

*Adapting to Climate Change in
Rural Human Settlements in South Africa*

Climate Change Adaptation Study Guide

MODULE ONE



Department of Rural Development & Land Reform
2017

Table of Contents

Introduction	4
How to Use This Study Guide	5
Icons Used in This Study Guide	5
Final Thoughts	6
1. Why is Climate Change Important in Rural Human Settlements in South Africa?	7
1.1 What to Expect in This Training Program?	8
1.2 What is Climate Change?	9
1.3 Climate Change Impacts	10
1.4 Climate Change Policy Context in South Africa	11
1.5 DRDLR Climate Change Adaption Strategy	12
1.6 Test Yourself - Multiple Choice Questionnaire	13
2. What Types of Climate Change Information is Available?	16
2.1 Climate Change Modelling Resources	17
2.2 Let's Respond Toolkit Website Introduction	18
2.3 South African Weather Services Introduction	19
2.4 South Africa Risk and Vulnerability Atlas Introduction	20
2.5 Test Yourself - Activity	21
3. How do You Conduct a Climate Change Vulnerability Assessment?	24
3.1 Climate Change Vulnerability Assessment Methodology	25
3.2 Developing Climate Change Indicators	26
3.3 Assessing Exposure	27
3.4 Assessing Sensitivity	28
3.5 Assessing Adaptive Capacity	29
3.6 Identifying Priority Indicators	30
3.7 Do it Yourself - Activity	31

Table of Contents

4. How do You Identify Climate Change Adaptation Options?	32
4.1 Types of Climate Change Responses	33
4.2 Developing a Climate Change Response Plan	34
4.3 Do it Yourself - Activity	35
5. How do You Develop a Monitoring and Evaluation Framework?	36
5.1 Introduction to Monitoring and Evaluation	37
5.2 Developing a Climate Change M&E Framework	38
5.3 Do it Yourself - Activity	39
6. How do You Integrate Climate Change into Planning Processes?	40
6.1 The Relationship Between Planning and Climate Change	41
6.2 Integrating Climate Change into the Planning Processes	42
6.3 Integrating Climate Change Into the IDP	43
6.4 Test Yourself - Multiple Choice Questionnaire	44

Introduction

Welcome to the Study Guide for Climate Change Adaptation Training Programme for Rural Human Settlements in South Africa. The aim of this study guide is to assist you as development practitioners as follows:

1. **Have an understanding of what is required and necessary for the implementation of climate change adaptation in rural human settlements in South Africa;**
2. **Be able to acquire and interpret climate data from relevant sources and authorities;**
3. **Be able to assess climate change risk and vulnerability in order to identify factors contributing to vulnerability in a system;**
4. **Be able to identify a range and prioritise adaptation responses to adjust or improve project/ development planning and management;**
5. **Be able to develop elements of a monitoring and evaluation framework for adaptation and identify institutional capacities (role players) needed to deal with adaptation options; and**
6. **To identify key steps to integrate climate change adaptation options into project business and spatial plans.**

The study guide is part of the Department of Rural Development and Land Reform's Climate Change Training Program. The training program aims to introduce you to the theory and practice of Climate Change Adaptation within the Rural Development and Spatial Planning context. The training program is comprised of the following components:

1. This study guide, which provides a set of lessons on integrating Climate Change Adaptation into Rural Human Settlements;
2. A set of narrative and illustrative videos demonstrating how each step of conducting a Climate Change Adaptation Plan is undertaken.
3. An Interactive Learning Aid hosted on the website <http://www.climatechangetraining.org> which includes tools, handouts and assessment for you to use in your planning processes.

How to Use This Study Guide

This study guide is divided into seven modules and each module has a set of lessons attached to them. Each module also has an assessment at the end to test whether you were able to learn the key concepts in the module. You can begin with module 1 and work through in order to module 7 or you can chose any particular module that may interest you.

The study guide is part of the overall Training Program and refers constantly to resources that are available on the training program website <http://www.climatechangetraining.org>. The intention therefore is that you use this study guide to help you navigate the materials available on the training program website.

Icons Used in This Study Guide



WEBSITE

Addresses of relevant or important websites will be highlighted



VIDEO

This guide often corresponds with videos online



MULTIPLE CHOICE QUIZ

Quizzes will test your knowledge of the study guide material



ACTIVITY

You will have the opportunity to apply your learning in module activities



RESOURCE

External resources like presentations and plans will be highlighted

Final Thoughts

As you know, we are already seeing the impacts of climate change across South Africa with unusually long droughts, intense storms and flooding, and increasing temperatures. These climate change impacts often damage infrastructure and affect our ability to provide services to communities who are in most need of them. Scientists are predicting that the impacts from climate change will only become much worse in the future.

A lot of work has already been done that sets out the road map for South Africa to respond to climate change. This study guide is part of this work stream and we hope that you find the study guide, videos and training program useful, and that you can apply the lessons you learn here into your daily planning activities. We need to be smart and prepare ourselves by thinking ahead and planning with climate change in mind.

