities, including climate change, since the 1970s. The Inter-Governmental Panel on Climate Change (IPCC) has concluded that global temperatures are likely to rise by a further 2 to 8.6°C by 2100. The mean global temperature is 1.5 degrees higher than it was in 2000. There is evidence that the global carbon emissions are also rising. Figure 3 clearly shows that there was a tremendous growth in the use of fossil fuels between 1900 and 2010. This has been one of the major causes of global warming and thus climate change. The six countries/regions with the highest levels are listed in Table 3.

3.2 The Continental Perspective

Although Africa contributes the least to global warming and thus to climate change, it suffers the most. Climate change has and will continue to significantly impact Africa's potential, diminish the livelihood opportunities of the most marginal of its societies and create new challenges.

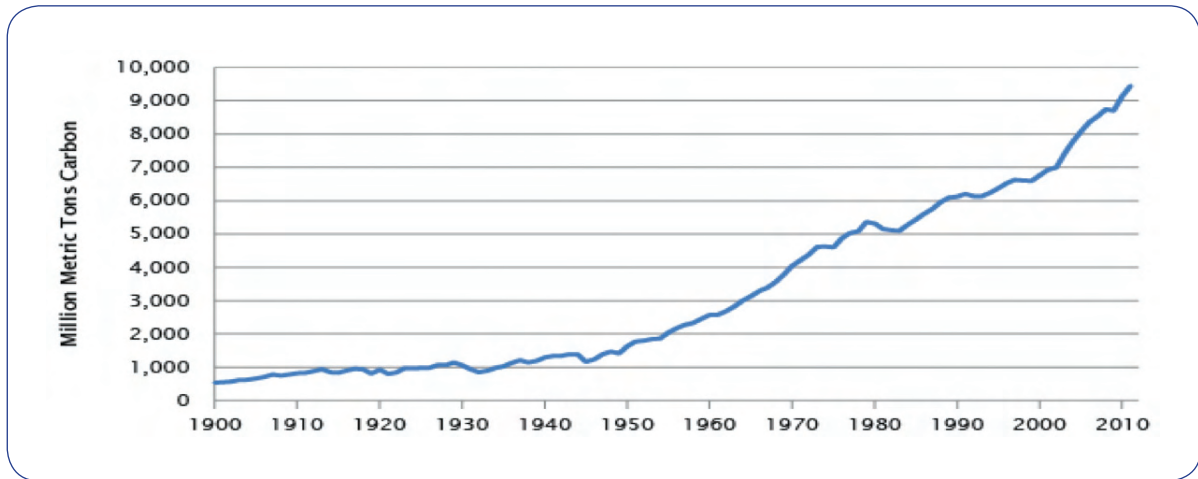


Figure 3: Trends in carbon emissions from fossil fuels, 1900–2010

Source: Boden et al. (2015)

Country/Region	% Carbon emissions
China	30
US	15
EU	9.6
India	6.6
Russia	5.0
Japan	3.6

Table 3: Six largest carbon emitting countries/regions in 2014

Source: PBL Netherlands Environmental Assessment Agency, 2015 Report.

According to the IPPC (2007), Africa is likely to have increased water stress for 75 to 250 million people by 2020 and by 2050, average temperatures in Africa are predicted to increase by 1.5 to 3°C, and will continue further upwards beyond this time.

According to the IPCC, the continent is likely to experience some of the following climate-related challenges: a reduction in yearly rainfall and groundwater recharge, except in East Africa where rainfall will increase; a shift in rainy seasons and increasingly frequent dry periods; increasingly frequent climate hazards such as droughts, heat waves, wildfires, storms, intense rain and floods, causing forfeiture to natural systems, crops, transport networks and human settlements; threats to soil fertility from erosion and increased temperatures; accelerated expansion of deserts, expressly in Namibia and Botswana and into southern Zimbabwe; faster growth of dry and desert areas and heat and water stress and shortened growing seasons, leading to declines in yearly yields; shifts in ecosystems, with the reduction of grassland for grazing animals; accelerated species extinction and destruction of wildlife habitats, depleting important ecosystem services such as the provision of fertile soil and clean water.

The IPCC further predicts that increased transpiration (evaporation of water from plant leaves) will make farming even more difficult. Crops will wilt due to rising temperatures and unpredictable rains, making it difficult for farmers to grow annual key crops such as wheat, rice and maize (corn). By 2020, in some countries in Africa, yields from rain-fed agriculture could be

reduced by up to 50% (IPCC, 2007). Farmers may have to look to alternative crops to offset these difficulties. Should it prove too difficult to grow maize, cassava would be a good alternative.

However, worst effect of climate change on Africa will result from its lack of financial capacity to deal with the challenges it presents. One in four people in sub-Saharan Africa still living in poverty, which translates to millions of people who do not have the same safety nets as those in wealthier, industrialised nations.

3.3 The Regional Perspective: Southern Africa Development Community (SADC)

The SADC region is vulnerable to climate variability and climate change. This is not only due to climate change but also to a combination of social, economic and other environmental factors. According to the SADC Secretariat (2015), climate change presents a significant threat to the SADC region as it is expected to increase the frequency and intensity of climatic events. Predicted higher temperatures, altered rainfall patterns, and an overall decrease in rainfall will have serious consequences for the region.

Adaptive capacities are not uniform and therefore it is difficult to have a uniform assessment and approach to deal with the impacts of climate on the region. Africa's adaptive response is influenced by a range of factors, such as the level of economic development, education, access to credit and the adoption of new technologies. A two degree increase will have impacts on biodiversity, agriculture, and on socioeconomic sectors including water, tourism, mining and energy. In terms of biodiversity and ecosystems, transpiration will result in a loss of species and the extinction of many plants and animals.

3.4 The National Perspective: Zimbabwe

According to the Zimbabwe's National Climate Change Response Strategy of 2015, the country is experiencing more hot days and fewer cold days as a result of climate change. It further states that the timing and amount of rainfall received is becoming increasingly uncertain. The last 30 years have shown a haphazard pattern of reduced or heavy rainfall and drought occurring back to back in the same season. The nation has suffered notable natural disasters including the 1991-92 drought and flooding in the Zambezi Valley (Muzarabani and Dande) caused by Cyclone Eline in 1999.

These climatic changes pose a threat to Zimbabwe's economy, which is heavily reliant on rain-fed agriculture, thereby threatening food security, jobs, incomes and socioeconomic development. In fact, over 70% of the population have climate-sensitive occupations. In 1992, Zimbabwe signed and ratified the UN Framework on Convention on Climate Change (UNFCCC) in 1992, recognising climate change as a key threats to people's livelihoods and development. Negative climatic variations have a negative effect on the agricultural sector, agricultural workers and other downstream (manufacturing) industry sector workers. Food production has declined over the last few years due to climatic variations and has been compounded by political and socioeconomic factors. Vulnerability levels to climate change are high across the country, as demonstrated by the extent of damages to properties and loss of life, disruption of children's education due to floods and cyclonic winds, among other things.

However, the level of response to climate change-related vulnerabilities in Zimbabwe has been worsened by the lack of effective national social protection systems. Droughts have increased since 2000: 2002-3, 2004-5, 2007-8 and 2011-12 saw exceptionally low rainfall. This prompted the Ministry of Environment Water and Climate (MoEWC) to develop the national response strategy on climate change.

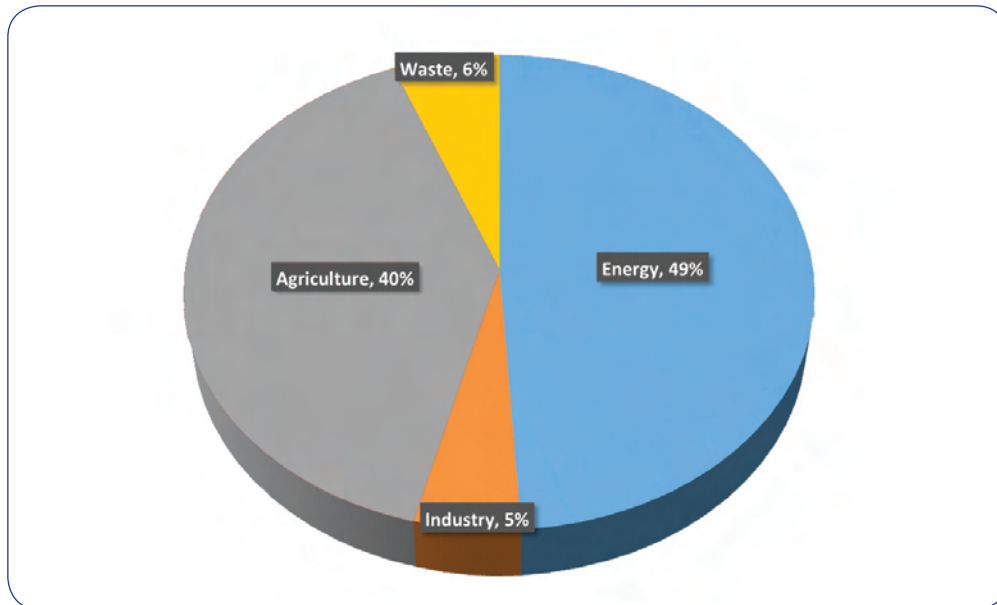


Figure 4: Sectoral distribution of emissions in Zimbabwe

Source: Zimbabwe INDC, 2015

In terms of GHG emissions, Figure 4 shows that the energy sector has the highest emissions with 49%. This is followed by the agriculture sector with 40%, then waste with 6% and industry with 5%.

Group work: Identifying the signs of climate change in Zimbabwe

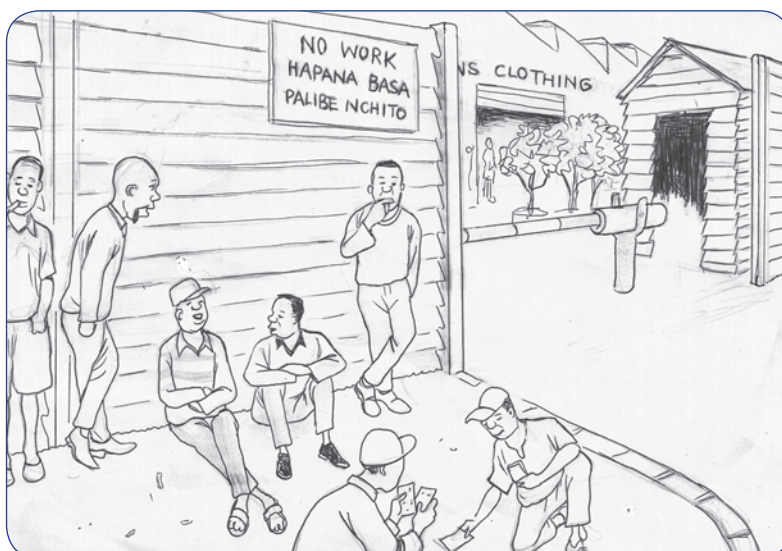
In groups, list the noticeable signs of climate change in Zimbabwe seen over the last 10 years.

UNIT 4: WHY IS CLIMATE CHANGE A TRADE UNION ISSUE?

Climate change is one of the greatest threats to the effectiveness of trade unions, as they have yet to recognise that the fight against climate change is integral to the broader fight against the existing economic and social injustices experienced by workers and the working poor. Climate change affects employment and the labour market in general.

Several employment-related climate change issues that trade unions should be aware of are:

- What will happen to workers and workplaces in weather-sensitive sectors?
- What alternative jobs are there for laid-off workers?
- What are the working conditions (wages, health and safety, working time, etc.) in new jobs created in renewable energy sectors? Will they offer 'decent work'?
- What kinds of benefits are there for workers who have been laid off?
- What will happen to workers in transition between jobs?
- What kinds of education and training initiatives are provided for workers who want to change?
- What will happen to workers who have to migrate because jobs, or even land, no longer exist?
- Who will finance the social costs of environmental change and how will it be done?



All these questions make climate change a trade union issue. It is therefore critical that trade unions to take action in order to find solutions to the negative socioeconomic consequences of climate change. More recently, trade unions have been demanding the meaningful involvement of workers in any climate change action and process in order to promote and protect the rights of workers and their families.

Plenary discussion: The role of trade unions in climate change

Give 10 reasons why trade unions should play an active role in climate change issues

CONCLUSION

Issues of climate change are of high importance nationally, regionally, continentally and globally due to the negative consequences that they have on economic development and people's welfare. Anthropogenic (human-induced) climate change has slowly emerged as a global challenge because of its high potential to disrupt dominant models of human development and livelihoods in developed and poor countries alike across the world.

It is agreed that human activities are the major cause of climate change rather than natural events. These include the on-going over-reliance on fossil fuels as noted above, deforestation and changes to land use. In sum, this has led to an excessive production of GHGs, of which carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) are the most serious.

Trade unions are equally affected by climate change through its impact on job losses in climate-sensitive sectors. Trade unions are increasingly recognising that the fight against climate change is situated within the broader fight against the existing economic and social injustices experienced by workers and the working poor. Thus, trade unions need to take climate change issues seriously and prioritise it in their day-to-day programmes and activities.

Key learning points

- There is a difference between climate and weather.
- Climate change has both negative and positive consequences.
- Greenhouse gases are necessary, but excess emissions have contributed to global warming.
- Africa will be affected more than developed countries because it lacks the financial capacity and means to deal with the consequences of climate change.
- In Zimbabwe, in terms of GHG emissions, the energy sector has the highest with 49%, followed by the agriculture sector (40%), then waste (6%) and industry (5%).
- Climate changes pose a threat to the Zimbabwe's economy, as it is heavily reliant on rain-fed agriculture, thereby threatening food security, jobs, incomes and socioeconomic development.
- Climate change is increasingly affecting jobs in climate-sensitive sectors. Therefore, trade unions must implement climate action programmes in order to protect and promote the rights of workers and their families.

Module References

Government of Zimbabwe (2015), 'National Climate Change Response Strategy', Harare, Zimbabwe.

www.sadc.int/themes/meteorology-climate/.

IPCC (2007), 'Fact Sheet: Climate Change in Africa – What is at Stake?'. Compiled by AMCEN Secretariat.

PBL Netherlands Environmental Assessment Agency (2015), 'Trends in global CO₂ emissions: 2015 Report', The Hague, The Netherlands.

U.S. Department of Energy (2013), 'Global Carbon Project: Global, Regional, and National Fossil-Fuel CO₂ Emissions'. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, doi 10.3334/CDIAC/00001_V2015.

MODULE TWO: THE IMPACT OF CLIMATE CHANGE

INTRODUCTION

Climate change threatens the environment and the performance of critical sectors of the economy such as health, agriculture, tourism, education, construction and health. These sectors are vital for providing the key socioeconomic services and eventually the attainment of essential socioeconomic rights. These rights include the right to food, education, health, housing, basic utilities (electricity, water and sanitation), transportation, decent wage and decent living. These socioeconomic rights are both an end and means of sustainable human development. This module will illustrate how climate change is affecting attainment and enjoyment of these essential socioeconomic rights. After assessing the climate change effects, the module further illustrates the cost of action and inaction on climate change, in other words, the benefits and costs of climate change action.

Objectives of the module

The objectives of the module are to:

1. Articulate the effects of climate change on the environment.
2. Understand how climate change affects the various sectors of the economy.
3. Articulate how climate change affects the provision of basic socioeconomic rights.
4. Understand the sectoral employment effects of climate change.
5. Determine how climate change affects the attainment of the four pillars of the ILO Decent Work Agenda.
6. Articulate the costs of action and inaction to climate change.

UNIT 1: THE ENVIRONMENTAL AND SOCIOECONOMIC IMPACTS OF CLIMATE CHANGE

1.1 The Impact of Climate Change on the Environment

The negative effects of climate change on the environment already include:

- Depletion of natural resources
- Reduction in flora and fauna (biodiversity)
- Reduced ecosystem production – reduced rate of generation of biomass in an ecosystem
- Deterioration of livelihoods dependant on natural resources
- Reduced fresh water supplies
- Degradation of water supplies for agriculture and other uses
- Increased barren land and reduced pasture for livestock
- Conflicts over natural resources.

The most common economic sectors that are climate-sensitive include agriculture, fisheries, manufacturing, wildlife, energy, mining, tourism, education and health. Table 4 indicates the socioeconomic impacts of climate change. It provides a sectoral analysis.

Sector	Challenges	Causes	Impacts
Agriculture	Decreased agricultural crop and livestock production	Extremes of temperature Floods, cyclones and hailstorms Inconsistent rainfall	Food insecurity Loss of agriculture-related employment Increased poverty Decline in economic activity and development in an agri-economy Increases in food prices Dependency on imported food and food aid Increased rural–urban migration in search of employment Salinisation (the build-up of salts in soil, which then becomes toxic to crops)
	Decreased fisheries and aquaculture (breeding, rearing, and harvesting of fish, shellfish, plants, algae and other organisms in all types of water environments)	Extreme high and low temperatures	
Construction	Destruction of infrastructure such as houses, schools, hospitals, clinics, bridges and roads	Floods Cyclones	Displacement of families Rise in informal housing, at times in hazardous areas Increased rural–urban migration Disruption in socioeconomic activities and livelihoods Poverty due to loss of assets such as houses
Health	Increased water- and vector-borne diseases such as cholera, diarrhoea, bilharzia and malaria	Floods Droughts Heat waves	Deterioration in health status of people (high morbidity rates) Increased vulnerability to poor health (malnutrition and hunger) High mortality rates High risk of the transmission of infectious diseases
	Increased airborne diseases Increased harmful insects, pests and pathogens	High temperatures, heat waves and heat stress	
Energy	High dependence on climate-sensitive sources of energy, for example, hydro-energy	Reduced and/or erratic rainfall	Energy insecurity and power cuts Reduced productivity for energy related production sectors Loss of income Deforestation Use of fossil-based energy such as coal and gas further contributing to climate change
Education	Reduced educational opportunities and materials (e.g. books and software)	Floods Cyclones Drought Veld fires	Increase in child labour Destruction of educational infrastructure, roads, bridges High dropout rate, especially for girls Decreased access to education
Tourism	Damage to tourism infrastructure Destruction of tourism-linked natural resources	Floods Cyclones Droughts and/or heat waves	Decline in tourism and foreign currency generation Decline in employment

Table 4: The socioeconomic impacts of climate change: A sectoral analysis



Climate impact	Human impact	Rights implicated
Sea level rise Flooding Sea surges Erosion Salination of land and water	Loss of land Drowning, injury Lack of clean water, disease Damage to coral infrastructure, homes and property	Self-determination [ICCPR, ICESCR, 1] Life [ICCPR, 6] Health [ICESCR,12] Water [CEDAW,14; ICRC,24] Means of subsistence [ICESCR,1] Standard of living [ICESCR,12] Adequate housing [ICESCR,12] Culture [ICCPR,27] Property [UDHR,17]
Temperature increase Change in disease vectors Coral bleaching Impact on fisheries	Spread of disease Change in traditional fishing, livelihoods and commercial fishing Threat to tourism, coral and fish diversity	Life [ICCPR, 6] Health [ICESCR,12] Means of subsistence [ICESCR,1] Adequate standard of living [ICESCR,12]
Extreme weather events Higher intensity Sea surges	Dislocation of populations Contamination of water supply Damage to infrastructure, delays in medical treatment, food crisis Psychological distress Increased transmission of disease Damage of agricultural lands Disruption of educational services Damage to tourism sector Massive property damage	Life [ICCPR, 6] Health [ICESCR,12] Water [CEDAW,14; ICRC,24] Means of subsistence [ICESCR,1] Adequate standard of living [ICESCR,12] Adequate and secure housing [icescr,12] Education [ICescr,13] Property [UDHR,17]
Changes in precipitation Changes in disease vectors Erosion	Outbreak of disease Depletion of agricultural soils	Life [ICCPR, 6] Health [ICESCR,12] Means of subsistence [ICESCR,1]

Table 5: The impact of climate change on socioeconomic rights and the implications concerning international legal instruments.

Source: Jodoin and Lofts, 2013

Figure 5 (overleaf) further shows the impact of climate change on socioeconomic rights and the implications concerning international legal instruments.

UNIT 2: CLIMATE CHANGE AND EMPLOYMENT

Climate change affects employment and the labour market in general, although there are variations between economic sectors. The most affected are climate- or weather-sensitive sectors such as agriculture, energy and tourism. The impact of climate change on employment is realised in four main ways, which can be either negative or positive:

- Certain jobs will be lost without direct replacements for example, through jobs related to banned products
- Additional jobs will be created through renewable energy deployment
- Some jobs will be substituted, for example, through shifting from using fossil fuels to renewable energy
- Some jobs will be transformed and redefined through incorporation of climate-related skills (reskilling), for example, for ICT workers, electricians, plumbers, etc.

Sector	Cause	Employment effects
Agriculture	Decline in production due to water stress Decline in fisheries (quantity and quality) due to rising water temperatures	Negative, due to decline in production Positive, if there is a transition from rain-fed agriculture to renewable energy technologies (solar, mini-hydro, biofuels)
Manufacturing	Decline in agricultural production will have a direct effect on the processing industry	Negative, if there is a decline in agricultural production Positive, if there is rehabilitation of infrastructure and the construction of renewable energy technologies
Building and construction	Destruction of infrastructure through floods, cyclones, hailstorms, roads and power lines	Positive, especially the in rehabilitation of infrastructure and the construction of renewable energy technologies
Energy	Decline in hydro-energy production	Negative, when jobs shift from coal-powered hydro to renewable energy Positive, if renewable energy production (for example, solar and biofuels) is promoted
Health	Emergence of new diseases	Positive, in terms of reskilling the health workforce

Table 6: The effects of climate change on employment, by sector

2.1 Employment Effects of Climate Change by Sector

Table 6 shows the effects of climate change on employment by sector.

It is important to note the interconnectedness of economic sectors. If one sector is negatively affected by climate change, it is bound to have a negative impact on at least one other. Figure 5 shows the interconnectedness of tourism with other economic sectors. It demonstrates how

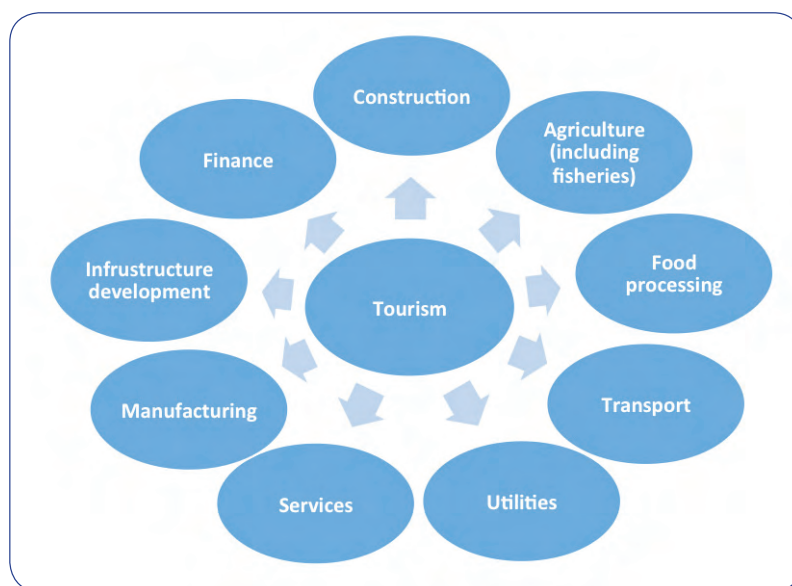


Figure 5: The interconnectedness of tourism with other economic sectors

Source: ILO (2009)

the direct impact on the tourism sector will trickle down to nine sectors, and vice versa, thereby negatively affecting economic growth and development. Taking innovative and radical sectoral approaches to addressing climate change is thus key.

Group work: Employment effects of climate change

*In groups identify employment effects of climate change in your sector.
How are workers being affected?*

UNIT 3: CLIMATE CHANGE AND THE IMPACT ON GENDER

Climate change affects women and girls far more than it does men and boys. Some of the gender impacts of climate change are as follows:

- Women are more likely to be affected by climate change than men, as the majority are employed in climate-sensitive sectors such as agriculture, health and tourism
- Women's livelihoods are more dependent on the environment and natural resources
- Climate change results in water, food and energy insecurity. Therefore, women, as the care-givers and providers of social services, have the extra burden of sourcing water, food and firewood in distant areas
- Drought causes decline in incomes, especially in rural areas. As a result, culture and tradition see girls rather than boys being taken out of school
- Drought drives early marriages in girls and exposure to hazardous and unacceptable ways of making an income, for example, sex work
- Destruction of infrastructure such as bridges and roads affects women, more who are in need of ante- and post-natal services and sexual reproductive health services.

Table 7: The impact of climate change on the four pillars of the Decent Work Agenda

Decent Work Agenda Pillar	Climate change effects	Results	Impact	Critical questions to be addressed
Employment	Destruction of infrastructure due to floods, cyclones and hurricanes Extreme weather events affecting climate-sensitive sectors such as agriculture, energy and tourism	Loss of employment Increased precarious work due to production interruptions Lower incomes Changes in labour demand	Increased informal economy and poverty Labour migration and brain-drain Increased child labour Increase in the number of the working poor Decline in labour productivity due to extreme weather changes Need to acquire new skills (retraining, reskilling)	What threats and opportunities do climate change and mitigation and adaptation present to decent work?
Workers' rights	Floods, cyclones and extreme temperatures	Job insecurity Income insecurity	Increased poverty levels Economic insecurity	Does the labour legislation and the regulatory environment need to be 'climate-proofed' so that it can adapt to climate change without sacrificing standards and rights?
Social protection	Floods, cyclones and extreme temperatures	Unsafe/hazardous working environments Loss of household social protection support mechanisms Destruction of social infrastructure (for example, housing, education and health infrastructure)	Higher risks of injuries, respiratory and skin diseases, exposure to wildfires for workers in selected sectors such as agriculture and construction Risk of death Displacement of people, thereby increasing vulnerability	How can social protection and security systems be designed to address and cope with new demands created by climate change?
Social dialogue	Destruction of infrastructure due to floods, cyclones and hurricanes Extreme weather events affecting climate-sensitive sectors such as agriculture, energy and tourism	Limited access to collective bargaining due to increased precarious work	Rises in industrial conflict and social unrest Increased worker insecurity due to increased precarious work Violation of trade union rights Decline in unionisation due to company closure, job loss, increased precarious work and company relocation Loss of trade union strength, especially in climate-sensitive sectors Lack of resources to conduct traditional trade union work	How can those most vulnerable to climate change be brought into social dialogue processes?

UNIT 4: CLIMATE CHANGE AND THE DECENT WORK AGENDA

For several years, trade unions have been advocating for the implementation of the ILO Decent Work Agenda, which is made up of four pillars, namely employment creation, workers' rights, social protection and social dialogue. Zimbabwe's trade unions have made several strides to ensure that these pillars are being achieved. However, as the full implementation of the Decent Work Agenda is now being threatened by climate change, it is critical for trade unions to adjust their approach and take appropriate action. Table 7 (previous page) shows the impact of climate change on each of the four pillars of the Decent Work Agenda.

Buzz group: Climate change and Decent Work

In pairs, list the impact of climate change on any two pillars of the Decent Work Agenda and relate them to your personal experience.

In pairs, answer the questions in the last column of Table 7.

UNIT 5: THE ECONOMICS OF CLIMATE CHANGE

Dealing with climate change has two major response actions. These are:

1. Taking action.
2. Not taking action.

It is critical to understand the economic consequences of action and inaction on climate change as indicated in Table 8, below.

Taking action means:	Not taking action means:
1. Investing in climate-friendly technologies 2. Investing in adaptation strategies 3. Investing in education and awareness-raising on climate change in order to prepare society for the unavoidable impacts of climate change.	1. Maintaining (or further increasing) the current amount of energy consumption and production 2. Lack of diversification of sources for this energy 3. Letting individuals adapt to abrupt weather shocks and environmental changes by themselves, i.e., through ad hoc measures.

Table 8: Taking action versus not taking action on climate change

With inaction:

- i. The impacts on our lives will be much greater, for instance, a 5-6 degrees Celsius rise in temperature may lead to a 5-10% loss in GDP.
- ii. Jobs will be lost in line – ITUC's COP 21 theme was 'There are no jobs on a dead planet'.
- iii. Environmental degradation will result in futureless growth.
- iv. Social injustice will increase, as the greater share of the cost is likely to be borne by the families of those affected.
- v. The precise monetary value of some socioeconomic impacts would be difficult to calculate and are thus difficult to include in the current cost calculations.

Zimbabwe's Intended Nationally Determined Contribution (INDC) of 2015 estimated the costs that the country will incur in addressing climate change mitigation strategies for the period up to 2030. These are reflected in Table 9, which indicates that the country needs to invest a total of

Area	Indicative cost (US\$ million)
Blending ethanol	100
Solar water heaters	1,230
Improving energy efficiency	60
Increasing hydropower in the energy mix	5,000
Refurbishing and electrifying the railway system	1,106
Coal-bed methane (CBM) power	1,000
Solar-powered off-grids	3,000
Integrated waste management	500
Changing thermal power station technologies	5,000
Reviewing the transport system	37,000
Implementing REDD+	1,000
Sustainable energy alternatives for curing tobacco	1,050
TOTAL	55,796

Table 9: Indicative costs of mitigation strategies in Zimbabwe's INDC 2015

Source: Zimbabwe INDC, 2015

US\$55,769 billion by 2030 in order to undertake the projects indicated. However, the National Climate Change Response Strategy estimated costs to implement the Action Plans at US\$9,887 billion. These figures assist in identifying investment requirements for mitigation and adaptation to climate change.

Plenary Discussion: Action on climate change

Discuss why it is critical for government, employers, workers and communities to take action on climate change.

What is likely to happen if we do not all take action on climate change?

CONCLUSION

It is clear that climate change will continue to have increasingly disastrous effects on the economy and on people's welfare. It negatively affects critical economic sectors that are also drivers of economic growth and development. Climate change is also fast eroding the attainment of basic socioeconomic rights essential to lifting people out of poverty. It is therefore necessary for all stakeholders (government, business, labour and civil society) to take action to mitigate the effects of climate change as well as adapt to its consequences. The costs of inaction are far higher than

the costs of taking action. Investing now will mean fewer investments in the future.

The INDC clearly calculates the costs of mitigation and costs of adaptation to climate change. It is critical for trade unions to advocate for more resources for tackling climate change so as to secure livelihoods and future generations.

Key Learning Points

- Climate change threatens the performance of critical sectors of the economy: health, agriculture, tourism, education, construction and health.
- Climate change negatively affects the attainment and enjoyment of basic socioeconomic rights such as the right to food, education, health, housing, basic utilities (electricity, water and sanitation), transportation, decent wages and decent living.
- Extremes of temperatures, floods and cyclones, reduced rainfall and polluted air and water reduces the quality of the environment.
- The impact of climate change varies from sector to sector, with the most affected being climate- or weather-sensitive sectors such as agriculture, energy and tourism.
- Economic sectors are interconnected. If one sector is negatively affected by climate change, it is bound to have a negative effect on others.
- Climate change is threatening the implementation of the Decent Work Agenda. It is therefore critical for trade unions to be aware of how climate change impacts on the agenda's four pillars so that they can take appropriate action.
- It is critical to understand the economic consequences of action and inaction regarding climate change.
- The cost of taking no action against the effects of climate change has more far-reaching negative consequences than the costs of taking action.

MODULE REFERENCES

- Government of Zimbabwe (2015), Zimbabwe Intended Nationally Determined Contribution (INDC), Harare, Zimbabwe.
- ILO (2009), 'The Employment Effects of Climate Change and Climate Change Responses: A Role for International Labour Standards? Geneva.
- Jodoin, S. and K. Lofts' (eds), *Economic, Social, and Cultural Rights and Climate Change: A Legal Reference Guide* (New Haven, CT: CISDL, GEM & ASAP, 2013).
- UNEP (2008), 'Climate Change, its Consequences on Employment and Trade Union Action', Nairobi, Kenya.

MODULE THREE: GOVERNANCE STRUCTURES RELATED TO CLIMATE CHANGE

INTRODUCTION

This module looks at the governance structures related to climate change and the legal instruments (international and national) in place to ensure that the world (nations and people) protects the environment and reduces greenhouse carbon emissions. It also explains the roles of different governance structures and identifies the key actors. The areas of trade union participation and opportunities for influence are also highlighted.

Objectives of the module

The objectives of the module are as follows:

1. Outline the governance structures related to climate change.
2. Identify the actors working against climate change.
3. Outline the legal instruments related to climate change.
4. Identify the opportunities available for trade unions to influence national and international discussion on climate change.

UNIT 1: GLOBAL GOVERNANCE STRUCTURES RELATED TO CLIMATE CHANGE

1.1 The United Nations Framework Convention on Climate Change (UNFCCC)

*Preventing 'dangerous' human interference with the climate system
is the ultimate aim of the UNFCCC.*

The UNFCCC is an international environmental treaty that was negotiated at the UN Conference on Environment and Development – 'The Earth Summit' – in Rio de Janeiro in June 1992 and came into force on 21 March 1994. It is a framework for international co-operation to combat climate change by limiting average global temperature increases and the resulting climate change and coping with impacts that were, by then, inevitable. As of December 2015, the UNFCCC had 197 signatories and thus the Convention enjoys broad legitimacy, largely due to its nearly universal membership. Countries that have ratified the treaty are referred to as 'Parties to the Convention'. Zimbabwe ratified this Convention in 1992.

1.1.1 The objectives of UNFCCC

The UNFCCC's ultimate objective is to 'stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'. It states that 'such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner.'

The framework sets no binding limits on GHG emissions for individual countries and contains no enforcement mechanisms. Rather, it outlines how specific international treaties ('Protocols'

The Convention in Summary

The Convention:

1. Recognises that there was a problem.
2. Sets a lofty but specific goal.
3. Puts the onus on developed countries to lead the way.
4. Directs new funds to climate change activities in developing countries.
5. Keeps tabs on the problem and what's being done about it.
6. Charts the beginnings of a path to strike a delicate balance.
7. Kicks off formal consideration of adaptation to climate change.

The Convention is a first step to a safer future

or 'Agreements') may be negotiated to set such limits. The Convention is a structured way to addressing a problem of global proportions that requires harmonised world policies.

1.1.2 Requirements set by the Convention

The Convention requires industrialised countries to give precise and regularly updated inventories of their GHG emissions. Developing countries are also encouraged to carry out similar inventories.

The Convention itself is considered legally non-binding as it does not set mandatory limits on GHG emissions for individual countries and does not include enforcement mechanisms. It is instead a framework document that can be amended and updated.

1.1.3 Tasks set by the UNFCCC

One of the first tasks set by the UNFCCC was for signatory nations to establish national GHG inventories of GHG emissions and removals. These were used to establish the 1990 benchmark levels for addition of Annex I countries to the Kyoto Protocol and for those countries to commit to reducing their levels of GHG.

By 1995, some countries had launched negotiations to strengthen the global response to climate change – the first Conferences of the Parties (COP). In 1997, the Kyoto Protocol was adopted and it established legally binding obligations for developed countries to reduce their GHG emissions during the period 2008–2012.

Article 3(1) of the Convention states that Parties should act to protect the climate system on the basis of 'common but differentiated responsibilities', and that developed country Parties should 'take the lead' in addressing climate change. Under Article 4, all Parties make general commitments to address climate change through, for example, climate change mitigation and adapting to the eventual impacts of climate change. Article 4(7) reads as follows:

The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.

The framework Convention specifies the aim of developed countries as regards (Annex I, Parties) stabilising their GHG emissions (carbon dioxide and other anthropogenic greenhouse gases not regulated under the Montreal Protocol) at 1990 levels.

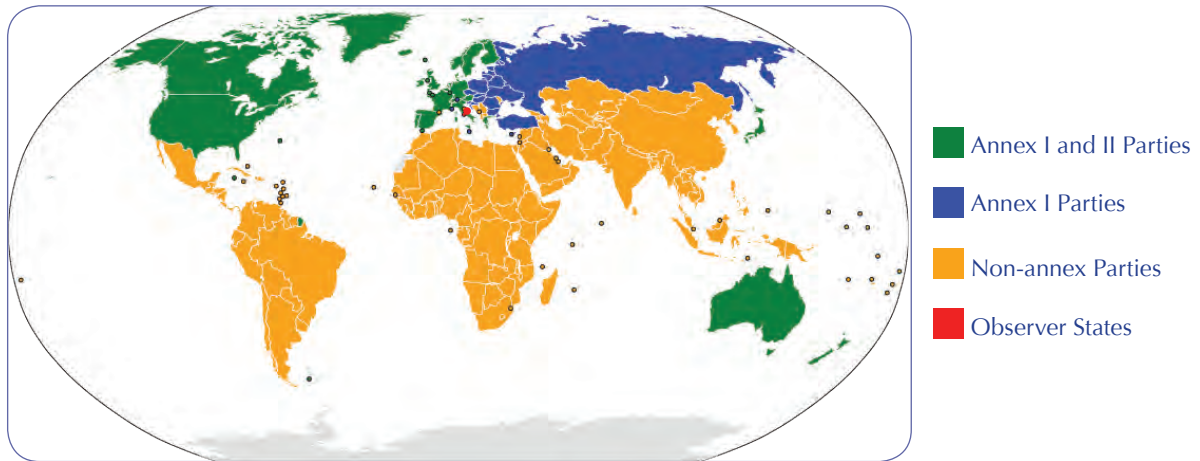


Figure 6: Parties to the UNFCCC

1.1.4 The Convention and the Classification of Parties and their Commitments

Figure 6 shows the main groups of the UNFCCC. The Annex list of countries can be obtained on the UNFCCC website. The UNFCCC divides countries into the following groups according to differing commitments:

Annex I: There are 43 Parties to the UNFCCC listed in Annex I. They include industrialized countries that were members of the OECD (Organisation for Economic Co-operation and Development) in 1992, plus countries with economies in transition (EIT Parties). The 14 EITs are the former centrally planned (Soviet) economies of Russia and Eastern Europe.

Non-Annex I: Parties are mostly developing countries. Certain groups of developing countries are recognised by the Convention as being especially vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought. Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures. The Convention emphasises activities that promise to answer the special needs and concerns of these vulnerable countries, such as investment, insurance and technology transfer. Developing countries may volunteer to join Annex I when they are sufficiently developed. Zimbabwe falls into this group.

Annex II: Parties consist of OECD members of Annex I, but not EIT Parties. They are required to provide financial resources to enable developing countries to undertake emissions reduction activities under the Convention and help them adapt to adverse effects of climate change. In addition, they have to 'take all practicable steps' to promote the development and transfer of environmentally friendly technologies to EIT Parties and developing countries. Funding provided by Annex II Parties is mostly channelled through the Convention's financial mechanism.

Least-developed countries: There are 49 Parties in this category, and they have special status under the treaty in view of their limited capacity to adapt to the effects of climate change.

Observer States: These are non-member states given permission by the UN to participate in its activities but with limitations, for example, the right to vote.

1.1.5 The UNFCCC Secretariat

The work under the UNFCCC is facilitated and supported by the Secretariat in Bonn, Germany. The Secretariat supports all institutions involved in the international climate change negotiations, particularly the Conference of the Parties (COP), the COP serving as the meeting of the Parties (CMP), the subsidiary bodies (which advise the COP/CMP), and the COP/CMP Bureau (which

deals mainly with procedural and organisational issues arising from the COP/CMP but also has technical functions).

Subsidiary Bodies – These are committees that assist the COP and include:

Permanent:

- The Subsidiary Board of Implementation (SBI), which gives advice to COP on all matters concerning the implementation of the Convention. It examines the information in the national communications and emission inventories submitted by Parties in order to assess the overall effectiveness of the Convention. The SBI also advises COP on budgetary and administrative matters.
- The Subsidiary Board of Scientific and Technological Advice (SBSTA), whose task is to provide COP with advice on scientific, technological and methodological matters. Two key areas of its work are to promote the development and transfer of environmentally friendly technologies and to conduct technical work to improve the guidelines for preparing national communications and emission inventories. The SBSTA also acts as a link between the scientific information provided by bodies such as the IPCC and the policy needs of COP.

Temporary: During COP 11/CMP 1 in Montreal in 2005, two ad hoc groups were established to take the lead in moving the post-2012 framework forward.

- The Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol, which dealt with new commitments by Parties named in Annex B in terms of the Kyoto Protocol. Bringing the Protocol Parties together was deemed necessary for facilitating negotiations between the Parties named in Annex 1 for the second period of engagement (post-2012). The group also facilitated negotiations on other means, such as adaptation, technology transfer and capacity building as part of the post-2012 framework.
- The Ad Hoc Working Group on Long-Term Co-operative Action (AWG-LCA). This group was preceded by a two-year process to unite all Parties to the Convention in a dialogue (The Dialogue) focusing on long-term, co-operative action to address climate change by enhancing the Convention. To reinforce it, the dialogue was institutionalised in the form of the AWG-LCA in Bali in 2007.

Other bodies created under COP and CMP are shown in Table 10.

1.2 The Intergovernmental Panel on Climate Change (IPCC)

The IPCC was created in 1998 as the leading international body for the assessment of climate change. As an intergovernmental body, membership is open to all member countries of the United Nations (UN) and the World Meteorological Organisation (WMO). It was set up by the WMO and the United Nations Environment Programme (UNEP) to prepare (based on available scientific information) assessments on all aspects of climate change and its impacts, with a view of formulating realistic response strategies. It provides regular assessment reports on the state of knowledge about climate change.

As outlined in UN General Assembly Resolution 43/53 of 6 December 1988, the IPCC's initial task was to prepare a comprehensive review and recommendations with respect to the state of knowledge of the science of climate change; the social and economic impact of climate change, and possible response strategies and elements for inclusion in a possible future international convention on climate. Today, its role is defined in 'Principles Governing IPCC Work':

To assess on a comprehensive, objective, open and transparent basis the scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socioeconomic factors relevant to the application of particular policies.

Institution	Responsibilities
<i>Specialist bodies created under COP</i>	
Consultative Group of Experts (CGE) on National Communications of Parties not included in Annex 1	To assist Parties not included in Annex 1 in preparing their national communications
Least-Developed Countries Expert Group (LDCEG)	Advises these countries on preparing and implementing adaptation plans
Expert Group on Technology (EGTT)	Provides scientific and technical advice to assist in developing and transferring of technology
<i>Specialist bodies created under CMP</i>	
Executive Board Supervisory Committee	Oversees the effective implementation and the correct operation of the Clean Development Mechanism (CDM)
Compliance Committee	Guarantees compliance with commitments and supports Parties that encounter difficulties in so doing under the Kyoto Protocol. It has two branches: facilitation and enforcement.

Table 10: Additional bodies created under COP and CMP

The IPCC reviews and assesses the most recent scientific, technical and socioeconomic information produced worldwide relevant to the understanding of climate change. It does not conduct any research, nor does it monitor climate-related data or parameters. Instead, it aims to reflect a range of views and expertise. Thousands of scientists from all over the world contribute to its work on an entirely voluntary basis, i.e., without payment. Reviewing is an essential part of the IPCC process as it ensures an objective and complete assessment of current information.

The scientific evidence brought up by the first IPCC Assessment Report of 1990 underlined the importance of climate change as a challenge requiring international co-operation to tackle its consequences. It therefore played a decisive role in leading to the creation of the United Nations Framework Convention on Climate Change (UNFCCC), the key international treaty to reduce global warming and cope with the consequences of climate change.

1.2.1 The Role of the IPCC

Governments participate in both the review process and the plenary sessions, where main decisions about the IPCC work programme are taken and reports are accepted, approved and adopted. Due to its scientific and intergovernmental nature, IPCC embodies a unique opportunity to provide rigorous and balanced scientific information to decision makers. By endorsing IPCC reports, governments acknowledge the authority of their scientific content. The work of the organisation is therefore policy relevant yet policy neutral, and never policy prescriptive.

IPCC reports support the UNFCCC. They cover scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and the options for adaptation and mitigation. The IPCC does not carry out its own original research, nor does it monitor the climate or related phenomena itself. Instead, it bases its assessment on published literature, which includes peer-reviewed and non-peer-reviewed sources.

The IPCC Second Assessment Report of 1995 contained important material drawn on by negotiators in the run-up to the adoption of the Kyoto Protocol in 1997. Since then, the IPCC has

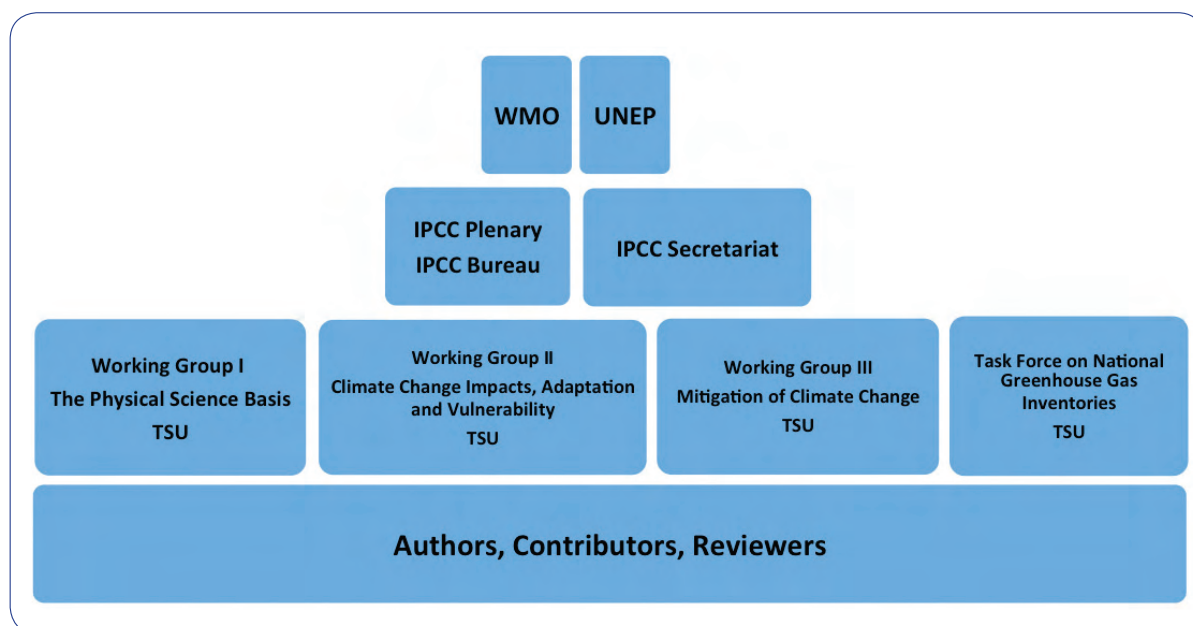


Figure 7: The structure of the IPCC

regularly delivered the most comprehensive scientific reports about climate change produced worldwide, namely the Assessment Reports. It has also responded to the need for information on scientific and technical matters from the:

- UNFCCC, through Methodology Reports and Special Reports
- Governments and international organisations, through Special Reports and Technical Papers.

Methodology reports serve as guidelines to help Parties to the UNFCCC prepare their national GHG inventories. IPCC reports contain a ‘*Summary for Policymakers*’, which is subject to line-by-line approval by delegates from all participating governments.

1.2.3 How the IPCC works

The Secretariat co-ordinates all IPCC work and liaises with governments. It is located at WMO headquarters in Geneva. The IPCC is administered in accordance with UNEP, WMO and UN rules and procedures, including codes of conduct and ethical principles. Its panel is composed of representatives appointed by governments and organisations that deal with climate change. Delegates with the appropriate expertise are encouraged to participate. Plenary sessions of the IPCC and IPCC Working Groups are held at the level of government representatives. Non-governmental and intergovernmental organisations may be allowed to attend as observers. Sessions of the IPCC Bureau, workshops, expert and lead authors are by invitation only.

The IPCC is currently organised into three Working Groups and a Task Force (Figure 7). They are assisted by Technical Support Units (TSUs), which are hosted and financially supported by the government of the developed country’s co-chair of that particular working group/task force. A TSU may also be established to support the IPCC Chair in preparing the synthesis report for an assessment report.