Why is Climate Change Important in Rural Human Settlements in South Africa?

In recent years, South Africa has experienced the effects of climate change through increasing temperatures, flood events, and long periods of drought. These impacts have resulted in damage to infrastructure, service provision and livelihoods, which have all had a negative impact on the economy. Whilst information on climate change has improved in South Africa, climate change impacts are expected to worsen and there is still a gap in terms of how we prepare or respond to these changes. The Department of Rural Development and Land Reform has developed this training program to assist officials to better respond to climate change issues.

With this module you will be introduced to the aims of the training program, and you will gain an understanding of the basics of climate change and the key policies in South Africa. You will also be provided with a summary of the work that has already been done, by the Department of Rural Development and Land Reform (DRDLR), in developing a rural development climate change adaptation plan.

This training program uses a combination of videos and presentations to help you to plan for climate change in a way that talks directly to what is happening on the ground in your particular community. This program has been developed specifically for rural development and land reform officials to assist in mainstreaming climate change in rural planning processes.

There are five lessons included in this module. The first lesson introduces you to the aims of the course, and explains the background to developing the course. The second lesson introduces you to the basics of climate change, and highlights the direct and indirect impacts of climate change according to the different sectors. The third lesson introduces you to potential (direct and indirect) impacts of climate change. The fourth lesson introduces the key climate change policies that have been adopted internationally, and the policies and actions South Africa has put in place to align with international agreements. The final lesson introduces you to the DRDLR Climate Change Adaptation Plan which has been developed to ensure that all of the programmes, the department is implementing, will create sustainable livelihoods that are resilient to the changes in climate.

Context is key when responding to climate change

1.1 What to Expect in This Training Program?

The aim of this lesson is to introduce you to this study program and provide you with an understanding of the reasons for the course's development.

This lesson includes an overview of the Department of Rural Development and Land Reforms' Climate Change Strategy and the guiding principles the department has developed in adapting to climate change. These include:

1. **Climate change related vulnerability must be understood in the local context;**
2. **Adaptation planning must be shaped by local participation;**
3. **Adaptation must build on local capabilities;**
4. **Acknowledging climate justice; and**
5. **Evidence based planning.**

These principles clearly state that, as officials, we need to understand what is happening on the ground within our communities in terms of climate change, and when we develop responses or projects we must focus on the needs and capabilities of these local stakeholders. This is the only way we can ensure that the correct responses are in place, and that they will be adopted at a local level.

The lesson provides you with the background to the development of the training course and the tools that have been developed to help officials, like you, to prepare communities in South Africa for climate change.



Lesson Video

www.climatechangetraining.org/lesson/theme1-lesson1



1.2 What is Climate Change?

The aim of this lesson is to introduce you to key climate change policies both internationally and in South Africa.

The lesson will introduce you to key international climate change policies and structures such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. Key national policies, plans and climate change research documents are also introduced. These include:

1. **National Climate Change Response White Paper (2011)**
2. **South Africa's Nationally Determined Contributions**
3. **Long Term Mitigation Scenarios**
4. **Long Term Adaptation Scenarios**

This lesson will help provide you with a background to climate change response policy in South Africa so that the responses you develop align with what has been developed nationally.



Lesson Video

www.climatechangetraining.org/lesson/theme1-lesson2



1.3 Climate Change Impacts

The aim of this lesson is to introduce you to key climate change impacts that will be experienced in South Africa.

The lesson will introduce you to some of the climate change related impacts that may be experienced in South Africa. A list of potential impacts have been developed using national climate change projects and scenarios based on the Department of Environmental Affairs' South African Long Term Adaptation Scenarios programme.

The lesson also takes you through some of the potential risks and vulnerabilities that have been identified in key South African Sectors such as Agriculture, Biodiversity and Environment, Coastal and Marine, Human Health, Human Settlements, and Water, considering the projected changes to the regional climate.



Lesson Video

www.climatechangetraining.org/lesson/theme1-lesson3



1.4 Climate Change Policy Context in South Africa

The aim of this lesson is to introduce you to key climate change policies both internationally and in South Africa.

The lesson will introduce you to key international climate change policies and structures such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. Key national policies, plans and climate change research documents are also introduced. These include:

1. **National Climate Change Response White Paper (2011)**
2. **South Africa's Nationally Determined Contributions**
3. **Long Term Mitigation Scenarios**
4. **Long Term Adaptation Scenarios**

This lesson will help provide you with a background to climate change response policy in South Africa so that the responses you develop align with what has been developed nationally.



Lesson Video

www.climatechangetraining.org/lesson/theme1-lesson4



1.5 DRDLR Climate Change Adaption Strategy

The aim of this lesson is to introduce you to the Department of Rural Development and Land Reform's (DRDLR) Climate Change Adaptation Strategy. The strategy aims...