IPCC Working Group I assesses the physical scientific aspects of the climate system and climate change. The main topics assessed include changes in GHGs and aerosols in the atmosphere; observed changes in air, land and ocean temperatures, rainfall, glaciers and ice sheets, oceans and sea level; historical and paleo-climatic perspectives on climate change; bio-geochemistry, carbon cycle, gases and aerosols; satellite and other data; climate models; and climate projections,

causes and attribution of climate change.

IPCC Working Group II assesses the vulnerability of socioeconomic and natural systems to climate change; the negative and positive consequences of climate change; and options for adapting to it. It also takes into consideration the inter-relationship between vulnerability, adaptation and sustainable development. The assessed information is considered by sector (water resources, ecosystems, food and forests, coastal systems, industry and human health) and by region (Africa, Asia, Australia and New Zealand, Europe, Latin America, North America, Polar regions, small islands).

IPCC Working Group III assesses options for mitigating climate change through limiting or preventing GHG emissions and enhancing activities that remove them from the atmosphere. The main economic sectors are taken into account, both in a near-term and in a long-term perspective. These include energy, transport, buildings, industry, agriculture, forestry and waste management. WG III analyses the costs and benefits of the different approaches to mitigation and also considers available instruments and policy measures. The approach is more solution-oriented.

The **Task Force on National Greenhouse Gas Inventories** was established by IPCC to oversee its National Greenhouse Gas Inventories Programme. The core activity is to develop and refine an internationally agreed methodology and software for calculating and reporting national GHG emissions and its removal and to encourage its use by IPCC participants countries and by parties of the UNFCCC. The programme also established and maintains an Emission Factor Database.

Additional task groups and steering committees may be established for a limited or longer duration to consider specific topics or questions. One example is the Task Group on Data and Scenario Support for Impact and Climate Analysis.

Plenary Discussion: The UNFCCC and the role of trade unions

What is the UNFCCC and what is its role?

What role do trade unions have in UNFCCC processes?

UNIT 2: THE CONFERENCE OF PARTIES (COP)

2.1 What is the Conference of Parties (COP)?

The UN's annual Climate Change Conference are held under the framework of UNFCCC. They serve as the formal meeting of the UNFCCC Parties (Conferences of the Parties – COP) to assess progress in dealing with climate change and, as of the mid-1990s, to negotiate with the Kyoto Protocol to establish legally binding obligations for developed countries with regard to reducing their GHG emissions. The COP meets every year, unless the Parties decide otherwise. The first meeting – COP 1 – was held in Berlin, Germany, in March 1995.

COP is the supreme decision-making body of the UNFCCC. All States that are Parties to the Convention have representatives at its meeting, at which they review the implementation of the Convention and any other legal instruments that the COP adopts. They also make the necessary decisions to promote the effective implementation of the Convention, including institutional and administrative arrangements.

The main objective of each COP is to review the Convention's implementation. Another key task is reviewing the national communications and emission inventories submitted by each Party.

Based on this information, COP assesses the effects of the measures taken by Parties and the progress made in achieving the ultimate objective of the Convention.

As of 2005, the COP has also served as the Meetings of Parties of the Kyoto Protocol (CMP). Parties to the Convention that are not parties to the Protocol can participate in Protocol-related meetings as observers. The COP Presidency rotates among the five recognised UN regions - that is, Africa, Asia, Latin America and the Caribbean, Central and Eastern Europe and Western Europe and Others – and the venue of each COP tends to rotate between these groups.

2.2 The Bureau of the COP and CMP

The Bureau supports the COP and the CMP by providing advice and guidance on the on-going work under the Convention and the Kyoto Protocol, organising their sessions and the operation of the secretariat, especially at times when the COP and CMP are not in session. The Bureau is elected from representatives of Parties nominated by each of the five UN Regional Groups and Small Island Developing States.

Functions of the Bureau of the COP: Traditionally, the Bureau is responsible for advising the IPCC President and making decisions with regard to the overall management of the intergovernmental process. It assists the President with the performance of his or her duties by providing advice and by helping with various tasks (for example, members undertake consultations on his or her behalf). Bureau members often consult with their regional groups on issues. The Bureau has overall responsibility for questions of process, but it is not a forum for political negotiations.

The Bureau is also responsible for examining the credentials of Parties, reviewing the list of IGOs and NGOs, seeking accreditation and submitting a report thereon to the Conference.

2.3 Evolution of the COP

The timeline below details the international response to climate change:

- 1995 – COP 1 took place in Berlin, where it voiced concerns about the adequacy of countries' abilities to meet commitments under the Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI).
- 1996 – UNFCCC Secretariat was set up to support action under the Convention.
COP 2 took place in Geneva, where its Ministerial Declaration was noted but not adopted.
- 1997 – Kyoto Protocol formally adopted in December at COP 3. The Kyoto Protocol outlined the GHG emissions reduction obligation for Annex I countries, along with what came to be known as 'Kyoto mechanisms', such as emissions trading, clean development and joint implementation.
- 1998 – COP 4 took place in Buenos Aires, where it was expected that the issues left unresolved in Kyoto would be finalised. However, the complexity and difficulty of reaching agreement proved insurmountable. Instead, the parties adopted a two-year plan of action to advance efforts and to devise mechanisms for implementing the Kyoto Protocol, to be completed by 2000.
- 1999 – COP 5 took place in Bonn, Germany. It was primarily a technical meeting and reached no major conclusions.
- 2000 – COP 6 took place in November in The Hague, the Netherlands. The discussions evolved rapidly into a high-level negotiation over serious political issues. These included major controversy over:
 - The US's proposal to allow credit for carbon sinks in forests and agricultural lands that would satisfy a major proportion of its compliance with reducing its emissions
 - Disagreements over consequences for non-compliance by countries that did not meet their emission reduction targets
 - Difficulties in resolving how developing countries could obtain financial assistance to deal with the adverse effects of climate change and meet their obligations to plan for measuring, and possibly reducing,

- 2000 GHG emissionsIn the final hours of COP 6, despite some compromises agreed between the US and (ctnd) some EU countries, the EU, led by Denmark and Germany, rejected the compromise positions and the talks in The Hague collapsed.
- 2001 – COP 6 negotiations resumed in Bonn, but little progress was made in resolving the differences that had led to impasse in The Hague. Parties negotiated the key issues and agreement was reached on most of the major political issues, to the surprise of most observers, given the low expectations that preceded the meeting. These included: (i) flexible mechanisms; (ii) carbon sinks; (iii) compliance; and (iv) financing.
- 2001 – At COP 7 in Marrakech, Morocco, negotiators wrapped up the work on the Buenos Aires Plan of Action, finalising most of the operational details and setting the stage for nations to ratify the Kyoto Protocol. The main decisions at COP 7 included:
- Operational rules for international emissions trading among parties to the Protocol and for the CDM and joint implementation
 - A compliance regime that outlined consequences for failure to meet emissions targets, but deferred to the Parties to the Protocol, once it came into force, the decision on whether those consequences would be legally binding
 - Accounting procedures for the flexibility mechanisms
 - A decision to consider at COP 8 how to achieve a review of the adequacy of commitments that might lead to discussions on future commitments by developing countries.
- 2002 – Held in New Delhi, COP 8 adopted the Delhi Ministerial Declaration that, amongst other things, called for efforts by developed countries to transfer technology and minimise the impact of climate change on developing countries. It also approved the New Delhi work programme on Article 6 of the Convention.
- 2003 – COP 9 took place in Milan. The Parties agreed to use the Adaptation Fund established at COP 7 in 2001 primarily to support developing countries to better adapt to climate change. The fund would also be used for capacity building through technology transfer. The Parties also agreed to review the first national reports submitted by 110 non-Annex I countries.
- 2004 – COP 10 took place in Buenos Aires, where it discussed progress made since the first COP 1 and future challenges, with special emphasis on climate change mitigation and adaptation. To enable developing countries to better adapt to climate change, the Buenos Aires Plan of Action was adopted. The Parties also began discussing the post-Kyoto mechanism on how to allocate emission reduction obligation following 2012, when the first commitment period ended.
- 2005 – COP 11 (or COP 11/CMP 1) took place in Montreal, Canada. It was the first Meeting of the Parties (CMP 1) to the Kyoto Protocol since their initial meeting in Kyoto in 1997. One of the largest intergovernmental conferences on climate change ever, the event marked the entry into force of the Kyoto Protocol. The Montreal Action Plan was an agreement to 'extend the life of the Kyoto Protocol beyond its 2012 expiration date and negotiate deeper cuts in greenhouse-gas emissions'.
- 2006 – COP 12/CMP 2 took place in Nairobi, Kenya. The Parties adopted a five-year plan of work to support climate change adaptation by developing countries and agreed on the procedures and modalities for the Adaptation Fund. They also agreed to improve the projects for clean development mechanisms.
- 2007 – COP 13/CMP 3 took place at Nusa Dua, in Bali, Indonesia. Agreement on a timeline and structured negotiation on the post-2012 framework (the end of the first commitment period of the Kyoto Protocol) was achieved with the adoption of the Bali Action Plan (Decision 1/CP.13). The AWG-LCA was established as a new subsidiary body to conduct negotiations aimed at urgently enhancing the implementation of the Convention up to and beyond 2012. Decision 9/CP.13 is an amendment of the New Delhi work programme.
- 2008 – COP 14/CMP 4 took place in Poznan, Poland. Negotiations on a successor to the Kyoto Protocol were the primary focus of the conference. Delegates also agreed on principles for financing a fund to help the poorest nations cope with the effects of climate change. They approved a mechanism to incorporate forest protection into the efforts of the international community to combat climate change.
- 2009 – COP 15/CMP 5 took place in Copenhagen, Denmark. The overall goal for this UN Climate Change Conference was to establish an ambitious global climate agreement for the period post-2012, when the first commitment period under the Kyoto Protocol expired. Ministers and officials from 192 countries took part in the meeting; there were also participants from a large number of civil society organisations. However, industrialised countries in Annex I are now reluctant to fulfil commitments under the Kyoto

2009 Protocol. The conference did not achieve a binding agreement for long-term action. A 13-paragraph (ctnd) 'political accord' was negotiated by approximately 25 parties, including US and China, but it was only 'noted' by COP as it was considered an external document, not one negotiated within the UNFCCC process. The accord was notable in that it referred to a collective commitment by developed countries for new and additional resources, including increasing forestry and investments through international institutions that would approach US\$ 30 billion for the period 2010–2012.

2010 – COP 16 was held in Cancun, Mexico. The outcome was an agreement adopted by the Parties that called for the US\$ 100 billion per annum 'Green Climate Fund' as well as a 'Climate Technology Centre' and network. However, the funding of the Green Climate Fund was not agreed upon, nor was a commitment to a second period of the Kyoto Protocol. However, it was concluded that the base year for measuring temperature rise shall be 1990 and the global warming potentials shall be those provided by the IPCC. All parties 'Recognising that climate change represents an urgent and potentially irreversible threat to human societies and the planet, and thus requires to be urgently addressed by all Parties'. It recognises the IPCC Fourth Assessment Report goal of a maximum 2 °C global warming and all parties should take urgent action to meet this goal. It also agreed upon greenhouse gas emissions should peak as soon as possible, but recognising that the time frame for peaking will be longer in developing countries, since social and economic development and poverty eradication are the first and overriding priorities of developing countries.

2011 — COP 17 was held in Durban, South Africa. The conference agreed to start negotiations on a legally binding deal for all countries to be adopted in 2015 that governed the period post-2020. The Durban Platform for Enhanced Action was drafted and accepted. There was also progress regarding the creation of the Green Climate Fund, for which a management framework was adopted. The fund is to distribute US\$100 billion per year to help poor countries adapt to climate change impacts.

2012 – COP 18 was held in Doha, Qatar. The conference produced a package of documents collectively titled 'The Doha Climate Gateway'. These contained:

- a) The Doha Amendment to the Kyoto Protocol (to be accepted before entering into force) featuring a second commitment period running from 2012 until 2020, limited to 15% of the global carbon dioxide emissions due to the lack of commitment from Japan, Russia, Belarus, Ukraine and New Zealand and due to the fact that developing countries such as China (the world's largest emitter of GHG), India and Brazil are not subject to emissions reductions under the Kyoto Protocol.
- b) Language on loss and damage was formalised for the first time in the conference documents.
- c) The conference made little progress towards the funding of the Green Climate Fund.

2013 – COP 19/CMP 9 was held in Warsaw, Poland. Key decisions adopted included:

- a) Further advancing the Durban Platform
- b) The Green Climate Fund and Long-Term Finance
- c) The Warsaw Framework for REDD+
- d) The Warsaw International Mechanism for Loss and Damage.

Under the Durban Platform, Parties agreed to submit 'intended nationally determined contributions' well before the Paris Conference of 2015.

2014 – At COP 20 in Lima, Peru, Parties adopted the 'Lima Call for Action', which elaborated key elements of the agreement to be discussed in Paris.

2015 – COP 21 was held in Paris, France. Negotiations resulted in the adoption of the Paris Agreement governing climate change reduction measures post-2020. Adopting this Agreement ended the work of the Durban Platform established at COP 17. It will only come into force, and thus be fully effective, if the 55 countries that produce at least 55% of the world's GHG ratify the Agreement.

Group Discussions: Activities of COP

What are the key tasks of COP?

Each group is to choose a year and discuss and state the outcome of the relevant COP.

UNIT 3: ACTORS IN GOVERNANCE

The actors in the climate change arena are government, business, trade unions and civil society organisations. Table 11, below (and overleaf), summaries the role of each one.

Actor	Role
Government A government is primarily responsible for creating the right conditions and incentives for private parties to manage risks from climate change impacts and make efficient investment decisions. It is also responsible for managing risks to public assets and service delivery.	The role of government has four levels: local, national, regional and global A government should: - Provide information for private parties to adapt - Set the right conditions for private parties to adapt - Encourage climate resilience and adaptive capacity - Provide the best available information on climate change to facilitate climate change adaptation by the private sector - Make information accessible and useable - Ensure that regulations, markets and institutions promote effective private climate risk management - Help build capacity and resilience, where required, to assist vulnerable individuals, groups, communities and regions in particular - Provide public goods and services and manage public assets. These include, for example, flood and coastal protection, emergency management, public health and safety measures.
Business Enterprises should establish and maintain a system of environmental management appropriate to the enterprise, including the establishment of measurable objectives and, where appropriate, targets for improved environmental performance, including periodically reviewing the continuing relevance of these objectives.	In order to manage risks from climate change impacts businesses need to: - Be aware of the risks and their responsibility for managing them - Take steps to understand the magnitude and nature of the specific risks to their assets and activities - Develop and implement strategies and actions to manage the risks Businesses can: - Improve energy efficiency, for example, through better insulation and energy efficient lighting. - Shift from fossil energies towards renewable energies - Reorganise business models to maximise energy savings and minimise carbon production (in transportation, for example) - Adopt fewer carbon-intensive inputs and develop fewer energy-intensive products - Mobilise employees, which is a critical step to ensuring an adequate implementation of climate change strategies and a strong driver towards innovation in the business model.
Labour Trade unions, as part of their work, have to: (a) Mobilise to ensure ambitious commitments from government (b) Engage in social dialogue at national and sectoral levels, in the workplace and on a tripartite basis with governments and employers, in order	Trade unions should: - Build a community for climate action - Lobby government for emission reduction targets and an ambitious global agreement - Support a carbon price to make renewable energy, green buildings and retrofits competitive - Call for investments in enabling green infrastructure, public transport and services

to plan industrial transformation and secure just transition measures (c) Organise workers with 'green' jobs to ensure decent work and union growth.	Engage in workplace action to drive energy efficiency, recycling and other environmental reforms Generate solidarity and direct action in support of communities facing climatic catastrophes Partner with climate and development groups to mobilise for political commitment.
Civil Society Organisations	Civil society organisations should be engaged in implementing activities that address climate change adaptation. These include: Advocacy Public awareness campaigns on the impacts and effects of climate change The impact of environmental degradation on global warming and subsequently climate change Participate in the UNFCCC Conference of Parties.

Table 11: Actors in climate change governance

Role Play: Actors in climate change governance

Divide participants into four groups. Each group should represent each of the four actors in climate change governance (government, employers, trade unions and CSOs).

Each group should act as if they are in a meeting deliberating on what role they should play in climate change issues at national level.

UNIT 4: TRADE UNIONS AND THE UNFCCC PROCESS

4.1 Trade Unions' Participation in the UNFCCC Process

Trade unions participate in the UNFCCC process via the 'Major Groups' mechanism. The Major Groups Facilitating Committee (MGFC) acts as the main Civil Society Organisation (CSO) liaising body within the UNFCCC process. The selection of the representatives is the responsibility of governing structures within each major group, but generally it takes into account academic qualifications, gender equality, regional balance and the responsibilities of the proposed candidate.

The International Trade Union Confederation (ITUC) acts as the lead co-ordinator and the liaison officer between the Trade Union major group and the UNEP Secretariat in all matters related to the MGFC. Engagement with the UNEP Secretariat requires a deep understanding of the issues at hand and being able to relate them to the needs of workers across the globe. It requires a considerable amount of literature reviewing, report reading and submitting trade unions' positions on matters that are included in the agenda of a meeting in a precise and timely manner.

At national level, national co-ordinators responsible for the environment are expected to collate views and data that will assist in strengthening trade unions' regional position in the UNFCCC process. To assist them, the ITUC Africa Regional Co-ordinator circulates a copy of the negotiating text, highlighting areas of concern for the labour constituency.

4.2 Trade Unions' Demands in the UNFCCC Process

Under the UNFCCC process, trade unions have demanded the recognition of the rights and interests of workers in all UNFCCC's discussions and documents. This has seen the trade unions developing a principle of social justice known as Just Transition (JT) as issue which was included in the Paris Agreement on Climate Change in 2015. It calls for justice for workers who are, and will continue to be, negatively affected by climate change and by measures planned to be undertaken to address it under mitigation and adaptation actions.

4.3 The Role of Trade Unions in Influencing and Exploiting UNFCCC Decisions

For trade unions to influence UNFCCC decisions in a more meaningful way, they have to take a more active role at all levels, i.e., from national to global. At national level, governments have formulated (or are in the process of so doing) national climate change policies, strategies and action plans. At this level, national trade union centres or federations should be involved in the development of national policy.

Through their regional bodies, trade unions have to participate in the development of regional policies on climate change. The participation of national centres in regional and sub-regional climate change meetings is critical. For example, sub-regional climate change has been extensively debated in sub-regional organisations such as SADC, EAC, ECOWAS and COMESA without any inputs from the world of work. At the continental level, ITUC has participated actively in these meetings, but the participation of national centres is yet to be seen. The African Union Commission (AUC) meetings on climate change are open to all major groups, including trade unions, at national and sub-regional level.

To fully benefit from UNFCCC decisions, trade unions can apply them in various ways, for example, when:

- Reviewing and strengthening national policies and legislation
- Negotiating collective bargaining agreements (CBAs) and workplace policies
- Accessing finance for workplace climate change interventions
- Developing trade union climate change interventions at national and enterprise level
- Monitoring compliance of the Paris Agreement on climate change
- Strengthening representation and social dialogue.

To upgrade the influence of trade unions in the UNFCCC process, there is a need to:

- Build their capacity
- Strengthen the Regional Labour and Environment Assembly (RLEA)
- Conduct research and write up case studies
- Involve regional trade union bodies
- Develop of a model regional climate change policy
- Review Decent Work country programmes.

UNIT 5: CLIMATE CHANGE INSTRUMENTS: INTERNATIONAL, CONTINENTAL, REGIONAL AND NATIONAL

5.1 International Instruments and Frameworks on Climate Change

Most of the following agreements are legally binding for countries that have formally ratified them. The first UN Conference on Sustainable Development was called the 'Earth Summit'; held in 1992, it gave birth to the three Rio Conventions, namely (i) UNFCCC, (ii) the UN Convention on Biodiversity (UNCBD) and (iii) the UN Convention to Combat Desertification (UNCCD).

Table 12 lists the various international instruments and their year of signing and ratification by the Government of Zimbabwe.

Name of Instrument/Framework	Area of focus	Status
United Nations Framework Convention on Climate Change (UNFCCC), 1992	Stabilising GHG concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Since 1995, it has organised annual COPs	Signed and ratified 1992
UN Convention on Biological Diversity (UNCBD), 1992	Developing national strategies for the conservation and sustainable use of biological diversity Fair and equitable sharing of benefits arising from genetic resources.	Signed 1992 and ratified 1994
UN Convention to Combat Desertification (UNCCD), 1994	Combating desertification and mitigating the effects of drought through national action programmes that incorporate long-term strategies supported by international co-operation and partnerships	Ratified 1997
The Kyoto Protocol (signed in 1997 and entered into force in 2005)	It established procedures to increase the flexibility and reduce GHG emissions.	Ratified 2009
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989	Industrial waste and chemicals	Signed March 1989 but not ratified
Bamako Convention	Industrial waste and chemicals	Ratified 1993
Vienna Convention for the Protection of the Ozone Layer (1987) and the Montreal Protocol on Substances that Deplete the Ozone Layer (1990)	Protecting the ozone layer and phasing out ozone-depleting substances.	Acceded November 1992
Stockholm Convention on Persistent Organic Pollutants (POPs), 2001	Eliminating the production and use of POPs.	Ratified March 2012
Rio Declaration on Environment and Development, 1992	Defined people's rights to development, and their responsibilities for safeguarding the common environment Long-term economic progress is linked to environmental protection Enactment of effective environmental legislation by the States	Not applicable

Table 12: International instruments and frameworks on climate change

5.2 Continental Instruments and Frameworks on Climate Change

Table 13 lists the Continental instruments and frameworks on climate change

5.3 Regional Instruments and Frameworks on Climate Change

Table 14 lists the Regional instruments and frameworks on climate change

Name of Instrument/Framework	Area of Focus	Date signed/ratified
African Convention on the Conservation of Nature and Natural Resources, 1969	Adopting measures to ensure the conservation, utilisation and development of soil, water, flora and fauna resources.	Unratified
Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, 1998	Regulates the movement of waste between countries and ensures sound management and disposal thereof Protecting human health and environment from hazardous waste	Ratified 1992
African Convention on the Conservation of Nature and Natural Resources (Revised Version), 2003	Adopting measures to ensure the conservation, utilisation and development of soil, water, flora and fauna resources.	Signed in 2003
The AU Committee of African Heads of State on Climate Change	Climate change	Not applicable
The AU Agriculture Climate Change Adaptation and Mitigation Framework August, 2011	Climate, environment and mitigation issues	Signed August 2011
Gaborone Declaration on Climate Change and Africa's UNEP, 2013	Co-ordinating, facilitating, harnessing and strengthening the exchange of information and knowledge for climate change adaptation	Signed 2013

Table 13: Continental instruments and frameworks on climate change

Name of Instrument/Framework	Area of Focus	Date signed/ratified
Southern Africa Sub-Regional Framework on Climate Change, 2010	Streamlining climate change responses at sub-regional level Prioritising adaptation and mitigation strategies	Not applicable
Climate Change Adaptation in SADC	Water sector	
SADC Action Plan on Climate Change	Mitigating climate change effects in the energy sector	Not applicable

Table 14: Regional instruments and frameworks on climate change

5.4 National Legislation on Climate Change

Table 15 lists Zimbabwe's national legislation on climate change

Legislation	Description
The Zimbabwe Constitution Amendment (No. 20) Act, 2013	Section 73 provides for Environmental Rights
Environmental Management Act (EMA), Act No. 13 of 2002 (Chapter 20:27), revisions under Act No. 5 of 2004 (s.23) and Act No. 6 of 2005 (s.28) Environmental Impact Assessment (EAs) Environmental Management Plans (EMPs)	This Act outlines provisions for the sustainable management of natural resources and the protection of the environment. It allows for the establishment of various environment-related agencies, including the National Environmental Council, Environmental Management Agency, Environment Management Board, Environment Fund, Environmental Quality Standards and the Standards and Enforcement Committee. It specifically refers to GHG reduction for maintaining environmental quality standards The National Environmental Council is made up of the Permanent Secretaries in the Ministries responsible for the matters of areas specified in the Second Schedule, two representatives of universities (appointed by the Minister), two representatives of specialised research institutions (appointed by the Minister), three representatives of the business community (appointed by the Minister), two representatives of local non-governmental organisations active in the environmental field (appointed by the Minister), the Director-General as the Secretary to the Council and others who may be co-opted by the Council (with the approval of the Minister) The functions of the Council are: to advise on policy formulation and give directions on the implementation of this Act; to advise on national goals and objectives and determine policies and priorities for protecting the environment; to promote co-operation among public departments, local authorities, the private sector, non-governmental organisations and such other organisations engaged in environmental protection programmes; to make recommendations to all appropriate persons and authorities regarding the harmonisation of functions related to the environment; to review and recommend to Ministers the guidelines for EMPs and environmental action plans; to review and recommend incentives for the protection of the environment; and to perform other functions as assigned by the Minister under this Act The Environmental Management Agency formulates quality standards on air, including GHGs. It assists with 'managing' the environment by developing a national plan, regulating and monitoring the discharge or emission of GHG and carrying out many other environment-related duties and functions as directed by the Minister. The Environmental Management Board consists of 9 to 15 members appointed by the Minister after consultation with the President. There should be at least one expert from each of the following areas: environmental planning and management; environmental economics; ecology; pollution; waste management; soil science; hazardous substances; water; and sanitation. One shall be a legal practitioner registered in terms of the Legal Practitioners Act and another the Secretary for the Ministry responsible for the environment One of the responsibilities of the Standards and Enforcement Committee is to recommend to the Board guidelines to minimise GHG emissions and suitable technologies for so doing. GHG emissions are seen as a part of air pollution under this Act

Environmental Management Act (EMA), Environmental Impact Assessment (EAs) and Environmental Management Plans (EMPs) (contd)	The EMA was introduced in 2002 and it is most commonly referred to as the 'EMA of 2002 as per 2005 amendment'. The original version commenced in 2003 and the third version (after second revision) in 2006. This Act amended a range of environment- and resource-related legislation, including the Forest Act of 1949.
Energy Regulatory Authority Act No. 3 of 2011 (Chapter 13:23)	This Act establishes the Zimbabwe Energy Regulatory Authority (ZERA), which regulates the procurement, production, transportation, transmission, distribution, importation and exportation of energy derived from any energy source. The authority is responsible for promoting renewable energy. The Energy Regulatory Authority Board, which controls and manages ZERA, was also established under this Act. The Act provides requirements, processes and rules related to energy resource licensing. The Energy Regulatory Act amends the Electricity Act of 2002 and the Petroleum Act of 2006.
Electricity Act No. 4 of 2002 (Chapter 13:19), revision under Act No. 3 of 2003	This Act repeals the former Electricity Act. It established the Zimbabwe Electricity Regulatory Commission and details its functions and management rules. The Commission has the objectives of creating and promoting efficient industry and market structures, maximising access to electricity services, ensuring adequate electricity supply, ensuring safety, security and reliability of electricity deliveries and providing fair and balanced regulations within the sector. The Commission is expected to co-ordinate with the Rural Electrification Fund Board, the Zambezi River Authority, electricity consumers, potential investors in electricity services and other interested parties, whenever appropriate. It consists of not less than five and no more than seven Commissioners, three of whom are full time. They are appointed by the President after consultation with the Minister of Mines and Energy The Zimbabwe Electricity Regulatory Commission provides incentives for the continued improvement of the technical and economic efficiency with which the electricity services are provided. Although it does not detail the process, the Commission is in charge of formulating and implementing these measures.
The Labour Act (Chapter. 28:01)	Section 74 of the Act specifies that parties are allowed to negotiate on any conditions of employment that are of mutual interest.
Civil Protection Act (Chapter 10:06)	Provides for establishing civil protection organisation funding and the operation of civil protection services in times of disaster.
Urban Councils Act (Chapter 29:15)	Empowers urban councils, town councils and municipal boards to enact by-laws that regulate the collection and disposal of waste within their areas of jurisdiction.
Rural District Council Act (Chapter 29:13)	Empowers Rural District Councils to enact by-laws that regulate the collection and disposal of waste as well as the preservation of forests within their areas of jurisdiction.

Table 15: Zimbabwe's national legislation on climate change

Instruments for environmental management in Zimbabwe include:

- Plastic Packaging and Plastic Bottles Regulation S.I 98, 2010
- Importation and Transit of Hazardous Substances and Waste Regulations S.I 77, 2009
- Air Pollution Control Regulations S.I 72, 2009
- Hazardous Substances, Pesticides and Toxic Substances Regulations S.I 12, 2007
- Hazardous Waste Management Regulations S.I 10, 2007
- EIA and Ecosystems Protection Regulations S.I 7, 2007
- Effluent and Solid Waste Disposal Regulations S.I 6, 2007.

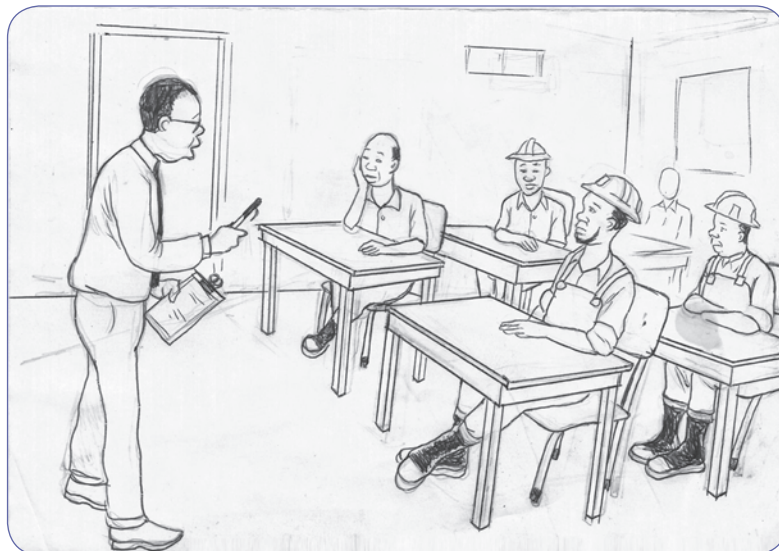
CONCLUSION

Climate change is a global problem and therefore needs a global response. Setting up governance structures from global to national level is one of the first steps towards addressing the challenges it has brought about. This module has outlined the structures in place, so giving trade unions the opportunity to identify where and when they can participate or intervene to ensure that workers' interests are addressed.

It is imperative that trade unions understand the process by which climate change is addressed at the global level and take up their role in climate change governance. In terms of legislation, trade unions must monitor and ensure that all legislation is followed and adhered to.

Quiz: International, continental, regional and national instruments on climate change

The facilitator should develop questions in quiz form concerning instruments on climate change.



Key Learning Points

- The objectives and mechanisms of the UNFCCC.
- The role of the IPCC.

- The role of government, business, labour and civil society organisations in the governance of climate change.
- Instruments and legislation on Climate Change – nationally, regionally, continentally and globally
- Conference of Parties, their role and the role of trade unions at the COP.

Module References

Friedrich-Ebert-Stiftung (2015) 'An African trade union guide to the United Nations Framework Convention on Climate Change (UNFCCC) process, for effective participation and implementation'.

www.iisd.ca/process/climate_atm-fcccintro.html

www.ipcc.ch/organization/organization.shtml

www.ipcc.ch/organization/organization_structure.shtml

www.ipcc.ch/working_groups/working_groups.shtml

www.unfccc.int/essential_background/convention/items/6036.php

www.unfccc.int/kyoto_protocol/items/2830.php

www.unfccc.int/parties_and_observers/items/2704.php

MODULE FOUR: NATIONAL ACTION ON CLIMATE CHANGE – INSTITUTIONS, POLICIES AND STRATEGIES

INTRODUCTION

This module explains the various policies and strategies in Zimbabwe that speak to climate change issues. Some of the policies and strategies are sector-based. The module further provides the role of trade unions in national policies and strategies that relate to climate change.

Objectives of the module

The module seeks to:

1. Identify the institutions that deal with climate change and the policies and strategies that they have developed on climate change issues.
2. Provide information on the contents of these policies and strategies.
3. Identify the role of trade unions in these policies and strategies.

UNIT 1: NATIONAL INSTITUTIONS ON CLIMATE CHANGE

There are various national institutions dealing with climate change in Zimbabwe (see Table 16).



The Environment Management Agency, which is the most prominent, is responsible for:

- Developing guidelines for national plans, environmental management plans (EMPs) and local environmental action plans
- Regulating, monitoring, reviewing and approving EIAs
- Regulating and monitoring the management and use of ecologically fragile ecosystems
- Developing and implementing incentives for protecting the environment
- Undertaking any works deemed necessary or desirable for the protection or management of the environment where it appears to be in the best interest of the public or where, in the opinion of the Agency, the relevant authority has failed to do so
- Serving written orders on any persons that require them to undertake or adopt such measures as specified to protect the environment.

Institution	Description
Ministry of Environment, Water and Climate	Formulates and implements sustainable policies on the development, utilisation and management of water resources in co-operation with user communities and institutions Designs, constructs and maintains medium- to large-size dams and water supplies to satisfy present and future domestic, industrial and mining water requirements Provides clear/treated water for urban areas in consultation with the Ministry of Local Government, Public Works and Urban Development Designs, constructs and maintains dams, weirs and boreholes to meet present and future irrigation requirements Responsible for overall/national planning, management, regulation and standardisation of irrigation development and the adoption of appropriate technology.
Ministry of Mines	Tasked with researching and assessing the consequences of operations in the mining sector and recommends possible mitigation and adaption measures.
Ministry of Economic Planning and Investment Planning	In 2012, it developed a baseline on climate change and development
Department of Meteorology, under the Ministry of Transport and Energy	Is responsible for meteorological data as it relates to the atmosphere. This department has programmes for drought monitoring and early warning systems, primarily as they relate to the agricultural sector Plans, designs, constructs and maintains state roads and bridges Provides strategic policies and plans to public enterprises within the Ministry Provides services that ensure the safety of road and water traffic Supervises, administers and controls relevant national and international regulations, treaties and protocols of all aspects of the transport and communications sectors.

Table 16: National institutions on climate change

UNIT 2: NATIONAL POLICIES RELATED TO CLIMATE CHANGE IN ZIMBABWE

Government policies related to climate change are shown in Table 17 (overleaf). It is in the process of developing a National Climate Change Policy, a Renewable Energy Policy and a Biofuel Policy.

UNIT 3: NATIONAL STRATEGIES ON CLIMATE CHANGE

3.1 The National Climate Change Response Strategy

In 2015, the Government of Zimbabwe, through the Ministry of Environment Water and Climate, developed a National Climate Change Response Strategy. Its vision is *‘to create a climate change resilient nation’* and its mission is *‘to ensure sustainable development and a climate proofed economy through engaging all stakeholders recognising the vulnerable nature of Zimbabwe’s natural resources and society.’*

Table 17: Government policies related to climate change

Policy area	Date	Summary of contents in relation to climate change
Environmental Policy	2009	Its vision includes: 1. Alleviating poverty 2. Improving the quality of people's lives 3. Acknowledging the importance of ensuring the sustainability of the benefits arising from good use of the environment.
Energy Policy	2012	The policy addresses the following: 1. Increasing access of all economic sectors to affordable energy through the optimal use of available energy resources and diversification supply options (applicability, availability, acceptability and affordability) 2. Stimulating sustainable economic growth by promoting competition, efficiency and investment (applicability and accountability) 3. Improving the institutional framework and governance in the energy sector (accountability) 4. Promoting research and development in the energy sector (applicability) 5. Developing the use of renewable energy sources to complement conventional sources (applicability and acceptability). These include bio-energy, hydropower, solar power and wind power.
Industrial Development Policy	2012-16	Although policy focuses on promoting environmentally friendly industrialisation, it does not address climate change issues. It does prioritise economic sectors closely linked to climate change. These include agri-business (food and beverages, clothing and textiles, leather, footwear, wood and furniture), the fertiliser and chemical industry, pharmaceuticals, metals and electricals.
National Gender Policy	2012-17	The policy considers climate change, its effects on gender and acknowledges that it further worsens gender disparities. There are seven targets: 1. Review current environment and natural resources management policies and strategies, audit for gender considerations, identify gaps and recommend/advocate for incorporating gender perspectives. 2. Support initiatives that aim to actualise constitutional environmental rights. 3. Conduct research to collect gender-segregated data that highlight environment challenges and climate change-induced gender inequalities and recommend gender-responsive strategies. 4. Build the capacity of state and non-state development agencies in gender mainstreaming in environment and climate change policies, programmes and national environmental action plans. 5. Contribute to the development and regular reviews of the National Climate Change Policy and Response Strategy, the National Biodiversity Strategy and other related national strategies to ensure they adequately incorporate gender considerations. 6. Support interventions aimed at increasing the participation of females and males in the sustainable utilisation of natural resources for economic benefits, including opportunities for carbon trading. 7. Ensure national-level strategies for climate-induced disaster management and risk reduction and coping mechanisms are gender-responsive.

National Youth Policy	2013	The policy sets out six strategies for youth, namely to: 1. Integrate environmental education and training into education and training programmes. Emphasis should be given in school curricula to environmental education. 2. Encourage and assist youth organisations with initiating and developing youth-to-youth contact via town-twinning and similar programmes in order to share experiences gained in other countries. 3. Strengthen the participation of youth in the protection, preservation and improvement of the environment. 4. Promote youth participation in tree planting, forestry, combating desert creep, waste reduction, recycling and other sound environmental practices. 5. Involve young people in designing and implementing appropriate environmental policies and programmes. 6. Encourage the media and advertising agencies with developing programmes aimed at widespread dissemination of information on environmental issues.
Zimbabwe National Trade Policy	2012-16	This policy recognises the following: The impact of environmental policies on trade The role of government in establishing measures that ensure trade and environmental policies are mutually supportive in order to achieve sustainable development Co-ordinating policies between the Ministries of Industry and Commerce and Environment Water and Climate in order to minimise policy conflicts between trade and the environment.
Comprehensive Agricultural Policy Framework	2012-32	Summary of contents: The framework does not specifically mention the phrase 'climate change'. However, it does give two policy statements on drought issues: 1. Promote, in collaboration with seed companies and international and national research organisations, research into the development of high yielding and drought tolerant crop varieties incorporates is silent on climate change. 2. Support the production of small grains especially in the drought prone areas
National Occupational Health and Safety Policy	2014	The policy identifies six critical sectors that affect, or are affected by, climate change: 1. Mining – EIAs and waste management 2. Forestry – afforestation, waste management and sustainable use of chemicals 3. Building and construction – EIAs and waste management 4. Retail and services – waste management 5. SMEs and the informal economy – waste management and the sustainable use of chemicals 6. Public service – waste management.

The Climate Change Response Strategy has seven pillars:

Pillar 1: Adaptation and Disaster Risk Management.

Pillar 2: Mitigation and low-carbon development strategies (LCDS).

Pillar 3: The capacity to effect:

- * Adaptation and mitigation
- * Climate change communication
- * Education and raising awareness
- * Research and development
- * Appropriate institutions to address climate change issues.

Pillar 4: Governance framework:

- * Institutions
- * Networks
- * Negotiations

Pillar 5: Finance and Investment:

- * Partnerships
- * International financing

Pillar 6: The development and transfer of technology, including infrastructure.

Pillar 7: Communication and advocacy and information management and dissemination.

Gender and water are regarded as cross-cutting issues.

Group discussion: Evaluating national policies, programmes and strategies on climate change

In groups discuss the gaps in the national policies, programmes and strategies on climate change?

What should be done to address these gaps?

3.2 The Intended Nationally Determined Contribution (INDC)

What is an INDC?

An INDC is a national pledge that a country develops that outlines their plan to tackle climate change. Each member country was to send its INDC to the UNFCCC before COP 21 which was held in November / December 2015. These INDCs formed the basis of the Paris COP 21 talks.

A country's INDC must specify:

- The steps it will take to reduce emissions and to adapt to climate change.
- The financial support it requires to implement the adaptation and mitigation strategies.
- The support it will provide to address climate change.

In 2015, the Government of Zimbabwe submitted its INDC. It is anchored on the country's efforts to reduce GHGs and adapt to climate change.

Climate change adaptation refers to responses that aim to reduce the vulnerability caused by climate change. It also refers to coping mechanisms to deal with impacts of climate change.

Climate change mitigation refers to the reduction of GHGs.

Zimbabwe's INDC: Adaptation strategies

The INDC specifies the following:

1. Commitment to promoting adapted crop and livestock development and climate-smart agricultural practices.
2. Building resilience in managing climate-related disaster risks such as droughts.
3. Strengthening the management of water resources and irrigation in the face of climate change.
4. Promoting practices that reduce risk of losses in crops, livestock and agricultural incomes.
5. Cross-sectoral adaptation efforts.

Zimbabwe's INDC: Mitigation strategies (the energy sector)

The INDC specifies the following:

1. Increasing ethanol blending.
2. Increasing solar water heaters.
3. Improving energy efficiency.
4. Increasing hydro in the energy mix.
5. Refurbishing and electrifying the rail system.
6. Exploring coal-bed methane (CBM) power.
7. Increasing solar-powered off-grids.
8. Improving integrated waste management.
9. Changing thermal power station technologies.
10. Reviewing the transport system.
11. Reducing deforestation forest degradation and implementing REDD+.
12. Developing sustainable energy alternatives of curing tobacco.

Plenary Discussion: Evaluating Zimbabwe's INDC strategies

*Do you think the strategies detailed in Zimbabwe's INDC are achievable?
Explain your answer.*

UNIT 4: THE ROLE OF TRADE UNIONS IN POLICIES AND STRATEGIES RELATED TO CLIMATE CHANGE

Trade unions have an important role to play in developing policies and strategies that relate to climate change. They should advocate for:

- Policy co-ordination and coherence, namely linking all sectoral policies with environmental and climate change-related issues.
- Adequate capacitation of relevant ministries and institutions responsible for climate change in terms financial and human resources.

Trade unions should also demand:

- Transparency and accountability of financial resources provided to ministries that deal with climate change issues.
- Involvement in climate change-related policy formulation, monitoring and evaluation.

Furthermore, trade unions should undertake programmes to raise awareness amongst trade union and members on existing national policies related to climate change.

CONCLUSION

This module shows that Zimbabwe has various national and sectoral policies in place that are link to climate change. It also has concrete strategies to deal with climate change, such as the National Response Strategy. Timeous finalisation of other policies, such as the National Climate Change Policy, Renewable Energy Policy and Biofuel Policy, will go a long way in terms of providing national guidance on dealing with climate change.

As part of UNFCCC, Zimbabwe is abiding with its procedures. For example, it submitted its INDC to UNFCCC on time, unlike other countries. The challenge is for government to fully implement its policies and strategies by providing adequate resources, both financial and human. Trade unions should also endeavour to demand active participation in the formulation, implementation and evaluation of all national policies that relate to climate change.

Key Learning Points

- Zimbabwe has comprehensive policies that deal with climate change. However, the challenge is to ensure policy coherence and adequate resourcing for the strategies to ensure the effectiveness of both
- Zimbabwe's INDC that fully integrates climate change mitigation and adaptation strategies
- Trade unions should advocate for policy co-ordination and coherence and the adequate capacitation of relevant ministries and institutions responsible for climate change in terms financial and human resources
- Trade unions should demand transparency and accountability of financial resources provided to relevant ministries that deal with climate change issues
- Trade unions should demand active participation in climate change-related policy formulation, monitoring and evaluation.

Module References

Government of Zimbabwe (2015), Zimbabwe INDC, Harare, Zimbabwe
— (2015), National Response Strategy on Climate Change, Harare, Zimbabwe
Various Government National Policies

MODULE FIVE: CLIMATE CHANGE, THE GREEN ECONOMY AND GREEN JOBS

Introduction

Having established what climate change is, and its devastating impact on the economy, the environment and human welfare; the governance of climate change and national institutions and policies dealing with climate change in Modules 1 to 4, it is important to analyse how some of the effects of climate change can be addressed. This module introduces the concept of the green economy and how it relates to the climate change discourse and its impacts. It illustrates why the green economy concept is the 'new economic model' in the context of climate change. The module also indicates how the green economy has opportunities for creating green and decent jobs, especially in the context of high unemployment levels, mostly amongst the youth, and provides a sectoral approach for examples of green jobs. It concludes with a discussion of the role of trade unions in the green economy initiative and the creation of green and decent jobs.

The Objectives of the Module

The objectives of the model are to:

1. Understand the concept of the green economy and how it links with climate change.
2. Articulate the guiding principles and elements of the green economy.
3. Understand what is meant by green jobs and why they are becoming increasingly important.
4. Identify potential green jobs in various economic sectors.
5. Understand the role of trade unions in the green economy and the creation of green and decent jobs.

Unit 1: Climate Change and the Green Economy

1.1 The Evolution of the Concept of the Green Economy

Given the increasing global understanding of the scale of global carbon emissions, how they have contributed to climate change and the associated devastating effects of the latter, there has been a global push for the need for a more sustainable economic model that hinges on a low-carbon development path. Experiences of environmental devastation and climate change have made it clear that the economic model needs to change towards a low-carbon economy.

In 2008, UNEP proposed the 'green economy initiative' (GEI) – the UN's response to the on-going global financial crisis – out of the recognition that without a fundamental economic transformation, the goals of sustainable development would remain elusive. In 2012, in 'The Future We Want' (the Rio+20 Summit's outcome document) recognised the green economy as an important tool for achieving sustainable development and poverty eradication. Since then, a large and growing number of countries have urgently pursued this economic pathway, working with UN agencies and other stakeholders such as the Partnership for Action on Untried Economy, the Poverty Environment Initiative, the Untried Growth Knowledge Platform and the Global Untried Growth Institute.

To date, more countries, including those from the developing nations, have embarked on the

path to a green economy and related strategies and come up with national green economy plans as the centrepiece of these strategies. Despite this growing engagement with green initiatives, however, there are still a number of major challenges.

What is the Green Economy?

UNEP defines a green economy as ‘one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities’ (UNEP, 2014).

The International Labour Organisation (ILO) further notes that ‘the concept of a green economy was initially limited to reducing carbon emissions due to their impact on climate change, but it has rapidly expanded to respond to all environmental challenges and include the broader dimensions of energy and resource efficiency, poverty eradication, social equity and human wellbeing.’

Thus, the transition from a high- economy to a low-carbon economy is at the heart of a green economy. Greening economies presents opportunities, which include:

- The potential to be a new engine of growth, both in developed and developing economies, and a net generator of decent work.
- Poverty reduction due to the strong links between conserving nature and reducing poverty.
- Social inclusion.
- Enhancing a country’s ability to manage natural resources sustainably, thus increasing energy efficiency and reducing waste, while addressing inequalities and enhancing resilience.

Table 18 shows the social, economic and environmental dimensions of the green economy.

Guiding principles of the green economy

The following principles are critical to guiding the transition to a green economy:

- Having a strong social consensus on the goal of and pathways to sustainability is fundamental. Social dialogue has to be an integral part of the institutional framework for policymaking and implementation at all levels. Adequate, informed and on-going consultation should take place with all relevant stakeholders.
- Policies must respect, promote and realise fundamental principles and rights at work.
- Policies and programmes need to take into account the strong gender dimension of many environmental challenges and opportunities. Specific gender policies should be considered in order to promote equitable outcomes.
- Coherent policies across the economic, environmental, social, education/training and labour portfolios need to provide an enabling environment for enterprises, workers, investors and consumers in order to embrace and drive the transition towards environmentally sustainable and inclusive economies and societies.
- Coherent policies must provide a framework of Just Transition (JT) for all to promote the creation of more decent jobs, including, where appropriate, anticipating impacts on employment; adequate and sustainable social protection for job losses and displacement; and skills development and social dialogue, including the effective exercise of the right to organise and bargain collectively.
- Recognising that no ‘one size fits all’ exists. Policies and programmes need to be designed in line with specific conditions, and when under development, for economic sectors and the types and sizes of enterprises.