“to create sustainable livelihoods that are resilient to the shocks and stresses caused by climate change and do not adversely affect the environment for present and future generations”. *DRDLR 2013: Climate Change Adaptation Sector Strategy for Rural Human Settlements*

This lesson provides you with a background to the development of the strategy, linking it to Outcome 7 of the National Development Plan; Vibrant, equitable and sustainable rural communities with food security for all. The strategy also responds to the requirement of the National Climate Change Response White Paper that mandates national departments to develop sector based climate change adaptation plans. This lesson also pays particular attention to the seven strategic objectives of the DRDLR's strategy which are:

1. Support the development of community and local climate adaptation plans
2. Build local adaptive capacity through supporting sustainable livelihoods
3. Support sustainable land management that promotes climate resilience
4. Protect ecosystem services to rural communities
5. Promote access to climate resilient services and infrastructure
6. Strengthen disaster preparedness and response
7. Invest in long term research on more effective ways to supports rural household climate resilience



Lesson Video

www.climatechangetraining.org/lesson/theme1-lesson5



1.6 Test Yourself - Multiple Choice Questionnaire

Now that you have completed the lessons for this module, you can test your understanding of the key concepts from this module with this quiz. The quiz is a multiple choice questionnaire and should take about 10 minutes to complete. The correct answers are provided at the bottom of the page.



Online version of MCQ also available

www.climatechangetraining.org/lesson/theme1-mcq

.....

1. What is the naturally occurring phenomena caused by energy trapped in the earth's atmosphere called?

- A) Greenhouse Gases
- B) Climate Change
- C) Global Warming
- D) The Greenhouse Effect

2. Which of the following is not a primary Greenhouse Gas?

- A) Methane
- B) Water Vapour
- C) Nitrogen
- D) Carbon Dioxide

3. What does an increase of Greenhouse Gases directly cause?

- A) Less energy from the sun entering the atmosphere
- B) A warmer atmosphere
- C) A cooler ocean
- D) More earthquakes

4. Which of the following is an indirect impact of Climate Change?

- A) Increase spread of diseases
- B) Change in crop production
- C) Increased flooding and damage to infrastructure
- D) All of the above

1.6 Test Yourself - Multiple Choice Questionnaire

5. Which of the following summarises South Africa's commitment to respond to global climate change as agreed to through the Paris Agreement?
- A) Nationally Determined Contributions
 - B) National Development Plan
 - C) National Climate Change Response White Paper
 - D) Long Term Mitigation Scenarios
6. The Long Term Adaptation Scenarios (LTAS) focuses on which of the following issues?
- A) Reducing Greenhouse Gasses
 - B) South Africa's International climate change commitments
 - C) Responding to the impacts of climate change in different sectors in South Africa
 - D) The Department of Rural Development and Land Reform's communications plan
7. Which of the following is not a Nationally Determined Contribution for South Africa?
- A) Develop a National Adaptation Plan.
 - B) Take climate into account in national development, sub-national and sector policy frameworks
 - C) Build the necessary institutional capacity
 - D) Develop human settlements in wetlands and floodplains
8. Which of the following is a founding principle of the Climate Change Adaptation Strategy for the Rural Human Settlements Sector?
- A) Climate Change vulnerability must be understood primarily at the national level
 - B) Adaptation planning must acknowledge climate justice
 - C) Adaptation planning must be shaped by national government
 - D) Adaptation must build on national capabilities
9. How many strategic objectives does the Climate Change Adaptation Strategy for the Rural Human Settlements Sector have?
- A) 7
 - B) 8
 - C) 6
 - D) 5

1.6 Test Yourself - Multiple Choice Questionnaire

10. Which of the following statements is true?

- A) Climate Change will only become important in the future
- B) There is no need to respond to climate change in rural areas in South Africa
- C) Protecting our natural environment can help us respond to the impacts of climate change
- D) Disaster management systems are not important in responding to climate change

Correct Answers:
1. D
2. C
3. B
4. D
5. A
6. C
7. D
8. B
9. A
10. C

What Types of Climate Change Information is Available?

There is a wide range of climate change related information available in the public domain. This information ranges from complex global climate modeling data sets to information on locally specific climate change adaptation projects. With this module you will be introduced to some of the key climate change knowledge portals available on the internet and some guidelines on how to navigate these websites.

It is worth noting that climate change information is generally available at different spatial scales. What this means is that some information is only available and applicable at a global or country scale, while other information is only applicable to a small area such as a village or floodplain. As a rule of thumb, the modeling of climate change is at a global or national level. There is increasing emphasis on “sub-national” modeling, but this level of research is still at its early stages. The impacts of climate change on temperatures and rainfall will therefore mostly be for large areas.

On the other hand, information on how to respond or adapt to climate change is generally very specific to a particular place. For example you might find that in one village there is a need to focus on bush encroachment, while in another neighbouring village the priority may be focussing on increased water borne diseases linked to climate change.

There are four lessons included in this module. The first lesson introduces you to the University of Cape Town’s Climate Information Portal. This website can help you understand the different types of global climate change models and how you can use this information to better understand the impacts of climate change in your area. The second lesson introduces you to the Let’s Respond Toolkit Website. This website resource can help you plan for climate change within your local community. The third lesson introduces you to the South African Weather Services Website. This website is particularly useful for weather related disaster management information. The final lesson introduces you to the South African Risk and Vulnerability Atlas. This website is a central spatial information portal the includes a wide range of climate related data for South Africa aimed at improving decision-making.

With Climate Change we Think Globally, Act Locally.

2.1 Climate Change Modelling Resources

The aim of this lesson is to introduce you to two useful climate change knowledge portals that can help you understand how to use global and national climate change data information at a local level.

This lesson includes an overview of two leading climate science information portals available for South African planners and decision makers. These sites provide information on climate history and projected climate change, looking at variables such as temperature and precipitation.

The following websites are included in the lesson:



The UCT Climate Information Portal CIP Tool

<http://cip.csag.uct.ac.za>



The Worldbank Climate Change Knowledge Portal

<http://climateknowledgeportal.worldbank.org>



Lesson Video

www.climatechangetraining.org/lesson/theme2-lesson1



2.2 Let's Respond Toolkit Website Introduction

The aim of this lesson is to introduce you to Let's Respond Toolkit Website which can help you understand how climate change can impact on your local communities and how to respond to these impacts.

This lesson includes summary of the main components of the website which are:

1. The process for conducting a climate change vulnerability assessment
2. How to develop a climate change response plan
3. How to engage with stakeholders regarding climate change
4. How to find climate change related information for particular municipalities and areas
5. How to find sector specific information relevant to climate change.



Let's Respond Toolkit

www.letsrespondtoolkit.org



Lesson Video

www.climatechangetraining.org/lesson/theme2-lesson2



2.3 South African Weather Services Introduction

The aim of this lesson is to introduce you to the South African Weather Services (SAWS) website. The site is run by the South African Weather Services, an agency of the Department of Environmental Affairs and the official authority for weather and climate forecasting in South Africa.

The website provides user-friendly weather and climate-related information with the aim of mitigating weather-related disasters for the South African Public.

The lesson also takes you through some of the useful maps and resources which you can use to view weather and climate information in your area. This information can be useful when assessing risks and vulnerabilities in your planning processes in order to minimise risks from climate change.



South African Weather Services

www.weathersa.co.za



Lesson Video

www.climatechangetraining.org/lesson/theme2-lesson3



2.4 South Africa Risk and Vulnerability Atlas Introduction

The aim of this lesson is to introduce you to the South African Risk and Vulnerability Atlas - Spatial Portal (SARVA).

The SARVA is an initiative of the Department of Science and Technology and has a specific focus on providing information to decision makers regarding risk, vulnerability and impacts of global climate change. The SARVA includes access to other data platforms such as the South African Earth Observation Network (SAEON) and South Africa Earth Observation System (SAEOS) as well as basic Atlas data sets.

The lesson take you through available resources on the website including live web mapping, static maps, reports, case studies and integrated analysis. These resources can assist in an increased understanding of global change impacts, focusing on the country, regions and localities of South Africa.



SARVA Spatial Portal

<http://sarva.dirisa.org>



Lesson Video

www.climatechangetraining.org/lesson/theme2-lesson4



2.5 Test Yourself - Activity



Now that you have completed the lessons for this module, you can test your understanding of the key concepts from this module through the activity below. The purpose of this activity is for you to become familiar with the climate change resources outlined in this module and to find relevant climate change information for your area. The activity should take about 30 minutes to complete.

Using the <http://cip.csag.uct.ac.za> website:

- Task 1:** Find and download *Historical Total Monthly Rainfall* for a town closest to where you live
- Task 2:** Generate and download a graph of *Historical Monthly Climate Averages* for your area
- Task 3:** Generate and Download a graph of Future climate projections for *Total Monthly Rainfall* using *RCP 4.5* for the period 2040-2060 for you area

Using the www.letsrespondtoolkit.org website:

- Task 4:** Find and download a climate change response plan template for the province you live in
- Task 5:** Find out which biome your municipality is currently in and how this biome will change in a Low risk climate change scenario, Medium risk climate change scenario and High risk climate change scenario.

Solutions on the following page.