When implementing sustainable development strategies, it is important to foster international co-operation. In this context, it is useful to recall the outcome document of the UN Conference on Sustainable Development (Rio+20), particularly Section VI on the means of implementation.

Dimension	Green economy – Key features	Green growth – Key features
Social	Human well-being; social equity; socially inclusive; reduced inequalities; better quality of life; social development; equitable access; addressing needs of women and youth.	Wellbeing, socially inclusive, access to basic commodities for the impoverished; meeting demands for food production, transport, construction, housing and energy.
Economic	Growth in income and employment; public and private investments; resilient economy; economic growth; new economic activity.	Economic growth and development; technology and innovation; environmentally sustainable economic progress; improved resilience; sustained economic growth; driver for economic growth; new growth engines; green technology; new job opportunities; qualitative growth rather than simply increasing GDP; job creation/GDP growth.
Environmental	Reducing environmental risks and ecological scarcities; low-carbon; resource-efficient; reduce carbon emissions and pollution; enhance energy and resource efficiency; prevent loss of biodiversity and ecosystem structures; within the ecological limits of the planet; environmentally responsible; finite carrying capacity.	Protection and maintenance of natural assets and environmental services; provision of resources and services; low-carbon; using fewer resources and generating fewer emissions; resource-efficient; cleaner; climatic and environmental sustainability; energy and resource efficient; minimises pollution and environmental impact; resilient to hazards; harmony between the economy and the environment; environmental protection; reduce GHG emissions.

Table 18: The social, economic and environmental dimensions of the green economy and green growth

Source: FES (2015)

UNIT 2: GREEN AND DECENT JOBS

2.1 The definition of 'green jobs'

According to the ILO, jobs are green when they help to reduce negative environmental impacts and lead to environmentally, economically and socially sustainable enterprises and economies.

They are green if they meet the following five criteria:

- Improve energy and raw materials efficiency.
- Limit GHG emissions.
- Minimise waste and pollution.
- Protect and restore ecosystems.
- Support adaptation to the effects of climate change.

The greening of jobs and their promotion, both in traditional and emerging sectors, will foster a competitive low-carbon and environmentally sustainable economy and patterns of sustainable consumption and production, and will contribute to the fight against climate change.

2.2 The two dimensions of green jobs

Green jobs have two dimensions, namely an environmental dimension and a social dimension

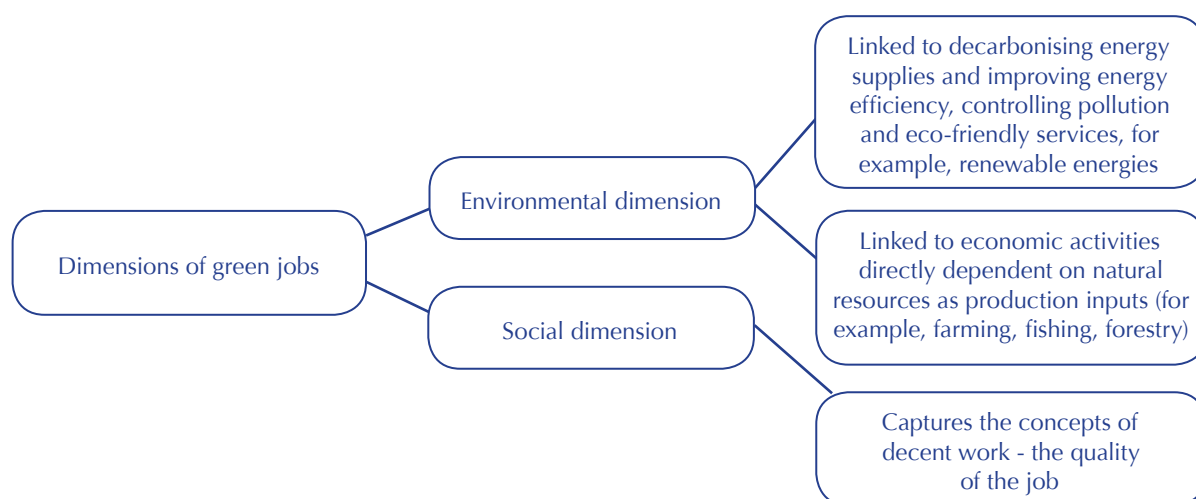


Figure 8: The social dimension of green jobs

(Figure 7). The social dimension of green jobs is based on the fact that although a job may be associated with an economic activity that is more environmentally sustainable, it does not necessarily mean it is green and decent. A job can be only considered a green job if it meets the conditions of decent work as stipulated by the ILO Conventions. These conditions include adequate wages, safe working conditions, job security, reasonable career prospects, protecting worker's rights and social dialogue. According to the ILO, people's livelihoods and their sense of dignity are bound up tightly with their jobs, and thus one that is exploitative, harmful and/or fails to pay a living wage and so condemns workers to a life of poverty can hardly be hailed as green. Table 19 offers examples of green versus decent jobs.

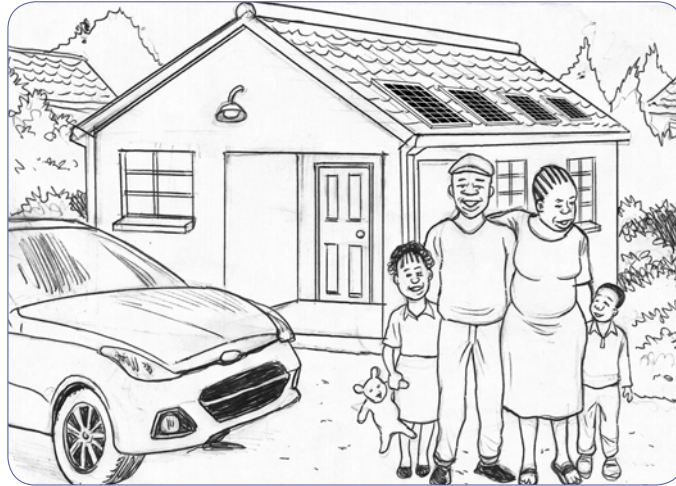
Decent but not Green	Green and Decent	Neither Green nor Decent	Decent but not Green
Electronics recyclers without adequate occupational safety Low-wage installers of solar panels Exploited biofuel plantation employees	Green architects Waste workers with decent working conditions Unionised solar energy equipment Well-paid public transit employees	Unsustainable Coal miners without adequate protection Working under unsafe conditions	Unionised car manufacture workers Chemical engineers working for polluting industries Airline pilots

Table 19: Describing decent and green jobs

Source: ILO (2015)

Green and decent jobs should aim at:

1. **Satisfying human needs:** providing universal access to water, food, health, housing, education, transport and culture.
2. **Being based on justice:** capable of distributing the costs and benefits fairly, between and within countries.
3. **Being inclusive:** involving young people, women and vulnerable groups - everyone must be able to play a part!
4. **Being part of a real economy:** doing away with the speculative economy and the economic, financial and real estate cycles.



UNIT 3: A SECTORAL APPROACH TO GREEN JOBS

3.1 The Energy Sector

Energy is widely recognised as the sector that contributes the greater share of carbon emissions. It is also the core sector at the heart of the transition to a green economy. Greening the energy sector means investing in renewable energy technologies, which include wind, solar, biomass, biogas, geothermal, wave and tidal. Renewable energy technologies are essential contributors to the national energy supply portfolio, as they contribute towards energy security, reducing dependency on fossil fuels and providing opportunities for mitigating GHG emissions.

Over the years there has been a growth of employment in the renewable energy sector. Zimbabwe has vast renewable energy resources such as solar, water for (mini) hydro and vast land for bio-energy production (sugar cane production, for example) and thus has the potential to generate green and decent employment. It is estimated that the number of jobs in renewable energy reached 5.7 million in 2012, increasing to 6.5 million in 2013, rising further to 7.7 million in 2014 (REN21, 2015). Figure 8 illustrates global employment trends in the renewable energy

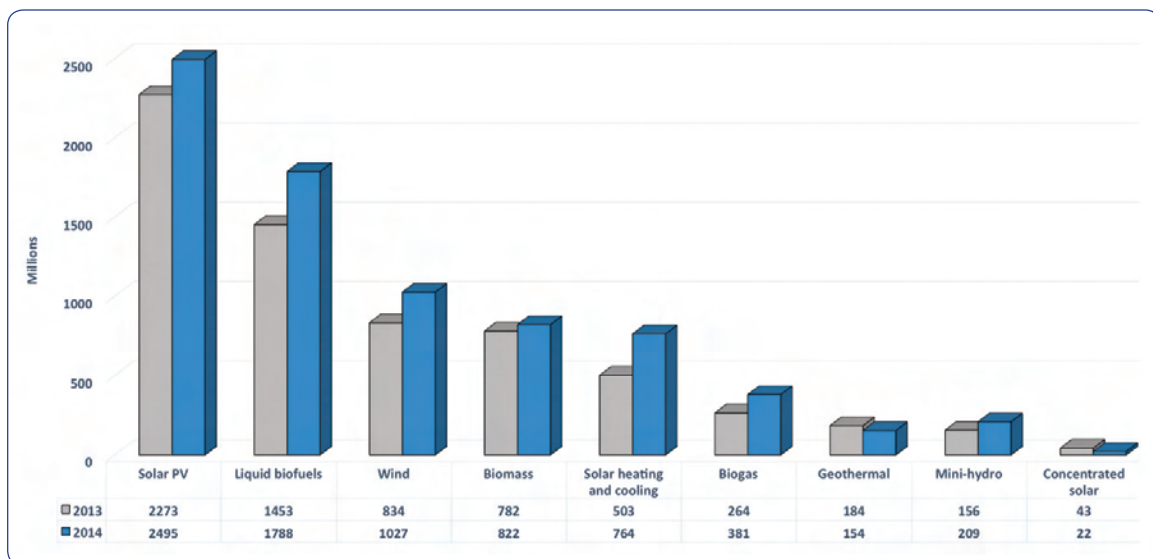


Figure 9: The estimated number of direct and indirect jobs in the renewable energy sector worldwide, by industry, 2013 and 2014

Source: REN21, 2015

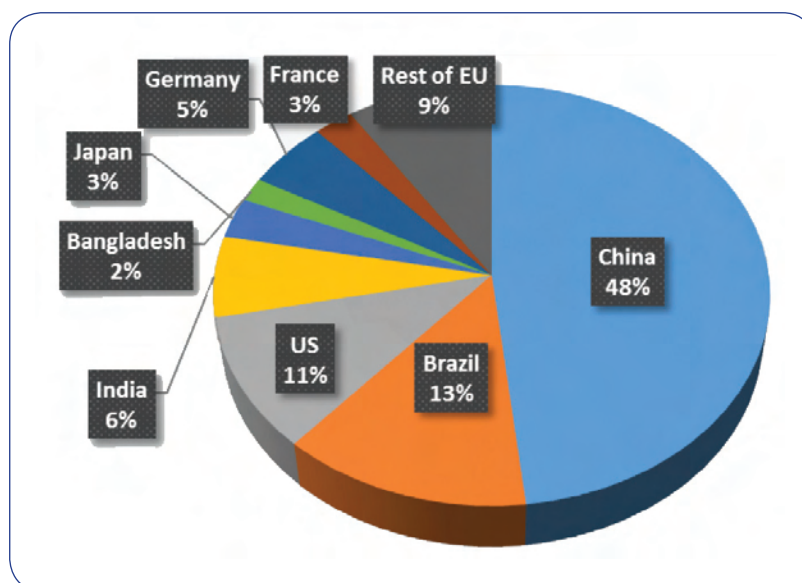


Figure 10: Share of jobs in the renewable energy sector by country

Source: REN21, 2015.



Figure 11: Job creation in the renewable energy value chain systems

Source: FES (2015)

sector for 2013 and 2014. It further shows that solar photovoltaic power accounted for the highest percentage of total employment in world renewable energy employment between 2013 and 2014, with biofuels coming second.

Figure 9 shows that for the period 2013-14 China had the highest share of employment in the renewable energy jobs, followed by Brazil and then the US.

Green job potential in renewable energy – the value chain system

Green jobs in the renewable energy sector are found in:

- Equipment manufacture and distribution.
- Project development.
- Construction and installation.
- Operation and maintenance.
- Cross-cutting and/or enabling activities (Figure 10).

Group work: Understanding the employment potential in the renewable energy sector

Identify any of the renewable sectors (solar, wind, hydro and bio-energy) and discuss the value chain process for that sector.

What type of jobs will be created at each stage of the value chain?

UNIT 4: A JUST TRANSITION TOWARDS A GREEN ECONOMY

The transition towards a green economy will not happen overnight, and neither will opportunities for decent work be created automatically. More importantly, a shift to a low-carbon economy must be effected in the context of just transition (JT), as climate change disproportionately affects workers and the poor. According to the ITUC-Africa Climate Change Strategy Paper (2015), the key principles of JT are as follows:

- Involving workers and communities is paramount in any decision on climate change policies
- No loss of employment as a result of climate change policies
- Ensuring all policy interventions support the reduction of poverty and improve incomes and industrial development
- Ensuring that a low-carbon trajectory creates opportunities for investment in environmentally friendly activities that create decent jobs, meet standards of health and safety, promote gender equality and provide secure incomes
- Developing a comprehensive social protection system, which is crucial to protecting the most vulnerable during transition periods
- Supporting on-going research into the impact of climate change on employment and livelihoods in order to better inform social and economic policies
- Supporting on-going skills development and the retraining of workers to ensure that they can be part of the new low-carbon development model as new economic/energy sectors emerge
- Having adequate funding for just transition, including funding for mitigation and adaptation measures that may have a greater impact on workers, and the poor in particular.

The Canadian Labour Congress was one of the first union organisations to develop and organise around the concept of JT. It has been used as a principle, process and practice to ensure there is justice for workers and communities during change (Evans 2008).

Its overall aim is to manage a process of change in a manner that is consistent with social justice and equity. It is important to balance social, environmental and economic concerns in order to address the consequences of climate changes in a fair and equitable way.

The focus on just transition should be on what kind of technical tools and policies are put in place to foster just transition to renewable energy as well as how these are put in place. It concerns the entire process of change in order to improve any person's socioeconomic standards.

Group discussion: Just Transition (JT)

What is 'just transition'?

Give reasons why it is important for trade unions to demand JT in the shift towards a green economy.

UNIT 5: THE ROLE OF TRADE UNIONS IN THE GREEN ECONOMY AND THE CREATION OF GREEN AND DECENT JOBS

The role of trade unions is summarised in Figure 11, overleaf.

CONCLUSION

The green economy provides an opportunity for a new economic model that encompasses the

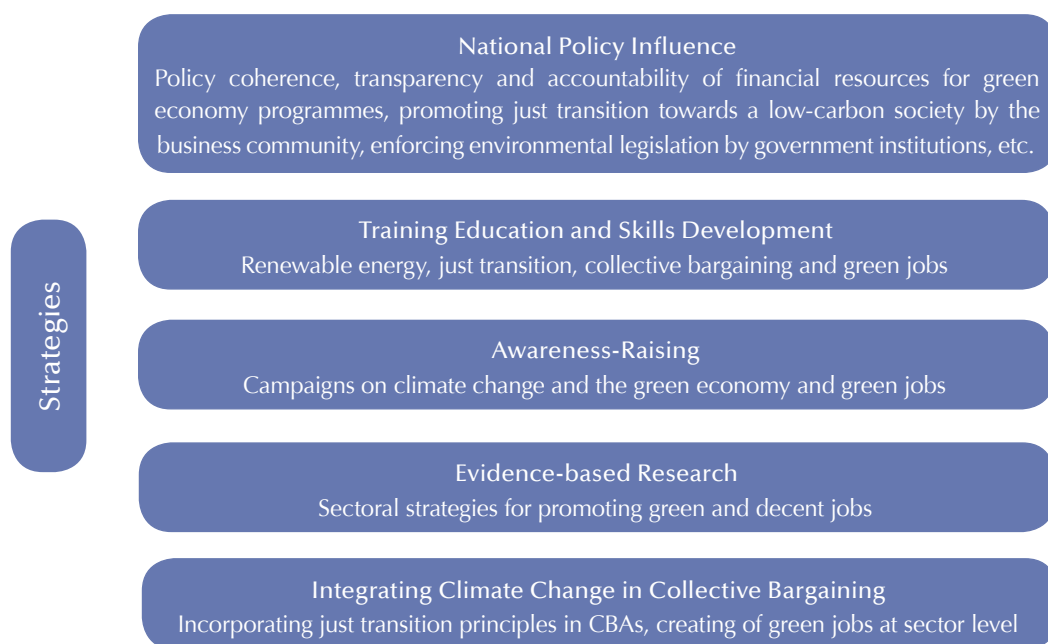


Figure 12: The role of trade unions in the green economy

Source: FES (2014)

three dimensions of sustainable development: economic, social and environmental. In addition, the green economy is also a source of employment creation and contributes to energy security, social development and poverty reduction. It is critical to emphasise that it is not simply the number of jobs created in the green economy that matters, but also the quality of the jobs, hence the term ‘green and decent jobs’.

The number of jobs in the renewable energy sector has increased over the last few years. It was estimated that jobs in renewable energy stood at 5.7 million in 2012 and increased to 6.5 million in 2013, before rising further to 7.7 million in 2014. China and Brazil are the global leaders in the job creation in the renewable energy sector.

The transition to a green economy has the potential to create new employment opportunities for many countries, Zimbabwe included. Workers that will be affected by this transition to a low-carbon economy will need proactive and equitable transition assistance (just transition), not only in terms of reskilling and skills upgrading, but also the firm provision of social protection programmes. In this arena, social dialogue will be critical, as it promotes the involvement of all social partners (government, business and labour) in a successful transition to a green economy.

Key Learning Points

- The green economy encompasses all the three aspects of sustainable development: economic, social and environmental.
- The transition from a high-carbon economy to a low-carbon economy is at the heart of a green economy.
- According to the ILO, jobs are considered green if they meet five specific criteria, namely improving the efficiency of energy and raw materials; limiting the emission of GHG; minimising waste and pollution; protecting and restoring ecosystems; and supporting adaptation to the effects of climate change.
- A job is considered green and decent if it has offers adequate wages, safe working conditions, job security, reasonable career prospects, respects worker’s rights and allows social dialogue.

- Energy is widely recognised as the sector that contributes the greater share of carbon emissions. It is also the sector at the heart of the transition to a green economy.
- There has been increasing growth in jobs in the renewable energy sector between 2012 and 2014, with solar leading, followed by liquid biofuels.
- Zimbabwe has vast potential for job creation in solar power, mini hydro-power and bio-energy.
- Trade unions should endeavour to promote just transition in the shift to a low-carbon economy.

Module References

Evans, P. (2008), 'In search of the 21st-century developmental state', Working Paper No. 4, Centre for Global Political Economy, University of Sussex, Brighton.

FES (2014), 'Trade Union Responses and Strategies on Climate Change in Africa', Johannesburg.

— (2015), 'Green Jobs in the Energy Sector in Zimbabwe: A situational Analysis and Potential Analysis', Harare.

ILO (2015), 'Climate change and jobs: Issues in the context of Africa'. Unpublished.

ITUC (2015), ITUC-Africa Climate Change Strategy Paper, Lome, Togo. Unpublished.

REN21 (2015), 'Renewables 2015', Global Status Report, Paris.

UNEP (2008), 'Climate Change, its Consequences on Employment and Trade Union Action', Nairobi.

MODULE SIX: CLIMATE CHANGE MITIGATION

INTRODUCTION

This module discusses the definition of climate change mitigation and outlines those aspects that can be involved in the process of mitigation. It will assess such strategies and approaches as regards to achieving the required standards and discusses the role of trade unions as stakeholders in climate change mitigation. If we want to reverse global warming, we must find measures to reduce GHG emissions. These directives are called mitigation measures.

Objectives of the module

This module intends to:

1. Give orientation on aspects of climate change mitigation.
2. Explore and identify climate change mitigation strategies and approaches.
3. Recommend the role trade unions can play regarding climate change mitigation and employment.

UNIT 1: DEFINING CLIMATE CHANGE MITIGATION

What is climate change mitigation?

Climate change mitigation generally involves reductions in emissions of GHGs of anthropogenic origin. It refers to any strategic intervention and/or human action taken to remove GHGs released into the atmosphere – or to lessen their amount – in order to reduce any risk and hazards of climate change to human life and the environment. To achieve this, there is need for collective action. Moreover, mitigation measures will require additional investment and financial flows.

Zimbabwe's INDC to UNFCCC provides national aspects, strategies and approaches to mitigation. It also highlights low carbon development strategies as one of the pillars in responding to climate change and recognises the importance of a climate change policy and a national action plan for adaptation and mitigation as well as strategies in economic and development policies at national and sectoral level.

Many GHG emissions are the result human of human activity; hence it is essential for us to reduce the future impact of climate change by urgently stabilising emission levels. However, the scale continues to increase, resulting in noticeable temperatures changes that must now be kept increases within a safe range. There is no single solution: policies, actions and measures must focus on specific sectors.

UNIT 2: ASPECTS OF MITIGATION

This section covers the political, economic and social aspects of climate change mitigation.

2.1 Political Aspects

All economic sectors will be affected by climate change, although some are more weather-sensitive than others. Since 1850 and on-going industrialisation, atmospheric GHG has risen

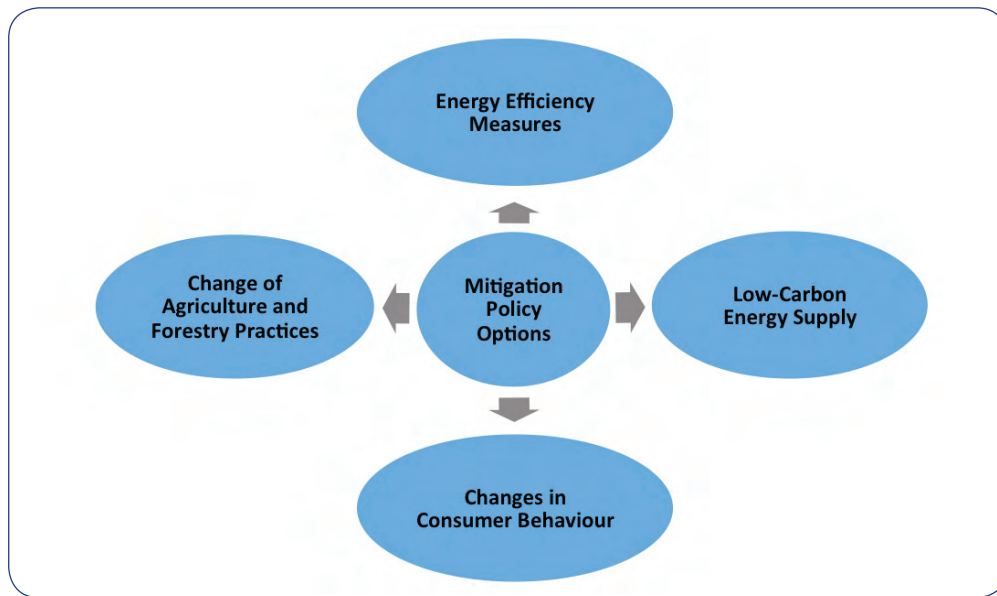


Figure 13: Climate change mitigation policy options

with trends in economic development. The Government of Zimbabwe must take stern decisions with regard to investments, production processes, management of the environment as well as enforcement of economic and social standards, in order to curb the effects of climate change within the country's borders. There has to be political commitment in order to create environmentally friendly climate.

Mitigation programmes need to be clean, cost-effective, eco-conscious and sustainable. Urban areas in Zimbabwe, as part of the developing countries consortium, which have a structural appetite for green growth need to adopt these lifelong and resilient strategies. Lack of water conservation techniques and firm water retention policies in urban areas, for example, contribute to water stresses and scarcities as dry peri-urban plains are more prone to forest fires. Urban planners and developers need to guard against massive and unregulated urban expansion programmes that threaten the natural ecosystem wherever arable land is converted into urban landscapes.

2.1.1 Legislation

Climate change is a massive impediment to the full realisation of social, economic and cultural human rights. Given the serious human rights consequences of climate change, all States must use all appropriate means to avoid and mitigate climate change and its consequences, and assist vulnerable communities with adapting to its consequences. All States are also required to ensure that their responses to climate change are consistent with their human rights obligations under domestic and international law.

The role of government and how democratic policies are implemented will determine the outcome of the measures taken. A clear legal framework is needed in order to take the concept of sustainable development further and implement its principles. Such a framework could form a special part of the foundation for a social dimension that could be supported by International labour standards which support the rights-based approach to JT, good governance and participation in relation to climate change. International labour standards are relevant to climate change because they regulate the labour market and set rules for challenges faced by governments, workers and employers in relation to workplace and employment issues affected

When it comes to workers' participation in decision-making related to climate change policies that affect their workplaces or the labour market in general, ILO Conventions provide for valuable legal guidelines.

The fundamental Conventions that are cornerstones for trade unions' participation in decision-making are:

Convention No. 87 on the Freedom of Association and the Right of Collective Bargaining (1948)

Convention No. 98 on the Right to Organize and Collective Bargaining (1949). Unless the principles of Conventions No. 87 and No. 98 are respected, there can be no democratic decision-making dealing with climate change policies

Convention No. 144 on Tripartite Consultation (1976), which deals with the way that the tripartite constituents of the ILO (i.e. governments, workers and employers), should co-operate on matters related implementing ILO standards. The Convention provides guidelines on how to set up consultative procedures, structures and highlights the participation of the three constituents in this work.

Box 2: Instruments empowering trade unions to participate in decision-making processes and national policies

by climate change. They can be important in responding to the question of how to tackle these challenges.

The International Covenant on Economic, Social and Cultural Rights (ICESCR) provides an important legal justification for an international response to climate change founded on a rights-based approach, for it is founded on the existing obligations of States to respect, protect, and fulfil specific rights.

The Government of Zimbabwe has put in place legislations that regulate climate change processes such as policies and strategies (outlined in Module Four) that provide a framework for a comprehensive and strategic approach to climate change adaptation, mitigation, technology and finance. Its overriding objective is to 'mainstream climate change mitigation strategies in economic and social development at national and sectoral levels through multi-stakeholder engagement'.

2.1.2 Policies

Ultimately, stabilising the climate will require large reductions in the emission of GHG. The government may find it difficult to make decisions if there are no policies to address mitigation efficiently. For example, subsidising bio fuels rather than raising the price of fossil fuels continues to be perceived as too risky politically. Figure 12 shows some mitigation policy options.

In 1992, the UNFCCC affirmed that 'responses to climate change should be co-ordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter.' Not only does it stress the integrated manner of action, but it also says that no activities in one area should have negative effects on others. In terms of commitments, it continues to stress (Article 4) that all parties shall:

Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example, impact assessments, formulated and determined nationally, with a view to minimising adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change.

In some countries, inherent energy intensive sectors are excluded from climate change requirements strategies because they may not survive a high carbon price, meaning that mitigation strategies may cause massive job losses. Major changes in companies' behaviour and production methods will be needed to achieve GHG mitigation at the lowest possible cost. Therefore policies looking at energy, carbon capture and storage and energy efficiency should be formulated and be accompanied by public and private sectors programmes that encourage the efficient production and use of energy.

Actions to combat climate change are very complex, as positive measures taken in one area may have negative effects on others. Considerations for such effects demand co-ordination in all areas and levels of society. At national level, different ministries have to co-operate. The ILO believes that before any national policies are in place, parties should assess likely negative effects from adaptation and mitigation measures.

The UNFCCC also highlights the need for co-operative research in order to reduce negative social consequences. It urges parties to:

[p]romote and co-operate in scientific, technological, technical, socioeconomic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies.

If adhered to, a sound policy framework based on legislation could greatly reduce the negative consequences of climate change on employment and the labour market. It would also improve the likelihood of winning support of the tripartite partners (governments, workers and employers) in addressing climate change challenges. Full stakeholder participation in policy decision-making is key to good governance.

2.1.3 Institutions

Zimbabwe is also in the process of carrying out inventories of GHG and developing a communication strategy and an action programme to mitigate climate change (See Modules 3 and 4.)

2.2 Economic Aspects

Expert scientific evidence has confirmed that human activity is altering the global climate, revealing the gravity of the challenge and the urgency to act. At industry level, the electricity sector needs to make significant efforts to identify, develop and deploy technological solutions with the objective of contributing to achieving substantial reductions in GHG emissions, while ensuring security of supply and economic sustainability.

2.2.1 Economic growth

Ensuring that economic growth and development is compatible with stabilising the climate calls for 'low carbon economies'. Globally, our manmade environment is affected by natural environment and thus we will suffer from the negative effects of climate change. The consequences of climate change have also affected the economically productive sectors such as agriculture. Tourism, which is heavily dependent upon the weather, is also likely to be most affected, as are settlements and industries located in dry lands.

The increase in change of extreme weather patterns increases the risk of food shortages, which may lead to malnutrition and a reduction in quality of life. This could directly affect economic performance.

Zimbabwe's economic base consists of agriculture, forestry, energy, tourism, and industry. Approximately 10 to 15% of GDP comes from the primarily rain-fed agricultural sector, upon which 80% of the rural population's livelihoods depend. The Zimbabwe INDC recognises opportunities for climate change mitigation through climate-smart agriculture and sustainable agro-forest-based adaptation and management. The forestry sector contributed to 3.4% of GDP in 2011.

2.2.2 Economic Strategies

In Zimbabwe, the mitigation component of the INDC focuses on the energy sector. Zimbabwe pledges to achieve energy emissions per capita by 2030 that are 33% below the projected 'business as usual level'. (*Module 3 also explains the various mitigation strategies in the Zimbabwe's INDC.*) Some of the economic strategies for climate change mitigation are given below.

a) Carbon leakage analysis

One component is to analyse carbon leakage on those GHG-intensive industries investing in the country. Carbon leakage refers to a situation where as a result of stringent climate policies, companies move their production abroad to countries with less ambitious climate measures, which can lead to a rise in global greenhouse gas emissions.

b) Subsidies

Subsidies can be directed to various types of renewable energy (solar, wind, biofuels). Subsidies can be targeted towards either lowering the price paid by energy consumers (consumption subsidies) or lowering the cost of energy production, or raising the price received by energy producers (production subsidies).

c) Permits

Here, all emitters and polluters could be made to acquire permits for their planned emissions and pollution. This option is the focus of action in many countries. First and foremost, it requires setting an overall target for emissions and pollution. Permits are then issued up to this target. In Zimbabwe, this option is applied to mining, processing and manufacturing industries. However, there are similar informal production processes in the informal economy, where it is not clear how or if this option is applied.

d) Monitoring

Monitoring emissions and pollution including effectiveness of climate change strategies needs to be improved especially on developing countries. For instance, there may be need to assess whether or not the earnings from the climate change-related subsidies have been distributed in a manner that supports lowering carbon development.

e) Energy generation

Much of the economic response comes from the energy sector, which is currently the largest source of emissions. It is hoped that coal-powered energy generation will increasingly use carbon capture and storage technology. The energy produced from renewable sources (wind, solar) will also contribute to total energy production at relatively small costs relatively.

f) Productive sectors

Recent studies have revealed that the consequences of climate change will affect all economic productive sectors but in different ways. Industrialising economies generate a great part of their wealth in capital cities (where industry is concentrated). In Africa, climate change is likely to increase water stress for 75 to 250 million people by 2020. It will also affect agricultural

CASE STUDY 1: The Green Belt Movement, Kenya

The Green Belt Movement (GBM) is a Kenyan women's NGO founded by the late Nobel Laureate Prof. Wangari Maathai in 1977. It aims at empowering women and tackles issues directly linked to climate change mitigation, for example, deforestation. Trees are planted by voluntary networks of women and their families and provide income through fruit and other cash crops. Participants are also trained in sustainable agriculture in order to diversify and increase the resilience of their sources of income. Women benefit from extensive capacity building so that they might generate their own income and ensure sustainable livelihoods to help support their families.

The GBM has also made a significant contribution to climate change mitigation. Carbon emissions are absorbed by planting new trees, and by improving the stewardship of existing trees. Sustainable agriculture and land use are important elements of mitigation supported by the GBM. Since it began, GBM communities have planted over 45 million trees in Kenya to restore natural forest cover and preserve essential ecosystems. Since the late 1980s, GBM has been involved in advocacy activities to curb the mismanagement of Kenya's natural resources by preventing forest destruction and ending poor governance and human rights abuses.

Source: www.greenbeltmovement.org

production, including access to food. The size of areas suitable for agriculture, the length of the growing season and yield potentials are expected to decrease. It is estimated, for example, that yields from rain-fed agriculture could be reduced by up to 50% by 2020.

Agriculture will suffer due to changes in the availability of fresh water resources. Crop productivity at lower latitudes has been projected to decrease, even with low temperature increases, and will also be negatively affected by a greater frequency of droughts. The country's food security will be affected from scarce good crops.

Fisheries and aquaculture are likewise projected to be adversely affected, given the changes in the distribution and production of particular species of fish due to continued warming.

Climate change impacts on tourism in many ways. Tourism contributes to climate change for instance, if tourists use more air travel which is also responsible for production of high emissions of carbon dioxide. On the other hand, tourism is also affected climate change. For instance, natural disasters will harm infrastructure and the country's natural and cultural heritage. Water levels of rivers will decrease due to drought, which will greatly affect animals and vegetation in national parks and wild areas.

Manufacturing industries in Zimbabwe rely on 'extraction sectors' such as agriculture, including fisheries, and mining for raw materials. Climate change is threatening industries prone to extreme weather events.

g) Technological development

Future technologies could significantly alter the costs of mitigation. In this regard, the following need to be considered:

- There should be intensified research and development policies that will result in the early development of radical new technologies for energy generation, especially for the transport sector. At this stage, however, a wide range of options needs to be explored
- Investing in climate-friendly technologies to change human behaviour in order to reduce our

climatic footprint and prepare society as a whole for the now-unavoidable impacts of climate change.

h) Land use

Agriculture is a major contributor to GHG emissions; it accounted for 14% of the global total in 2005. However, it differs in the type of gases it releases into the atmosphere. Methane (CH₄) is the main gas emitted by this sector. While emissions from industry, energy production or transport are still primarily based in the developed world, emissions from agriculture mainly originate in the developing world.

One of the consequences of deforestation is that the carbon originally held in the forests is released into the atmosphere, either immediately, when the trees are burned, or more slowly, as unburned organic matter decays. Most is released into the atmosphere as carbon dioxide (CO₂), but small amounts of methane (CH₄) and carbon monoxide (CO) may also be released. Reforestation reverses these trends. As trees grow, they withdraw carbon from the atmosphere, where it accumulates it in trees and soil. Although deforestation may not release significant quantities of methane or nitrous oxide (N₂O), these gases are often released as a consequence of using the cleared land for cattle or other ruminant livestock, paddy rice, or other crops, especially those fertilised with nitrogen.

Zimbabwe's economic development activities are mainly centred in the extraction sector (mining, agriculture and construction). The vulnerability of the country to climate change is determined by those economic sectors that are high emitters. It is therefore essential to stabilise the climate, which ultimately requires large emission cuts while promoting sustainable land-use systems that enhance agricultural production to ensure food security and the integrity of the ecosystem.

The country's Land Use Change and Forestry (LUCF) sector is the leading source of emissions, followed by energy and agriculture. The emissions showed a marginal decrease by 10% from 1990–2011, with the average annual change being -1%, with sector-specific annual change as follows: LUCF (0%), energy (-2%), agriculture (0%), industrial processes (3%), and waste (1%). These emissions originated from two sub-sectors: forests (CO₂ associated with forest and net forest conversion) and the burning of biomass. Harvesting biomass fuel and clearing land for agriculture were also identified as the main drivers of deforestation in Zimbabwe. The Zimbabwe Second National Communication (SNC) cites pressure on forest resources due to 70% of the population depending directly on forests for firewood, construction timber, food and fodder and woodland degradation due to the over-exploitation of open access common property, fires, disease and browsing by wildlife.

The purpose of policies is to mitigate the impacts of climate change. These include improving crop and grazing land management to increase soil carbon storage, reducing fossil-based fertilisers and pesticides, improving crop cultivation and livestock and organic manure management and improve energy efficiency. Forestry based tactics include:

- Afforestation (creating a forest) and reforestation (establishing forests where they had been converted to other uses)
- Improving forest management
- Reducing deforestation
- Improving the management of harvested wood products
- Using forestry products for bioenergy to replace the use of fossil fuels.

2.3 Social Aspects

Climate change has the potential to affect every social factor of sustainable development – health, employment, incomes and livelihoods, gender, education, housing, food, poverty – either directly, as a result of changes in climate variables, or indirectly.

Protecting cultural rights in mitigation policies is often an issue, particularly when large land-use projects (such as REDD-related projects or large hydroelectric projects) affect indigenous and/or local communities. For example, as hydroelectric projects frequently result in mass displacement, the dispersal of such communities may negatively impact their access to cultural rights, particularly in the case of indigenous peoples, who often have a special cultural and spiritual relationship with their land. The protection of all such cultural rights should be mainstreamed into mitigation policies, and appropriate scoping and risk assessment activities that take cultural rights into account should be undertaken before and during their development.

2.3.1 Education

Education is an essential element of the global response to climate change. UNESCO's Director-General, Irina Bokova, has stated that 'responding to climate change starts with education'. Since mitigating climate change will require profound changes in order to shift away from a carbon-intensive lifestyle, there are clearly substantial linkages between climate change and education. At the international level, the right to education is one of the few economic, social and cultural rights that has been directly addressed within UNFCCC. Under Article 10(e) of the Kyoto Protocol, State parties pledge to 'co-operate in and promote at the international level, and where appropriate, using existing bodies, the development and implementation of education and training programmes'.

At the national level, education is often absent from national climate policies. One of the reasons for this is the fragmentation between the Ministries of the Environment and Education, which hinders the inclusion of climate policies in educational plans.

2.3.2 Health

'Health' is not confined to the right to health care, but actually embraces 'a wide range of socioeconomic factors that promote conditions in which people can lead a healthy life, and extends to the underlying determinants of health, such as food and nutrition, housing, access to safe and potable water and adequate sanitation, safe and healthy working conditions, and a healthy environment'. It also includes 'the participation of the population in all health-related decision-making at the community, national and international levels'. There are a number of intersections between climate change mitigation and the right to the highest attainable standard of physical and mental health. For example, switching to cleaner cook-stove technologies can not only mitigate climate change by reducing emissions, but also benefit health by reducing levels of indoor air pollution.

2.3.3 Water

State parties are bound to respect the right to water, including obligations of ensuring access to the minimum essential amount of water that is sufficient and safe for personal and domestic uses to prevent disease; equitable distribution of all available water facilities; and to take measures to prevent, treat and control diseases linked to water, in particular ensuring access to adequate sanitation.

Water availability and management

Water is an essential public good that is a right for all and thus government are obliged to

ensure that it is accessible and available to everyone. It is essential to promote the sustainable development, management and utilisation of water resources under changing climatic conditions.

2.3.4 *Family Life*

Promoting equal rights for women and men in marriage, specifically legally empowering women to own/control property and other valuable resources and to participate in decision-making processes, is beneficial for climate change mitigation. Important concrete measures in terms of the right to family life are those that ensure an equitable distribution of facilities, resources and opportunities to both men and women.

2.3.5 *An adequate standard of living*

States have established programmes for the use and development of biofuels in order to reduce the concentration of GHG in the atmosphere. Whilst such mitigation measures could reap positive benefits for farmers in developing countries, the production of biofuels has a potential to infringe the right to adequate food and food security if there are no sustainable mechanisms to balance land use for food production and renewable energy. If land use is not properly managed, this can contribute to an increase in the price of food commodities due to ‘the competition between food, feed and fuel for scarce arable land’, leaving poor communities without an adequate supply of food.

2.3.6 *Social security*

This right represents ‘an important legal guarantee aimed at ensuring the right of everyone to live a life in human dignity in situations of social distress such as old age, disability, unemployment, employment injury, illness, childbirth, death, or other unforeseen circumstances’. The additional stress caused by climate change also stands to directly affect groups that are already in positions of vulnerability, including women, children, the elderly, the chronically ill and other minorities.

As a result, existing social security systems must be ‘climate-proofed’ to take into account the effects of climate change and its differentiated social impacts. In this respect, as jobs in emission-heavy sectors are phased out and the shift to creating green jobs via government policy to mitigate climate change is intensified, there is a potential for some to lose out, for example, individuals whose jobs do not or cannot transition into a low carbon-economy. It is proper that strong steps be taken towards respecting the right to social security during the transition phase.

2.3.7 *Employment*

The right to work refers to *decent* work, namely work that respects fundamental human rights as well as the rights of workers. Climate change may affect the right to work in numerous ways, notably by provoking important economic transformations or by jeopardising access to safe working conditions. For example, through changes to ecosystems and wildlife stocks, economies relying on tourism may face difficulties if tourism declines, resulting in the loss of employment. Extreme weather events such as hurricanes, typhoons and drought will also have important economic consequences that affect the right to work due to the destruction of infrastructure, the interruption of transportation and the disruption of business activities.

The right to decent work may also be affected by governments’ mitigation measures in response to climate change. This may occur through States’ transition to a low-carbon economy, as well as in relation to implementing mitigation measures such as projects under CDM or REDD+ in developing countries. The projects may likely have an impact on the livelihoods of those living in affected areas, such as those engaged in agriculture or forestry.



It is the responsibility of government to ensure that innovation and development create new opportunities for investment and growth.

2.3.8 Equality and non-discrimination

Discrimination undermines the fulfilment of economic, social and cultural rights for a significant proportion of the world's population. It is critical for the government to ensure non-discrimination in the design, implementation, monitoring and evaluating climate change mitigation measures. In addition, governments must also ensure that climate change mitigation measures do not disproportionately burden certain segments of the population.

a) Transport

Transport, especially in urban centres, can also have an important impact on the right to health. Policies promoting a shift to public transportation and phasing out private motorised transport for commuting have obvious mitigation benefits in terms of reducing carbon emissions, as well as direct health benefits. Indeed, urban air pollution linked to vehicle emissions is a serious health hazard. Public transport policies can also be combined with policies encouraging so-called 'active transport' such as cycling and walking, which promote physical and mental well-being. However, active transport and public transport systems require adequate urban planning, with features such as reserved bus lanes and bicycle paths.

The transport sector may be the most challenging, in the sense that even very large changes in the cost of emissions appear to have only a modest impact on their level. The behavioural changes in automobile use are, in the short run, slow to come, even when public transport alternatives are well developed, as in Europe. Globally, transport accounts for 14% of GHG emissions. Over the last three decades, CO₂ emissions from transport have risen faster than those from all other sectors and are projected to rise even more rapidly. Between 1990 and 2004, global CO₂ emissions from transport sector rose by 36.5%, of which 29% were produced by industrialised countries and 61% by developing countries or countries in transition. Policies to reduce GHG emissions in the transport sector are slowly being adopted such as usage of biofuels and can have additional benefits.

Education and awareness of politicians, the public and government as to the challenges of emissions has not been implemented. Some examples of policies that could be encouraged in the transport sector are:

- Shifting from depending on road transport to rail transport

- Promoting fuel-efficient vehicles
- Generating biofuels
- Encouraging non-motorised transport, such as cycling.

b) Waste management

At a global scale, the waste management sector makes a relatively minor contribution to greenhouse gas (GHG) emissions, estimated at approximately 3-5% of total anthropogenic emissions in 2005. Although minor levels of emissions are released through waste treatment and disposal, the prevention and recovery of wastes (i.e. as secondary materials or energy) avoids emissions in all other sectors of the economy. A holistic approach to waste management has positive consequences for GHG emissions from the energy, forestry, agriculture, mining, transport, and manufacturing sectors. Management generates greenhouse gases, including CO₂, nitrous oxide and methane, both directly and indirectly (for example, through energy consumption). Waste incineration generates CO₂ and nitrous oxide while land filling waste generates methane.

The best way to reduce emissions is to prevent waste generation:

- Priority should be given to waste minimisation, re-use, recycling, waste-to-energy, and landfill.
- Integrated waste management policies should be enhanced.
- A life-cycle perspective should be adopted in order to ensure that no environmental burdens are shifted to other life cycle phases;
- Avoid shifting burdens among different environmental impacts (for example, carcinogenic substances produced during incineration, soil pollution, pest and diseases coming from land filling, etc.)

What can be done to reduce these emissions?

- Eco-design products and packaging
- Use composted organic waste
- Control waste water systems
- Recover methane from landfills to produce energy
- Recover energy from waste incineration
- Assess the life cycle of products – a product life cycle are the stages a product from the time when it is first thought of then introduced in the market up to the time it is finally removed from the market.

c) Energy supply and use

Policies to reduce emissions can have positive environmental and social impacts, for example, adapting and renovating social housing so that it reduces and create jobs and reduces energy bills for poorer households. Policies must distinguish between GHG emissions from energy use in industry and GHG emissions from industrial processes. Process-related emissions include CO₂, nitrous dioxide (N₂O) and methane (CH₄), among others. They can be very important to individual sectors such as the manufacture of cement and aluminium.

The approaches that can be applied include efficient lighting and the use of efficient electrical appliances; solar power for heating and cooling, and alternative refrigeration fluids; the recovery and recycling of fluorinated gas, controlling non-CO₂ emissions and material recycling.

The Zimbabwe Energy Regulatory Authority (ZERA) Act, which controls and manages ZERA's operations provides the requirements, processes and rules related to energy resource licensing, thereby amending the Electricity Act of 2002 and the Petroleum Act of 2006.

The energy policy is the responsibility of the Ministry of Energy and Power Development, and it should provide a framework for the exploitation, distribution and utilisation of energy resources

to fulfil five broad policy principles (also known as the five As): *accessibility, applicability, availability, acceptability* and *affordability*. These principles aim to:

- Increase the access of all sectors of the economy to affordable energy through the optimal use of available energy resources and diversification supply options (*applicability, availability, acceptability* and *affordability*).
- Stimulate sustainable economic growth by promoting competition, efficiency and investment in the sector (*applicability* and *accountability*).
- Improve the institutional framework and governance in the energy sector (*accountability*).
- Promote research and development in the energy sector (*applicability*).
- Develop the use of other renewable energy sources of energy to complement conventional sources (*applicability* and *acceptability*).

Group Discussion: Understanding Climate Change Mitigation: Connecting the dots <i>Connect the dots in the 2 columns and link the mitigation strategies</i>	
• Energy efficiency	• Green infrastructure
• Renewable energy	• Power system resilience
• Combined heat and power	• Protect sustainable transport
• Sustainable transport	• Water and energy conservation
• Methane / carbon capture	• Building weatherisation / weatherproofing
• Industrial process improvement	• Reduced deforestation and improved forest management
• Carbon sinks	
• Lifestyle and behavioural change	

UNIT 3: THE ROLE OF CLIMATE CHANGE MITIGATION IN EMPLOYMENT

Climate change mitigation consists of actions taken to limit the magnitude or rate of long-term climate change. Mitigation policies can substantially reduce the risks associated with human-induced global warming.

The world of work is moving towards sustainable production, which will affect workers and trade unions. Hence, trade unions must anticipate and propose strategies to secure workers' livelihoods. According to ETUC, transitioning to a 'green economy' will create jobs, particularly in areas such as renewable energies and energy efficiency. Under certain conditions, jobs linked to low emission technologies may well have the potential to be sustainable and decent. However, to fully establish this may require government to fund research and development.

Effective climate change mitigation will not be achieved if each stakeholder (individual, institution or country) acts independently, in its own self-interest. Examples of such approaches to mitigation include switching to low-carbon energy sources, such as renewable and nuclear

energy, expanding forests and other carbon sinks to remove greater amounts of carbon dioxide without expansive consultation on the best way forward.

The government should review training programme content, support the necessary job transformation process and encourage professional redeployments. Certain technologies, such as carbon capture and storage, might not yet be technically viable or socially acceptable. However, carbon leakages and the rising price of 'green' electricity could lead to job losses in industries such as steel and cement. These industries need to be protected if they are to maintain their current employment figures.