2.5 Test Yourself - Activity

SOLUTION

Task 1:

1. Navigate to <http://cip.csag.uct.ac.za>
2. Select “Datasets” and then “African merged stations CMIP5”
3. Locate the town closest to where you live and click on the blue drop icon
4. Select “Explore Historical climate records” from the pop-up menu
5. Select “Download this data as a CSV file” above the graph, then rename the file and save it

Task 2:

1. Navigate to <http://cip.csag.uct.ac.za>
2. Select “Datasets” and then “African merged stations CMIP5”
3. Locate the town closest to where you live and click on the blue drop icon
4. Select “Explore Historical average seasonality” from the pop-up menu
5. Click on the downward pointing green arrow in the top right corner of the graph
6. Select “Download JPEG image” from the pop-up menu, then rename the file and save it

Task 3:

1. Navigate to <http://cip.csag.uct.ac.za>
2. Select “Datasets” and then “African merged stations CMIP5”
3. Locate the town closest to where you live and click on the blue drop icon
4. Select “Explore Future climate projections” from the pop-up menu
5. Click on the dropdown menu and select “Total Monthly Rainfall using RCP 4.5”
6. Click on the downward pointing green arrow in the top right corner of the graph
7. Select “Download JPEG image” from the pop-up menu, then rename the file and save it

2.5 Test Yourself - Activity

SOLUTION

Task 4:

1. Navigate to www.letsrespondtoolkit.org
2. Select “3. Climate Change Response Plans” from the menu on the left
3. Scroll down the webpage until the section labelled “ Climate Change Response Plan Templates” is visible
4. Look for the name of your province and selected the “Download” option below your province and save the document

Task 5:

1. Navigate to www.letsrespondtoolkit.org
2. Select “6. Sectors” from the menu on the left
3. Select “Biodiversity and Environment” from the available options
4. Scroll down the webpage until the section labelled “ References Material” is visible
5. Select “1. Biomes” from the list of “References Materials”
6. Scroll down the webpage until the map below “Current biome delineations” is visible
7. Click Using the “+” sign on the left of the map, zoom in to your municipality (you can click on the map, and while holding the button down move your mouse to move around the map)
8. Click on the location of your municipality and a pop-up box will appear with the name of the biome in your municipality
9. To see how the biome will change, repeat steps 6 to 8 for “Low risk scenarios - biome delineations”, “Medium risk scenarios - biome delineations” and “High risk scenarios - biome delineations”

How do You Conduct a Climate Change Vulnerability Assessment?

Understanding how to conduct a climate change vulnerability assessment is a crucial step in preparing for climate change. With this module you will be introduced to the different steps that are involved in conducting a climate change vulnerability assessment for your area.

A vulnerability assessment helps you to identify the most important climate change impacts in your area. It is therefore a crucial precursor to the development of a climate change strategy as you cannot develop appropriate responses without knowing first what the most critical climate change impacts are.

There are 6 lessons included in this module. The first lesson introduces you to the vulnerability assessment process, with an overview of the different steps required. The second lesson focuses on the first step of the vulnerability assessment process, identifying climate change indicators. The third lesson focuses on the second step of the vulnerability assessment process which involves assessing your exposure to the indicator by asking the question “*will this take place in my area?*” The fourth lesson focuses on the third step which involves assessing your sensitivity to the indicator by asking “*if this does take place in my area, how important will it be?*”. The fifth lesson introduces you to the fourth step of the process, assessing your adaptive capacity. This involves asking yourself “*are there resources in place to respond to these impacts?*” And finally, the last lesson of this module focuses on a prioritisation exercise to identify the most important indicators that responses can be developed for at a later stage.

A vulnerability assessment helps you to identify the most important climate change impacts that are relevant in your area

3.1 Climate Change Vulnerability Assessment Methodology

The aim of this lesson is to introduce you to the methodology of conducting a climate change vulnerability assessment using an international used methodology. A climate change vulnerability assessment is the process used to determine which climate change impacts are most important for your area.

This lesson includes an overview of the different steps that are required in order to conduct a climate change vulnerability assessment for your area.

The steps include:

- Step 1:** Identifying climate change indicators
- Step 2:** Assessing the Exposure to the indicators
- Step 3:** Assessing the Sensitivity to the indicators
- Step 4:** Determining the Adaptive Capacity to the potential impacts from climate change



Lesson Video

www.climatechangetraining.org/lesson/theme3-lesson1



3.2 Developing Climate Change Indicators

The aim of this lesson is to introduce you to the process of identifying climate change indicators as part of the first step of the vulnerability assessment process. This is an important step as it will help you to start thinking about the potential climate change impacts in your area.

The question you can ask when thinking about Climate Change Indicators is:

“What are all the potential impacts from Climate Change in South Africa?”

The lesson includes guidance on how to go about identifying climate change indicators. It also provides information on a set of indicators that have been developed through the Local Government Climate Change Response Programme that you can use as a basis for your Vulnerability Assessment.



Lesson Video

www.climatechangetraining.org/lesson/theme3-lesson2



3.3 Assessing Exposure

The aim of this lesson is to introduce you to the process of assessing exposure as the second step of the vulnerability assessment process. This step helps you to determine whether the indicators that you identified in Step 1 of the Vulnerability Assessment are applicable for your area.

The indicators identified in Step 1 through the Local Government Climate Change Response Programme were relevant for the whole of South Africa. Assessing whether you are exposed to each of these indicators is important in ensuring that you do not develop responses to indicators that are not applicable to your area.

The question you can ask when thinking about Climate Change Exposure is:

"Will the impact take place in my area?"