The 'green' transition should also be encouraged and regulated. For example, taxing financial transactions in order to fund training, research and development for the promotion of renewable energy. Energy efficiency may also play a role, for example, through improving the insulation of buildings. Other measures include introducing efficient carbon traceability. The 'green' transition should involve social partners in order to be fair, hence the importance of social dialogue and collective bargaining to create sustainable, decent jobs and curb social inequalities.

Zimbabwe's commitment to the implementation of anti-desertification and drought mitigation activities, with the effective participation of communities, goes back to 1987, when the government took the initiative and designed a National Conservation Strategy. In 1995, a Desertification Convention National Awareness Workshop was held at which all stakeholders participated. In addition, country has undertaken the following activities in the context of the Convention to Combat Desertification:

1. An awareness-raising campaign promoted by an interim committee (the forerunner of a permanent Task Force on Desertification spearheaded by the Ministry of Environment and Tourism).
2. Compiling a work plan summary and background information papers for the development of the national action plan.
3. Consultation processes to establish a National Desertification Fund.
4. Convening a national workshop, in 1995, to develop a Desert Margins Initiative Strategy, and to identify specific objectives for Zimbabwe as regards policies, research and technology transfer programmes for dry land natural resource management systems.

Group discussion: Understanding employment and climate change mitigation

1. *Outline the effects and impact being realised on the workers.*
2. *Suggest mitigation actions that can be taken at workplace levels.*

3.1 Sectoral strategies

In order to reduce the scale of GHG emissions and so forestall a continuing cycle of climate change, a broad range of sectoral policy instruments needs to be implemented and actions taken by all stakeholders as some sectors are heavy emitters of CO₂ than others.

There are several mitigation options for various economic sectors. However, mitigation is more cost-effective when using an integrated approach that combines measures to reduce energy use and the GHG intensity of end-use sectors, decarbonise energy supplies, reduce net emissions and enhance carbon sinks in land-based sectors.

Sector	Mitigation Strategies
Energy	Reducing the use of coal-fired power in a gradual and sustainable manner Replacing the use of coal with renewable energy sources (wind, solar, hydro, geothermal, bio-) Carbon capture
Transport	Reducing the carbon-intensity of fuel Reducing energy intensity Improving transport infrastructure
Construction and Building	Reducing the intensity of GHG emissions (for example, fuel switching fuels, installing solar systems at household level) Designing new buildings that use efficient energy equipment. The Eastgate Building in Harare has been officially recognised as the most energy efficient building in Zimbabwe Making behavioural changes to reduce energy demands
Industry	Reducing the intensity of CO ₂ emissions Improving technical energy efficiency through new processes/technologies. Designing and implementing sector-based approaches. For example, Japan's steel industry used the Sector Approach Agreement Mechanism to mitigate its GHG emissions Improving the material efficiency of goods, for example, by recycling

Table 20: Sectoral climate change mitigation strategies

Source: http://ar5-syr.ipcc.ch/topic_adaptation.php

Table 20 summarises some sectoral climate change mitigation strategies.

Deploying Climate Change Mitigating Technologies in the Electricity Sector

At industry level, the electricity sector is making significant efforts to identify, develop and employ technological solutions that aim at helping to achieve substantial reductions of GHG emissions whilst ensuring the security of supply and economic sustainability.

UNIT 4: CLIMATE CHANGE MITIGATION AND GENDER APPROACHES

Climate change has a greater impact on those sections of the population that are most heavily reliant on natural resources for their livelihoods, and/or who have the least capacity to respond to natural hazards such as droughts, landslides, floods and hurricanes. Women – the majority of world's poor – typically face higher risks and greater burdens from the impact of climate change when living in poverty. In addition, their unequal participation in decision-making processes and labour markets compound inequalities and often prevent women from fully contributing to climate-related planning, policy making and implementation.

Women have a critical role to play in response to climate change through their local knowledge of, and leadership in, for example, sustainable resource management and/or leading sustainable practices at household and community level. Their increasing participation at the political level has led to a greater responsiveness to citizen's needs. At the local level, women's inclusion in leadership has seen improved outcomes of climate-related projects and policies. On the contrary, if policies or projects are implemented without women's meaningful participation they can perpetuate existing inequalities and decrease effectiveness.

Over the past several years, it has been established and agreed by governments who are Parties to the UNFCCC, that gender equality and ensuring women's human rights are necessary to effectively act on climate change mitigation and adaptation.

Incorporating gender perspectives and involving women as agents of climate change in responses

Mitigation and adaptation efforts should systematically and effectively address gender-specific impacts of climate change in the areas of food security, agriculture and fisheries; biodiversity; water; health; human rights; and peace and security, among others.

Women, gender equality and energy

Women should be given greater involvement in climate change mitigation programmes as they are the primary users of energy at household level so that energy supplies can be managed more effectively and productively in the face of climate change.

Women, gender equality and technology in adaptation responses to climate change

In order to be effective, adaptation and mitigation technologies need to reach those who are most in need, namely the poor and vulnerable. This means that targeted efforts must recognise that the situation of women may differ from that of men; technologies be designed in such a way as to be relevant to women's circumstances; and ensure that women are given full access to knowledge, information and technologies related to adaptation.

Women, gender equality and emergency measures during natural disasters

Identifying gender-sensitive strategies for responding to human security needs and environmental and humanitarian crises caused by climate change is key. These efforts should focus on reducing women's vulnerability as compared to their male counterparts; promoting gender-sensitive emergency responses; and enlisting women as key environmental actors in natural disaster management decision-making processes, in order to tap into their skills, resourcefulness and leadership in mitigation and adaptation efforts.

Other mitigating strategies are listed below; governments are best placed to be able to identify specific needs of specific vulnerable groups, especially women.

Good Practice Policies to eliminate gender inequalities include:

- Having a training guide on gender and climate change
- Mainstreaming gender in all the processes at all levels
- Integrating gender into climate mitigation as a smart strategy for mitigating climate change
- Developing gender, climate change and mitigation strategies with a consideration of gender dimensions
- Putting in place a roadmap for gender equality
- Tailoring a manual for gender audit facilitators around the ILO's Participatory Gender Audit Methodology
- Operationalising a gender-sensitive approach in the Green Climate Fund
- The 'Budgeting for Women's Rights: Monitoring Government Budgets for Compliance with CEDAW: A summary guide for policy makers, gender equality and human rights advocates'

Group discussion: Understanding the benefits of mitigating climate change

What are the political, economic, social and environmental benefits of mitigating climate change?

UNIT 5: THE ROLE OF TRADE UNIONS IN CLIMATE CHANGE MITIGATION

Trade unions need to put issues of government intervention in the economy back on the political agenda. They need to ensure that sufficient information is disseminated and political pressure exerted for mitigation and adaptation policies to be fair for both the planet and its people. It is also their role to defend workers' rights as well as promote their interests by ensuring that workers are prepared for current and long-term consequences of 'green' transition.

In this regard, trade unions can advocate for:

- Designing effective climate change policies
- Investigating carbon leakage and competitiveness challenges and how to address them
- Arrangements that would enhance incentives for action by all large emitters
- Comprehensive and cost-effective national action that can be progressively built up by linking and expanding existing and prospective policies
- Innovative policies that will play a central role in making a mitigation strategy affordable
- Identifying the conditions necessary for well-functioning local emissions permits, markets and policies to meet the challenges of deforestation and reforestation
- Carefully priced renewable energy technologies, which are critical for ensuring that new technologies, once developed, are rapidly deployed where they are most needed
- Promoting the use of renewable energy such as use of bio fuels as alternatives to fossil fuels.

5.1 Trade union responsibilities

It is the responsibility of trade unions to:

- Develop the capacity to mitigate the effects of climate change.
- Advocate and influence states to take full responsibility and appropriate actions within their economic and technological capacities.
- Participate in climate change strategic structures around climate change-related issues nationally, regionally and internationally in order to gain recognition of workers' needs and rights concerning climate change.
- Demand the principle of JT, which, among other things, calls for justice to workers who are and will continue to be affected negatively by climate change and to take measures to address it through mitigation actions. It calls for Parties to UNFCCC, in their quest to mitigate climate change, to take into account labour issues such as job security, retraining, gender equality at work, occupational safety and health, child labour and other decent working conditions.
- Collect views and data that will assist with strengthening trade union position and processes
- Advocate for good public and corporate governance that ensures sustainable human-centred development rather than economic growth without economic security.

5.2 Recommendations for trade union action on mitigating climate change

- Develop the trade unions' pro-active attitude, which is required for engaging with national authorities, despite the hostile attitude or unwillingness to engage on the part of responsible national authorities.
- Prioritise climate change in trade union work programmes and policies.
- Build an information database on climate change, and its consequences and good practices.
- Trade unions must participate in reviewing and strengthening national policies and legislation on climate change.
- Negotiate collective bargaining agreements (CBAs) for sector and workplace policies. CBAs will provide an opportunity for trade unions to mainstream different labour concepts and principles

such as the JT, greening workplaces (green jobs) and the Decent Work agenda. Trade unions may also use this opportunity to design codes of practice and best environmental practices in the workplace.

5.3 Trade Union Strategies and Approaches

Education and awareness: Education is a fundamental human right. Education, awareness and knowledge about climate change, especially to make informed policy decisions about mitigation measures, are very important. It is also essential for the re-tooling of skills of the workforce in order to enable workers to adjust to the policies put in place. Capacity development in areas around advocacy and engagement will enable workers to make effective contributions to mitigation policy development and implementation. Right now, the influence of Africa's trade unions is minimal, particularly at national level. To influence the UNFCCC process it is important to start at the national level, for the influencing process is complex. Workers must have a thorough understanding of the subject matter, processes and the key players, as this is the best starting point in awareness-creation.

Education and training enables trade unions to develop the facilities and skills tackle the challenges of mitigating climate change. Developing a training programme with a specific curriculum on the nitty gritty of the UNFCCC process and the basic science behind climate change mitigation will enhance the trade unions' existing opportunities.

Integration and mainstreaming: Incorporating climate change mitigation into trade union functions such as organising and mobilisation, awareness, information dissemination and collective bargaining.

Affirmative action: Trade unions must appoint responsible persons to co-ordinate and facilitate climate change programmes and issues. Unions will then be able to mobilise finance and access for climate change interventions in the workplace.

Specific projects and programmes: Unions can develop their own climate change project proposals for mobilising finances from the state and other co-operating stakeholders such as National Employment Councils. This will entail developing trade union climate change interventions at national, sectoral and enterprise level.

Good practice and culture: After adopting the Paris Agreement (2015, COP 21), all measures to mitigate or adapt to climate change must be done in accordance with its provisions. These provide a solid guideline to a multitude of stakeholders on acceptable mitigation and adaptation measures. It would be extremely difficult and almost impossible for an intervention falling outside the mandate of the agreement to win support from developing partners or national governments.

Monitoring: Trade unions develop programmes for complying with climate change mitigation in according with the measurement, reporting and verification (MRV) mechanisms under UNFCCC. After adopting the Paris Agreement, training on how to monitor compliance with the UNFCCC will need to be done based on provisions incorporated therein. The trade union movement must play a major role in the operationalisation of the Just Transition principle, hence the need for it to fully understand the principle provided in the Paris Agreement.

Networking and collaboration: Some civil organisations are active in climate change mitigation, including the MRV mechanism. A legally binding agreement recognises the role of civil society in mitigating and adapting to climate change. Trade unions can use this provision to secure representation in different institutional mechanisms at national, sub-regional, regional and global levels, as stipulated in the Paris Agreement, which makes their representation and participation a legal obligation for states and administrators of institutional mechanisms created under UNFCCC.

Evolutionary approach: It is necessary to develop a comprehensive framework for reducing emissions nationally and worldwide. Given the urgency of the problem, it is essential that this approach be accelerated, since time lost will steadily increase the ultimate cost of reaching a sustainable outcome.

Sector-specific arrangements: These may be appropriate instruments for reducing carbon-leakage. The Government of Zimbabwe uses the end-consumer pay method. For example, car-importers pay carbon tax at the time of purchase, while motorists pay when renewing vehicle licences and buying fuel.

The Regional Labour and Environment Assembly (RLEA) and National Fora: Developing a regional trade union consensus proposal, or even knowing the diversity of positions in the region, is of vital importance. Many trade union movements in other parts of the world have a common understanding on provisions in the UNFCCC annotated agenda. (This is not the case for most trade unions in Africa, due to limited financial capacities to hold consensus-building meetings). Discussion meetings can be organised at national, sub-regional or regional level. The most important meeting is the Regional Labour and Environment Assembly, where a regional consensus is built prior to COPs/CMPs. (At national level, it is important to know the country's position and build dialogue and relations around fora where legislation, policies and programmes are developed, implemented and monitored.)

Case studies and research: Case studies are needed to showcase various effects of climate change on trade unions, the impacts of climate change in the world of work and awareness-raising campaigns aimed at workers, the general public, policy makers and negotiators. Although some Global Union Federations such as the Building and Woodworkers International (BWI) and the International Transport Workers' Federation (ITF) are currently effecting solid climate change interventions, their efforts are under-publicised. Some unions have also introduced climate change as a subject in their workshops, but this is unnoticed by outsiders. The lack of information on Africa's trade union initiatives on climate change lends credit to the idea that climate change has little connection to workplace issues and that trade unions have no role to play in the fight against climate change.

The involvement of regional trade union bodies: Continental bodies such as ITUC-Africa, OATUU and sub-regional trade union groups play critical roles in policy formulation and developing positions within their respective political or trading blocks. However, they have not been terribly active in the UNFCCC negotiation process. Their involvement – or lack thereof – will influence decisions on climate change at regional level.

Developing a model regional climate change policy: In Africa's trade union movement, only COSATU has developed a trade union policy on climate change. The lack of additional regional policies indicates the low priority given to climate change by the trade union movement. The lack of prioritisation does not always mean that there is a lack of concern. It is sometimes due to the technical nature of the subject; it is not a conventional labour issue of which unions have years of experience. To develop such a policy many African trade unions need guidance.

A Review of Decent Work Country Programmes: Trade union actions, and those of labour ministries, are greatly shaped by DWCPs. According to a desk survey carried out by ITUC Africa in 2011, few DCWPs had recognised climate change as a specific challenge in the world of work. Most made reference to the environment, particularly in the area of pollution, but failed to create a link between environmental problems and climate change. As a result, neither ministries nor

trade unions have developed specific programmes on climate change. Since DWCPs are the beacon from which these two bodies draw their directions, it is important for tripartite partners (with assistance from ILO and other co-operating partners) to initiate the process of reviewing DWCPs in order to address climate change in the world of work.

Group work: Understanding climate change mitigation

Discuss and suggest mitigating actions that can be taken and the role that the employers and trade union can take. (Suggest three actions for each).

CONCLUSION

Unless the level of required emission reductions is achieved, the economy will suffer serious harm, including significant job loss, trade disadvantages, increased energy and consumer costs.

Although trade unions may negotiate for a multi-stakeholder approach under UNEP's guidance, if engagement at national level is minimal or non-existent, the inclusion of trade union and workers issues would be minimal. Trade union participation must be much stronger at regional level where they can effectively shape the regional position.

Trade unions have already played an effective global role, particularly in the preparation of, and during, COPs, where key labour issues such as just transition, decent work and green jobs were well articulated in the negotiating text.

Following the adoption of the Paris Agreement on climate change, trade unions need to take steps to improve their engagement at national, regional and continental level. This requires capacity building, more awareness-creation and improved participation at national, sub regional, regional and international levels. The Paris Agreement requires trade unions to popularise it by educating and training the labour force, constructing CBAs and workplace policies that promote labour issues that will feature in the deal and lobbying for formulation and the amendment of national policies, legislation and respective Decent Work Country Programmes.

Trade unions must take responsibility for monitoring compliance at national, sub-regional and regional level and be able to submit independent reports to UNFCCC Focal Points and the UNFCCC Secretariat (as and when stipulated).

Key learning points

- Climate change is a threat to life. Unless we act now, the impact will be much greater and the costs much higher.
- The fight against climate change through mitigation will cost barely 1% of global GDP per year by 2030.
- Climate change mitigation is a collective issue that requires a collective solution.
- Climate change mitigation is a priority issue for trade unions.

MODULE REFERENCES

Brazier, A. (2015), 'Climate Change in Zimbabwe: Facts for Planners and Decision-Makers'; Konrad-Adenauer-Stiftung, Harare.

- Centre for Clean Air Policy (2016), 'Adaptation and Mitigation Synergies'.
- E8 (2008), 'Development of Climate Change Mitigating Technologies in the Electricity Sector'.
- ILO/ACTRAV,ITUC,GURN (2010), 'Trade unions and climate change; Impact on employment and Labour Market'; Conference Report.
- Msangi, Y. (2015), 'African Trade Union Guide to the UNFCCC Process for effective participation and implementation', Friedrich-Ebert-Stiftung.
- Olsen, L. (2009), 'The Employment effects of Climate Change and Climate Change Responses: A Role of International Labour Standards', GURN discussion Paper No.12, ILO.
- OECD (2008), 'Climate Change Mitigation "What do we do?"'.
- UNEP/Sustainlabour (2011), Climate Change, its consequences on Employment and Trade Union Action; Training Manual for Workers and Trade Unions, Spain
- USAID and FAO (2015), 'Green House Gas Emissions in Zimbabwe'

MODULE SEVEN: CLIMATE CHANGE ADAPTATION

INTRODUCTION

The module explains the meaning of climate change adaptation, differentiating it from climate change mitigation. It also highlights the socioeconomic aspects of adapting to climate change and provides the gendered aspects of adaptation. It further details some of the adaptation strategies being implemented in Zimbabwe. The module concludes by discussing the role of trade unions in climate change adaptation.

The objectives of this module are as follows:

1. To enhance the understanding of climate change adaptation issues and their consequences for employment.
2. To discuss and analyse the gender dimension of climate change adaptation and the challenges thereof.
3. To determine the challenges relating to adaptation and employment and the key strategies that can be applied.
4. To discuss the role of trade unions in climate change adaptation.
5. To articulate the human rights aspects of climate change adaptation.
6. To discuss the various strategies implemented in Zimbabwe and their impact.

UNIT 1: DEFINING CLIMATE CHANGE ADAPTATION

What is climate change adaptation?

Climate change adaptation means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause, or taking advantage of opportunities that may arise. It has been shown that well-planned early adaptation action saves money, lives and jobs and protects communities. Some examples of climate change adaptation are shown in Figure 13, overleaf.

UNIT 2: ASPECTS OF CLIMATE CHANGE ADAPTATION

2.1 Economic Aspects of Adaptation to Climate Change

Climate change poses a serious challenge to socioeconomic development. Efforts to reduce GHG emissions need to move hand-in-hand with policies and incentives to adapt to the impacts of climate change. Some of those that will hit developing countries the hardest are rising sea levels, altered rainfall patterns and extreme weather events, all of which will have socioeconomic consequences – economic crises, migration and loss of infrastructure. One of the main reasons why developing countries are more likely to suffer from the effects of climate change than industrialised ones is that they are heavily dependent on agriculture, which is probably the most vulnerable economic sector.

How much adaptation might cost and how large its benefits are questions that have become increasingly relevant for on the ground projects and in national and international contexts.

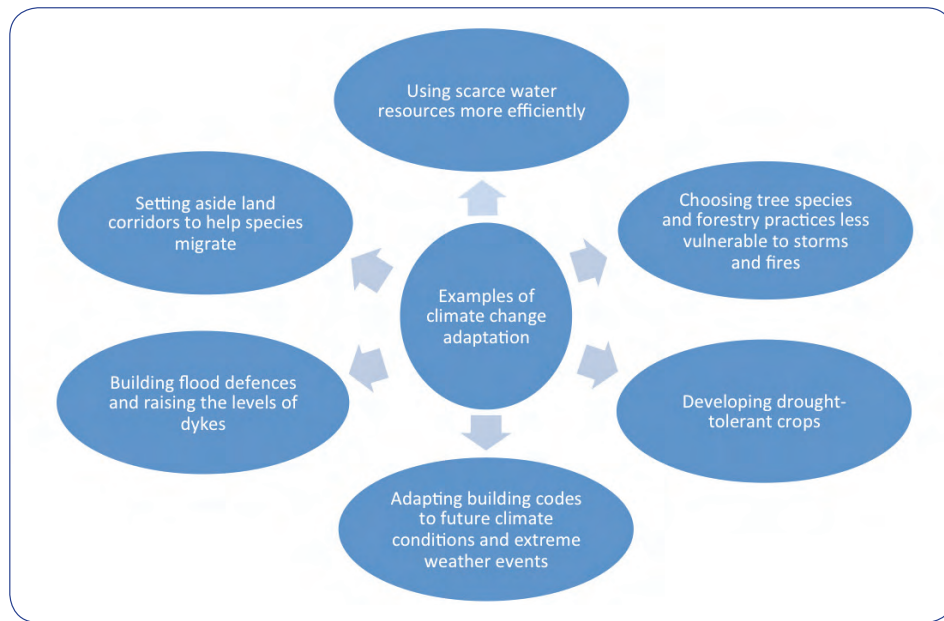


Figure 14: Examples of climate change adaptation strategies

Although costing or raising large sums of money to finance adaptation is clearly important, it will not alleviate the challenge of ensuring that individuals, businesses, government and civil society can make timely, well-informed and efficient decisions about adaptation.

The feminisation of economic aspects of climate change

The feminisation of climate change is increasing and thus the equal involvement of men and women and their respective needs and perspectives in adaptation planning is important. In addition to ensuring that the measures developed actually benefit those who are supposed to implement them, it is vital that relevant knowledge is also integrated into policy and projects (COP 10 Women's Statement).

Post-disaster situations may provide women with unique opportunities to challenge and change their gendered status in society. In the aftermath of a natural disaster, they often assume traditionally male tasks and develop new skills, such as natural resource and agricultural management. In the right environment, women could transfer into the job market.

It is therefore important that experts and politicians acknowledge the fact that climate change also presents a social problem. Research, policies, adaptation and mitigation programmes and projects must pay specific attention to the most vulnerable members of society, ensuring that they receive adequate compensation and security as a result of climate-related damage. Adaptation plans and programmes must actively involve women, children, people with disabilities and other vulnerable groups and consider their respective challenges, needs and perspectives. It is through their voices that the reality of climate change can be understood and proper adaptation measures enforced.

2.2 The Political Aspects of Climate Change Adaptation

Even though the need for additional policies on adaptation had already been acknowledged before UNFCCC was ratified in 1992, and is now probably one of the most fashionable issues in the international public arena, implementing adaptation procedures still seems problematic, seldom leading to concrete measures. In this respect, they resemble 'empty shells', a problem observed in the developed and developing world.



Effective national action on climate change adaptation depends on the following:

- Short-term and long-term commitment and planning on the part of the government
- The ability of government to create a political and public consensus for action
- Democratic governance processes and an enabling environment for effective citizen participation
- The type of policies in place and their impact on the challenges brought about by climate change
- Sufficient political will to effectively implement policies as well as an inclusive climate change adaptation programme.
- The ability of the State to primarily act as a catalyst for encouraging innovation by its social and economic institutions.

Failure to achieve the above may in itself become a political obstacle, hindering the successful implementation of an otherwise progressive adaptation policy. Political feasibility, a democratic and participatory process of development and the acceptance of adaptation policies is thus of great relevance and can ensure a smooth transitions when it comes to addressing climate change.

2.3 The social and behavioural aspects of climate change

Women and men, in their respective social roles, are differently affected by the effects of climate change due to their different social responsibilities. Care work and income-generating work and dependency on natural resources because of lacking access to environmental services are, for example, more pronounced for women than men. Disparity is also evident where knowledge and the capacity to cope with the climate change vary due to differences in access to education and information systems. Women are discriminated against when it comes to the application of climate protection and adaptation instruments and measures.