The lesson also introduces you to the excel based Vulnerability Assessment Tool that can be downloaded from the Climate Change Adaptation Training Program website. You can use this tool to document the results from each step of the vulnerability assessment. The lesson also highlights the different resources available that can help you answer the exposure questions.



Lesson Video

www.climatechangetraining.org/lesson/theme3-lesson3



3.4 Assessing Sensitivity

The aim of this lesson is to introduce you to the process of assessing sensitivity as part of the third step in the vulnerability assessment process. This step helps you to determine which of the indicators that you identified in Step 2 are the most important for your area. You cannot respond to all the indicators you are exposed to, so the Sensitivity Step helps you to narrow down this list to those indicators that are most important.

The question you can ask when thinking about Climate Change Sensitivity is:

"If it takes place, how important is the impact?"

The lesson shows you how to go about answering the sensitivity question, highlighting relevant resources from the Let's Respond Toolkit website and demonstrating how to complete the excel based Vulnerability Assessment Tool.



Lesson Video

www.climatechangetraining.org/lesson/theme3-lesson4



3.5 Assessing Adaptive Capacity

The aim of this lesson is to introduce you to the process of assessing adaptive capacity as part of the fourth step in the vulnerability assessment process. The first three steps of the Vulnerability Assessment result in a refined list of potential climate change impacts for your area. In the fourth step you are now going to consider whether capacity and systems are currently in place to respond to these potential impacts.

The question you can ask when thinking about Climate Change Adaptive Capacity is:

“Do I have systems in place to respond to the impact?”

When assessing your adaptive capacity you need to consider whether you have capacity in the following areas:

- **Research**
- **Policy**
- **Institutional Support**
- **Finance**

Just like the previous two lessons, you will be shown how to complete the excel based Vulnerability Assessment Tool for this step in the video presentation.



Lesson Video

www.climatechangetraining.org/lesson/theme3-lesson5



3.6 Identifying Priority Indicators

The previous lessons showed you how to identify the climate change impacts that you are most vulnerable to in your area. The aim of this lesson is to introduce you to the process of identifying priority indicators as the final step of the vulnerability assessment process. These are the most critical areas that require a response in order for you to minimise your risk and vulnerability to climate change.

The lesson goes through the steps needed to prioritise your indicators so that your efforts are focused on the most critical areas.



Lesson Video

www.climatechangetraining.org/lesson/theme3-lesson6



3.7 Do it Yourself - Activity



Now that you have completed the lessons for this module, you can test your understanding of the key concepts from this module through this Activity. The activity is a set of tasks based on the key ideas from the lessons and should take about 30 minutes to complete. There is no set answer for the activity, the requirement though is that you successfully complete the tasks listed in the activity.

1. Open the <http://climatechangetraining.org> website and navigate to this learning module
2. Download the EXCEL worksheet “Vulnerability Assessment Tool”
3. Begin with the “Exposure Answer” Column and answer Yes or No to all the listed indicators for are exposed to in your particular area. Remember to make comments in the right hand “Comments” column on why you are answering Yes or No
4. Move on to the “Sensitivity Answer” Column and answer High, Medium or Low to all the indicators you answered Yes to for exposure. Also remember to make notes in the “Comments” column.
5. Then move on to the “Adaptive Capacity Answer” Column and answer High, Medium or Low to all the indicators you answered High to for sensitivity. Also remember to make notes in the “Comments” column.
6. Finally use the second tab “VA Summary” to filter the indicators you answered:
 - A. Yes for exposure
 - B. High for sensitivity
 - C. Low fo adaptive capacity

How do You Identify Climate Change Adaptation Options?

There are a range of possible ways to respond to climate change impacts. With this module you will be introduced to the process of developing climate change responses and consolidating these responses into a climate change response plan.

Once you have identified the most important areas of climate change vulnerability through the vulnerability assessment process you need to identify specific responses that can help to reduce vulnerability and improve resilience. The responses you develop should be specific to the climate change impact and should be implementable.

The responses are then included as projects in your climate change response plan which outlines a strategy for responding to climate change. This plan can then be used when motivating for funding for the climate change projects that you identified.

There are two lessons included in this module. The first lesson introduces you to the range of different climate change response options looking at National level Strategy Responses and more specifically how to develop local climate change responses. The second lesson focuses on the process of developing a climate change response plan and highlights the different sections that are required.

A climate change response plan serves as your strategy to deal with climate change.

4.1 Types of Climate Change Responses

The aim of this lesson is to introduce you to the range of different climate change response options and the process of developing climate change response options.

This lesson provides you with examples of adaptation responses found in different national strategies so that you can start to think of similar responses that are applicable for your context. The lesson also looks at how you can apply the SMART principles to develop adaptation options that are achievable.

These principles are:

1. **Specific** – target a specific area for improvement.
2. **Measurable** – quantify or at least suggest an indicator of progress.
3. **Assignable** – specify who will do it.
4. **Realistic** – state what results can realistically be achieved, given available resources.
5. **Time-related** – specify when the result(s) can be achieved.



Lesson Video

www.climatechangetraining.org/lesson/theme4-lesson1



4.2 Developing a Climate Change Response Plan

The aim of this lesson is to introduce you to the process of developing a climate change response plan. The lesson introduces you to a generic structure you can use for a climate change response plan and shows how you can use the results from your vulnerability assessment to develop climate change adaptation responses.

A downloadable word template has been developed as a starting point that you can use when developing your response plan. The lesson includes step by step guidance on how to use this template.



Lesson Video

www.climatechangetraining.org/lesson/theme4-lesson2



4.3 Do it Yourself - Activity



Now that you have completed the lessons for this module, you can test your understanding of the key concepts from this module through the activity below. The activity is a set of tasks based on the key ideas from the lessons and should take about 30 minutes to complete. There is no set answer for the activity, the requirement though is that you successfully complete the tasks listed in the activity.

1. Open the <http://climatechangetraining.org> website and navigate to this learning module
2. Download the provincial response plan template where your particular area is located.
3. Review the introduction and methodology chapters of the template to make sure they are appropriate to your process of developing a climate change response plan
4. Review the provincial background section to make sure it includes the appropriate information for your particular province
5. Delete the District Background information that is not appropriate for you
6. Paste in your results from the Climate Change Vulnerability Exercise (See previous module)
7. Revise the responses chapter to match the responses you have identified as the most appropriate responses
8. Summarise the plan in the executive summary by including your priority indicators and the adaptation responses to match these indicators

How do You Develop a Monitoring and Evaluation Framework?

There are many different ways in which responding to climate change can be monitored. With this module you will be introduced to some of the key climate change monitoring and evaluation concepts at a national level and how do you go about developing your own climate change monitoring framework.

In principle, it is ideal to integrate your climate change monitoring process with other performance monitoring systems such as municipal Service Delivery and Budget Implementation Plan (SDBIP). However you should also make sure you climate change monitoring system integrates with the national Climate Change Monitoring and Evaluation (M&E) systems so that there is alignment with other spheres of government.

There are 2 lessons included in this module. The first lesson introduces you to national climate Change Change Monitoring and Evaluation (M&E) system and how this system links to adaptation actions taking place at a local level. The second lesson focuses on the process of developing a climate change monitoring and evaluation framework and highlights the different sections that are required in the framework.

You can't manage what you can't measure

5.1 Introduction to Monitoring and Evaluation

The aim of this lesson is to introduce you to the concept of a monitoring and evaluation framework and to explain monitoring and evaluation systems that have been used nationally for climate change.

A comprehensive Climate Change Monitoring and Evaluation (M&E) systems has been developed by the South African Department of Environmental Affairs. This M&E System includes the overall framework for climate change monitoring in the country but also specifically Desired Adaptation Outcomes for Monitoring and Evaluation Climate Change Resilience. The lesson summarised these key M&E concepts and discussed how you can implement them at a local level.



Lesson Video

www.climatechangetraining.org/lesson/theme5-lesson1



5.2 Developing a Climate Change M&E Framework

The aim of this lesson is to provide you with an overview of the process you should follow to develop a monitoring and evaluation framework for your climate change response plan. The lesson outlines the different sections of a M&E Framework that are required and shows you how to integrate these elements into other performance management systems

A downloadable Excel template has been developed as a starting point that you can use when developing your M&E Framework.



Lesson Video

www.climatechangetraining.org/lesson/theme5-lesson2



5.3 Do it Yourself - Activity



Now that you have completed the lessons for this module, you can test your understanding of the key concepts from this module through this Activity. The activity is a set of tasks based on the key ideas from the lessons and should take about 30 minutes to complete. There is no set answer for the activity, the requirement though is that you successfully complete the tasks listed in the activity.

1. Open the <http://climatechangetraining.org> website and navigate to this learning module
2. Download the monitoring and evaluation framework template
3. List your Goals, Sub-projects and Activities from your Climate Change Response Plan in the “Implementation Monitoring” tab
4. Note that the Goals in the M&E Framework should match your high level responses in your climate change response plan.
5. Assign Deliverables, Responsibilities and Time frames to each activity.
6. Navigate to the next tab “Success Monitoring”
7. List your Indicators of Success for each Goal
8. Assign a Baseline, Responsibilities and Time frames to each Goal

How do You Integrate Climate Change into Planning Processes?

There are many different types of planning requirements in South Africa. The Local Government Municipal Systems Act of 2000 (MSA) and the Spatial Planning and Land Use Management Act of 2013 (SPLUMA) requires national, provincial, and municipal spheres of government to develop and implement a number plans including;

1. **Provincial and Regional Spatial Development Frameworks,**
2. **Municipal Spatial Development Frameworks and Plan,**
3. **Municipal Integrated Development Plans**
4. **Precinct Plans,**
5. **Rural Development Plans and**
6. **Land Reform Plans.**

With this module you will learn how to integrate climate change into these plans.