As the world moves towards the post-Kyoto climate regime, it is essential that adaptation and mitigation initiatives at all levels pay particular attention to poverty and gender-based vulnerability and ensure that women are engaged at all levels of the decision-making process. If mechanisms and measures are developed in a non-gender-sensitive way, they will not take into account different responsibilities and financial options thus limiting their effectiveness.

Effects on livelihoods

Small farmers, mostly in developing countries, already struggle to get fair prices for their goods, be safeguarded against weather and pests and compete with large-scale agricultural systems to



stay in business. Climate change is poised to make matters worse through shifts in climate and agricultural zones, changes in production patterns as a result of higher temperatures and more extreme and changing precipitation patterns, all of which threaten crops. This has the potential to take away families' livelihoods and hurt entire communities that depend on selling the fruits of their labour. The threat to food supplies and food security is very real. All adaptation needs to be carefully and systematically planned. This includes risk assessment (probability, location, and intensity), which can be done by taking the following steps:

- Estimating damages and losses
- Agreeing on which adaptation options are cost-effective and the highest priority
- Adopting a clear adaptation plan whose implementation can be monitored
- Ensuring that farmers and their families are actively involved in the climate change-related processes and programmes and have sufficient access to information and education on climate change adaptation and mitigation
- Ensuring that water reservoirs are secured in farming areas.

Effects on the livelihood of the rural poor

Many people, particularly in Africa, depend on their surrounding natural resources to survive. Disadvantaged groups in rural communities lack the resources to cope with the more extreme effects of climate change such as intense flooding or droughts, which may see their physical displacement or change their way of life. In addition, many of the rural poor already live in flood zones and other highly vulnerable areas. Hence, appropriate adaptation measures must be employed, with proper security from such risks as floods, otherwise poverty levels and social inequality will only worsen.

Effects on poor urban communities

Globally, poor urban neighbourhoods already suffer from greater pollution levels and temperature changes. Well-planned and monitored adaptation measures that prioritise investment in, for example, water infrastructure will buy time and space for people to recover and adapt to climate change. Without such infrastructure it is difficult to respond to the distributional effects of climate change and natural disasters, which is to the disadvantage of the poor. Proper adaptation will prevent most negative impacts of climate change, especially for the more vulnerable.

The increased vulnerability of women, children and the elderly

Women, children and the elderly will become increasingly vulnerable if climate change adaptation measures prove ineffective. In rural areas in developing countries it is often the responsibility

CASE STUDY 2: Tuvalu's perspective on Climate Change

The issue of infringement of the right to culture was stated in an article written by Maldivian Prime Minister, Apisai Lemela, entitled 'A threat to our Human Rights'. He highlighted the fact that 'Tuvalu is a nation with a unique language and culture, and that resettlement will destroy its fabric and culture. For nations such as Tuvalu, and other small island developing states whose way of life is deeply marked by insularity, resettlement poses a serious threat to their continued cultural existence'.

CASE STUDY 3: Education, climate change and children in Kenya

Kenya is already being affected by climate change – there are more hot days per year and prolonged droughts and rainfall is erratic rainfall. Rivers and streams are drying up, and there is now flooding in certain areas. These changes have led to a decline in available drinking water, decreased harvests, food shortages, the loss of biodiversity, landslides and soil degradation. By most estimates, all these will be exacerbated in the coming years.

In light of these problems, UNICEF recently published a study on how climate education may play a role in helping communities in Kenya adapt to specific challenges posed by climate change. It focuses on how education can involve children in climate adaptation and disaster risk-reduction programmes with a view to improving outcomes. With regard to education, the report highlights numerous region-specific adaptation programmes that could be integrated within educational programmes based on the climate-induced physical changes that are predicted. These range from running emergency preparedness programmes in local schools where there risk of flooding is high to providing child-friendly schools that focus on education about water, sanitation and hygiene, protecting vulnerable children and community participation.

of women and children to collect firewood and water. However, decreasing supplies result in less time for other income-generating tasks, as they have to travel further distances to meet their needs. Children and the elderly are also more susceptible to climate change-related sicknesses such as heat-related ailments from higher temperatures (malaria, dehydration), malnourishment as a result of food insecurity and diseases associated with increased flooding. In many countries where women do not have the same access to land, capital and other resources as men, even if they are the head of the household, they have difficulty in accessing climate-resilient technology or seed, both of which are necessary for climate change adaptation.

Forced relocation

Many communities will be forced to move as they become exposed to rising sea levels, extreme drought that puts strain on resources, or even floods that may displace them. Since the effects of climate change are not only environmental but also socioeconomic, new and existing policies must take a holistic approach and transcend disciplines, sectors and the public–private divide.

2.4 Governance and Participation

Adapting to climate change will fail unless it is supported by the full participation of affected communities, especially their most vulnerable members. We should support these groups, build on their local knowledge, provide access to new information and enable them to implement the strategies they choose. Because of its centrality to many people's lives, the manner in

which adaptation is addressed will impact on broader political and governance structures and cultures. A top-down, directive approach risks excluding other people and worsening existing equity challenges, whereas participatory approaches that empower all people and ensure their involvement in assessing and choosing levels of risk are needed. This is in line with Alternative to Neo-liberalism in Southern Africa's bottom-up, holistic approach that promotes the fair participation of all those affected.

UNIT 3: UNDERSTANDING HUMAN RIGHTS IN THE CONTEXT OF ADAPTATION POLICIES

Governments are obliged to respect and protect the cultural heritage of all groups and communities. In this area, one concern is that some adaptation programmes may benefit one group to the detriment of another, as might be the case of coastal fortifications (barricades) that protect one community but expose another to a greater risk of erosion and/or flooding. Adaptation measures may be undertaken without the necessary public consultation and result in outcomes that adversely affect the very persons they aimed to protect. There is also the risk of violating human rights, such as the right to housing, water and food during relocation and resettlement programmes. Such programmes must therefore be undertaken with adequate input and consent from those who are to be relocated.

Education about climate change adaptation should also be developed and integrated within national institutions and educational policies. It is pertinent to note that this type of education can be very broad and should occur at all levels of learning, from primary through to tertiary level. Two case studies about how human rights in climate change adaptation have been protected are shown overleaf.

UNIT 4: CLIMATE CHANGE ADAPTATION AND EMPLOYMENT

4.1 Why climate change adaptation matters in employment

Climate change and environmental degradation already pose significant challenges to economic growth and employment, and risks will be greater in the medium to long term. Yet, if properly managed, action on climate change can lead to more and better jobs. Transitioning to a low-carbon, greener economy will involve creating new jobs in environmentally friendly production processes and outputs. This may well put other jobs at risk, however, particularly in those sectors with fewer options for transitioning towards more sustainable ways of production.

Adaptation-related economic activities are driven by interlinkages between the physical impacts of climate change, the policy response to prevent or cope with them and the economic implications on the sectors that are affected by and respond to them. Economic activities arise when climate change impacts – a greater frequency of extreme weather events, for example – drives the market for climate risk management solutions and measures to cover short-, medium- and longer-term risks.

4.2 Sectoral adaptation approaches in Zimbabwe

Agriculture

In Zimbabwe, farmers have had to adapt to the weather for decades. However, new challenges may be more extreme, cover larger geographical areas and occur more rapidly. Workers in the agriculture sector suffer low wages, retrenchments, poverty and food shortages as a result of

non-performance due to climate change. This makes it of paramount importance for government to include trade unions as social partners in planning and programming adaptation and mitigation measures in all affected sectors, including agriculture. Sharing information and social dialogue will strengthen such efforts to assist the affected.

Persistent drought in Zimbabwe has severely strained surface and ground water systems, contributing to the country's deteriorating water supply. Smallholder farmers in Chiredzi District, for example, are exposed to one of the country's harshest climates as a result of its location (Natural Region V). In this region, rainfall is too low (generally below 450 mm per season) and erratic for the meaningful production of any crop under rain-fed conditions. Even drought-resistant crops such as sorghum and millet provide only marginal yields.

Unless adaptation measures are taken, yields from rain-fed agriculture are expected to decrease by up to 50% by 2020 (Brown et al., 2013). Maize, the nation's staple crop, is particularly vulnerable due to its intolerance to drought. Thus, climate change is likely to worsen food insecurity, especially during prolonged droughts, which are becoming more frequent and intense.

According to Zimbabwe's INDC, the Coping with Drought and Climate Change project, which is funded by the Global Environment Facility and the Special Climate Change Fund under the leadership of the UNDP, has developed adaptation mechanisms to reduce the vulnerability of smallholder farmers and pastoralists to future climate change in rural Zimbabwe. Internal implementing partners include the Environmental Management Agency, government ministries, gender and female development NGOs and community based organisations. The Scaling up Adaptation in Zimbabwe project focuses on improving rural livelihoods by strengthening integrated planning systems.

Tourism

The impacts of climate change could negatively affect any country's sustainable development in diverse ways, including water resources, energy, health, agriculture, and biodiversity, all of which could impact tourism. Consequently, the process of adaptation in the tourism sector cannot be undertaken in isolation. It must be placed within the broader context of sustainable development policies and strategies and consider the impacts and adaptations in other sectors.

In Zimbabwe, the tourism industry has seriously been affected by changes in temperature and/or rainfall patterns. For instance, floods experienced in such resort areas such as Masvingo have affected tourism as a result of damage to infrastructure, additional emergency preparedness requirements, higher operating expenses (for example, insurance, backup water and power systems and evacuations) and interruptions to business operations.

Transport and infrastructure

Zimbabwe's roads were once considered to be among the best in southern Africa, but are now in a state of disrepair due to years of neglect. Climate-related hazards, including extreme localised floods, have worsened this situation. For example, the severe flooding in Domboshava during Cyclone Eline in 2000 caused substantial damage to infrastructure, including bridges and schools. The rail and air transport system in Zimbabwe has also deteriorated significantly over the last ten years. Rail capacity utilisation dropped from 53% in 2000 to 15% in 2009 (Zimbabwe Medium-Term Plan, 2010). Some of this infrastructural disintegration is, however, attributable to neglect, mismanagement and inefficiencies on the side of institutions involved. This has created a situation whereby infrastructure is already inadequate for current needs, and more likely to be adversely affected by climatic shocks and stresses.

Lack of proper adaptation and mitigation measures will cause a rise in the socioeconomic

costs of climate change to infrastructure in Zimbabwe. As a result, correct policy choices are critical to ensuring that future infrastructure is climate resilient (i.e., able to withstand increases in climate variability and mean changes) and able to reduce risks among vulnerable groups (Corfee-Morlot and Cochran, 2009).

Plenary debate: Evaluating the options for adaptation

Whilst there is a wide array of adaptation options available for the most vulnerable sectors, most of the options available are purely technologically advanced and not possible for developing countries. True or false?

UNIT 5: STRATEGIES AND APPROACHES TO CLIMATE CHANGE ADAPTATION

Compared to climate change mitigation, climate change adaptation policy development is still in its infancy. Adaptation was put on an equal footing with mitigation in the Bali Action Plan, and there has been progress in policy development, but the main focus of the debate is on the development of national adaptation strategies and programmes and support by regional centres.

5.1 National level

1. Increase water management flexibility in reservoir operations, water conservation, efficiency and reuse to maximise the efficient use of available water supplies and existing infrastructure.
2. Enhance climate adaptation planning by developing capabilities, tools and guidelines to incorporate climate change information across rehabilitation planning processes. These enhanced planning efforts will improve the understanding of climate change impacts as regards addressing the delivery of water and power, infrastructure and ecosystems and habitat affected by reclamation projects.
3. Improve the resilience of infrastructure, and its reliability and safety, to prepare for increased intensity and frequency of floods and droughts. Ultimately, recovery will include climate change considerations within evaluations of infrastructure safety as well as in prioritisation for operations and maintenance of existing facilities.
4. Expand information sharing by collaborating with stakeholders to support mutual climate adaptation efforts through sharing data and tools.
5. Awareness campaigns on climate change preparedness.
6. Education and training on climate change mitigation and adaptation for affected people, including workers in the vulnerable sectors of the economy.
7. Advocacy on gender-sensitive legislation and adaptation policies that promote equality in protection, participation and accessing information on climate change and adaptation.

5.2 Local-level strategies

1. Prioritise adaptation efforts in communities where vulnerabilities are highest and the need for safety and resilience is greatest.

While national policies and strategies are essential, the results of their implementation at local level is the ultimate test of CCA. It is at this level that lives and livelihoods can be protected, development promoted and safety and resilience built.

2. Build projected climate change related trends in today's risk and vulnerability assessment based on current climate inconsistencies.

This strategy enables the crafting of effective short-, medium- and long-term strategies to strengthen response capacities and preparedness, reduce risks and promote effective adaptation. Current climate variability and countering on-going disaster impacts will always be an essential focus as regards highly vulnerable communities. However, wherever possible, these immediate concerns need to be integrated into longer-term strategies that address future risks and the drivers of vulnerability. This can be done through development actions aimed at reducing overall vulnerabilities through addressing, for example, livelihoods, environmental degradation or HIV/AIDS that, whether they incorporate specific CCA actions or not, are crucial in supporting households and communities to manage climate risks.

3. Fully integrate adaptation into longer-term national and local sustainable development and poverty reduction strategies.

Not only will the integration of CCA and associated disaster risk reduction (DRR) into development offer protection of overall development goals (such as the Millennium Development Goals) but it will also provide the basis for building community safety and resilience.

4. Prioritise the strengthening of existing capacities among local authorities, civil society organisations, trade unions and the private sector in order to lay the foundations for the vigorous management of climate risk, and for rapidly scaling up adaptation through community based risk reduction and effective local governance.

Capacity building and capacity development are among the most urgent requirements for addressing climate risk, at local level in particular. A community's capacity to understand climate risk issues, effectively use available information, develop the necessary institutions and networks and plan and build appropriate CCA actions and evaluate and monitor these to learn from experience are essential prerequisites for effective adaptation.

5. Develop broad resource mobilisation mechanisms for adaptation to ensure the flow of financial and technical support to local actors.

It is imperative to develop dedicated funding mechanisms to support local action on CCA as well as regulatory structures that align the broad range of development activities taking place at national and local levels. Further, it is important to ensure that whatever resources are mobilised, they are all committed to one integrated agenda – achieving development goals and building of community resilience including protection from climate and other disaster risks.

6. Leverage the opportunities in disaster prevention and response through improved early warning systems, contingency planning and integrated response in order to promote effective community based adaptation and risk reduction and management.

It is important to recognise the positive opportunities in disaster prevention and response to raise awareness of the longer-term needs in CCA and DRR and to strengthen the enabling environment for advocacy and capacity development.

Limitations to adaptation

Developing countries which have not made any significant contribution to the amount of GHG in the atmosphere will be at an even greater disadvantage when it comes to dealing with the effects of climate change. The reasons for this are as follows:

- Developing countries already struggle with a lack of infrastructure and fewer technological and financial resources, which will hinder their ability to adapt

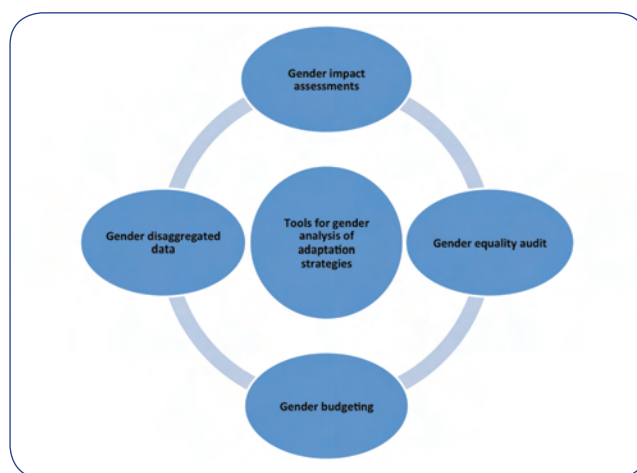


Figure 15: Tools for gender analysis of adaptation strategies

- These countries are dependent on donor funds, which are also declining at international level
- Public funds that could have originally been directed towards education will have to be used to construct sea walls or storm water systems and/or increase irrigation in order to adapt
- Although this reality is discussed as a part of UNFCCC, technological and financial assistance to developing countries isn't remotely close to sufficient.

Group role play: Understanding the gender implications of climate change adaptation

In groups, through role play, show the gender implications of climate change adaptation.

UNIT 6: GENDER APPROACHES TO CLIMATE CHANGE ADAPTATION

Climate change impacts men and women differently, given their different roles and responsibilities at household and community level. Women are more exposed and vulnerable to climate change because they are often poorer, are less educated and are excluded from political and domestic decision-making processes that affect their lives. Sociocultural barriers that are manifested in gendered roles and social status also inhibit women from effectively responding to climatic risks.

Table 20 (overleaf) illustrates how women and men are impacted differently by climate change and how women are disadvantaged in most cases, hence the need for gender lenses to be applied in adaptation measures:

Adaptation measures with gender lenses

Women have the potential to be active agents of change, for they possess unique knowledge and skills that should be acknowledged and tapped into to develop resilience. In most cases, climate change impacts are linked to gender issues and women's vulnerability. The decreasing availability of clean water, diminishing agricultural production, reduced access to crop residues and biomass for energy and the increasing risk of famine are all areas where women take primary responsibility as care-givers and will thus experience severe negative impacts. Hence it is important to choosing adaptive investments that take men and women's differing needs into account.

Tools for gender analysis

Figure 14 shows the different tools that can be used for a gendered analysis of climate change

Table 21: Gender assessment of climate change adaptation approaches

Source: Annecke, (undated)

	Women	Men	Link to climate change vulnerability
Roles	Stay home to care for children, the elderly and the sick	Can migrate to access economic opportunities	Men's ability to migrate in search of economic opportunities makes it easier for them to deal with crisis, and may result in benefits for the family as a whole. Women, on other hand, may be limited because they have to stay home and care for the children. Male migration often increases women's workloads, as they are left behind to manage the household in addition to their usual tasks. It can also increase women's exposure to risks such as gender-based violence and HIV infection
	Produce household crops, livestock	Produce market crops, livestock	Both crops and livestock are affected by climate change, with profound consequences for household food security. Men often claim safer or more fertile land for growing market-oriented crops, leaving women to grow household crops on less fertile land
	Responsible for food storage and preparation	Responsible for selling (valuable) produce and livestock	Climate change has implications for food preparation and storage (water for preparation and the vulnerability of food stores to extreme events such as cyclones and floods). Harvests may be reduced or destroyed by changes in weather (floods, droughts). This affects market prices and the availability of surplus to sell – placing pressure on men and women to identify other sources of income and reduce major expenditure (for example, school fees). In times of shortage, women are often expected to feed other members of the family before themselves.
Resources	Lower incomes, more likely to be economically dependent	Higher incomes, more likely to own land and other assets	Men typically have more money and other assets than women. Their savings provide a buffer during tough times and make it easier to invest in alternative livelihoods.
	Have less access to education and information	Have more access to education and information	Managing climate-related risks to agricultural production requires new information, skills and technologies such as seasonal forecasts, risk analysis and water-saving agricultural practices Men are more likely to have access to these resources, as well as the knowledge and the power to use them. As a result, they are better equipped to adapt Women often have traditional knowledge that can inform adaptation efforts. Old and new information can be important when adapting.
Power	Less power over family finances and other assets	More power over family finances and other assets	Without the power to decide on family resources and finances, women's ability to manage risks by for example, diversifying crops, storing food or seeds or savings is limited.

Power	Limited engagement in community politics and decision-making.	Greater involvement in community politics and decision-making	Men are likely to have more influence over local governance in terms of promoting policies and programmes. They may not support women's rights, needs and priorities.
	Many cultural restrictions and/or prohibitions on mobility	Few cultural restrictions on mobility	Mobility is a key factor in accessing information and services. It is also critical to escaping the danger posed by extreme weather conditions. Women are at high risk of being affected by climate change disasters as they may not be as highly mobile as males.

adaptation measures. Mainstreaming gender is critical to planning, implementing and monitoring of climate change adaptation measures. These tools have much potential concerning the latter, especially in the water, energy, agricultural and informal sectors, but proper monitoring and evaluation is critical. It is important to consider, through a gendered lens, who has access to, control over and benefits from the assets and resources in a home or community in order to build resilience, target information and facilitate mobility. Awareness, information-sharing and training workers in these sectors on climate change, mitigation and adaptation is also hugely important.

UNIT 7: THE ROLE OF TRADE UNIONS IN CLIMATE CHANGE ADAPTATION

Trade unions have a key role to play in CCA because of their unique purpose of safeguarding workers' rights and interests. Some of their key functions and roles in this are:

- They are uniquely placed to sensitise workers about the impact of climate change on employment patterns and the relevant adaptation measures.
- They can promote and demand that both public and private sectors develop programmes on CCA.
- They must train workers to contribute to climate change debates and ascertain if the adaptation measures at the workplace are being properly implemented.
- They need to take a rights-based approach to CCA issues and ensure that workers are safeguarded.
- They should ensure that workers are involved in decision-making processes on climate change adaptation strategies.
- They need to engage in collective bargaining to ensure that workers are consulted and involved in the planning and implementation of adaptation measures whilst ensuring that their interests are protected.
- They need to strengthen social dialogue and reinforce of social protection systems.

Debate session: Role of trade unions in climate change adaptation

In groups, debate: 'Climate change is a new arena for trade union work and dealing with adaptation issues makes it more complex and is not unions' core business'. Debate using verifiable facts.

Drama session: Trade unions and climate change adaptation at the workplace

Dramatise how trade unions can play a role in climate change adaptation.

CONCLUSION

Trade unions and workers need to understand climate change issues, their causes and gender implications in order to ensure better participation in climate change-related discussions and the ability to propose adaptation measures that strengthen the fight against climate change and alleviate the suffering it may cause. From the trade union perspective, this means first understanding the impacts of climate change in a specific sector, then at the workplace and for workers' families, before finally exploring adaptation measures that could reduce the impact of climate change. At national level, there is need for:

- Serious financial resource mobilisation and investment in education and training, among other solutions, to enable developing countries to understand and engage in better climate change adaptation measures.
- The involvement of all vulnerable groups in adaptation planning and implementation in order to ensure the appropriate strategies are applied to a befitting situation and area.
- Strengthened social dialogue to ensure a human-centred approach to climate change and adaptation issues.

Key learning points

- The importance of local context in developing adaptation strategies that build on local knowledge and cultural norms, practices and value systems.
- As humans will directly suffer from the effects of climate change, government must adopt a human rights-based approach in its adaptation strategies.
- Without human-centred and gender-sensitive public policies, it will be the most vulnerable groups who will suffer most from their inability to adapt to the effects of climate change.

MODULE REFERENCES

- Corfee-Morlot, J. and I. Cochran et al. (2009), 'Cities, climate change and multi-level governance', OECD Environmental Working Papers OECD, Paris, France.
- Giddens, A. (2008), 'The Politics of Climate Change – National Responses to the Challenge of Global Warming', Policy Network, London.
- Global Environment Facility (2014), 'GEF Programming Strategy on Adaptation to Climate Change', Least Developed Countries Fund, Special Climate Change Fund, GEF Secretariat.
- Government of Zimbabwe (2015), Zimbabwe Intended Nationally Determined Contribution (INDC), Harare.
- ILO (2011), 'Towards an ILO approach to climate change adaptation', Employment working paper, No.104, International Labour Office, Employment Sector, Employment Intensive Investment Programme, Geneva, Switzerland
- UNDP Various Reports, www.undp.org/content/undp/en/home/ourwork/environmentandenergy/strategic_themes/climate_change/focus_areas/adapting_to_climatechange.html
- ZCTU (unpublished), 'ZCTU Climate Change Policy', Harare.
- ZELA (2015), 'The prospects of leveraging domestic resources to finance climate change adaptation and mitigation in Zimbabwe', Harare.

Founded in 1925 in memory of Friedrich Ebert, the Friedrich-Ebert-Stiftung (FES) is a private, non-profit organisation committed to the values of Social Democracy. The goals that guide the political education work of FES is to enable and encourage citizens to participate in civil society, the labour movement and to engage in the political processes. The aim of the international co-operation of the Friedrich-Ebert-Stiftung is to promote freedom, justice and solidarity in a globalised world and to contribute to peace and security.

ISBN: 978-0-7974-7674-5