The various plans required by the MSA and SPLUMA are used to define the development pathway for a particular community and the steps that need to be put in place to achieve that pathway. The impacts of climate change should be reflected in the these plans to ensure that climate change does not impact on the ability of a community to develop into the future.

This module builds on the work you have done in previous modules when you completed a Climate Change Vulnerability Assessment and drafted a Climate Change Response Plan. The module will take you through the process of considering which climate change responses listed in the response plan should be included in which types of development plans.

There are three lessons included in this module. The first lesson explains the relationship between planning and climate change. The second lesson introduces you to the process of integrating climate change into Sector Plans, Spatial Development Frameworks, Rural Development Plans and Land Reform Plans. The final lesson overviews integrating climate change into the Integrated Development Plan.

Climate Change must be considered in plans to ensure its negative impacts are appropriately managed.

6.1 The Relationship Between Planning and Climate Change

The aim of this lesson is to explain the relationship between climate change and planning.

The lesson includes a brief overview of the Spatial Planning and Land Use Management Act (SPLUMA) which provides the legislative framework for a variety of planning tools that are used in South Africa. In particular the five key principles of SPLUMA are examined in terms of the relationship to climate change.

The principles are:

1. **Spatial Justice**
2. **Spatial Sustainability**
3. **Efficiency**
4. **Spatial Resilience**
5. **Good Administration**

The lesson also briefly looks at the current Guidelines for the Development of Provincial, Regional and Municipal Spatial Development Frameworks (SDFs) and Precinct Plans and how climate change is also included in the processes to develop these SDFs.



Lesson Video

www.climatechangetraining.org/lesson/theme6-lesson1



6.2 Integrating Climate Change into the Planning Processes

The aim of this lesson is to explain the process of integrating climate change into planning processes. In particular the lesson considers how climate change can be integrated into:

1. **Sector Development Plans,**
2. **Spatial Development Frameworks and Plans,**
3. **Rural Development Plans and**
4. **Land Reform Plans.**

The lesson outlines the process of allocating key climate change responses into different types of plans. The process from Climate Change vulnerability Assessment to Response Plan to Spatial Development framework or Rural Development Plan then onto the Integrated Development Plan is explained.



Lesson Video

www.climatechangetraining.org/lesson/theme6-lesson2



6.3 Integrating Climate Change Into the IDP

The aim of this lesson is to introduce you to the process of integrating climate change into the Integrated Development Plan of the municipality within which your community is located.

The lesson will introduce you to a “*climate change credibility checklist*” you can use to review the current IDP to determine if it is climate credible. The lesson then overviews how you can integrate climate change into the IDP in a step by step process once you have identified areas of missing content using the checklist. The lesson also briefly discusses how you can ensure your climate change responses are included in the municipal Service Delivery and Budget Implementation Plan (SDBIP) and Medium Term Expenditure Framework (MTEF) budget allocations.



Lesson Video

www.climatechangetraining.org/lesson/theme6-lesson3



6.4 Test Yourself - Multiple Choice Questionnaire

Now that you have completed the lessons for this module, you can test your understanding of the key concepts from this module with this short quiz. The quiz is a multiple choice questionnaire and should take about 10 minutes to complete. The correct answers are provided at the bottom of the page.



Online version of MCQ also available

www.climatechangetraining.org/lesson/theme6-mcq

.....

1. Which is not a Spatial Planning and Land Use Management Act (SPLUMA) requirement?

- A) Municipal Spatial Development Plan
- B) Precinct Plan
- C) Environmental Management Plan
- D) Provincial and Regional Spatial Development Framework

2. Which of the following is not a key principle of SPLUMA?

- A) Spatial Sustainability
- B) Spatial Justice
- C) Efficiency
- D) Weak Administration

3. In the Guidelines for the Development of Provincial, Regional and Municipal Spatial Development Frameworks and Precinct Plans (2014), which theme should climate change be consider in, at the very least?

- A) Socio-economic
- B) Legislative
- C) Built environment
- D) Biophysical

6.4 Test Yourself - Multiple Choice Questionnaire

4. Which is the suggested order for integrating climate change into the planning processes?

- A) Vulnerability Assessment, Climate Change Response Plan, Spatial plans, IDP
- B) IDP, Spatial plans, Climate Change Response Plan, Vulnerability Assessment
- C) Vulnerability Assessment, Spatial plans, Climate Change Response Plan, IDP
- D) IDP, Vulnerability Assessment, Spatial plans, Climate Change Response Plan

5. What is the purpose of the IDP checklist?

- A) To include projects in SDBIP and MTEF budget allocations
 - B) To set up a monitoring and evaluation system
 - C) To communicate the municipal response to community
 - D) To ensure that the response to climate change in the IDP is credible
-

5. D
4. A
3. D
2. D
1. C

Correct Answers: