

Lesson Plan: Climate Change Impacts in South Africa

As a **High School** or **Undergraduate Earth Sciences, Environmental Sciences, or Geography** teacher, you can use this lesson plan to teach your students about climate change and global warming and specifically the impacts of climate change in South Africa.

This lesson plan provides an introduction to climate change, causes and impacts of climate change globally, **climate change risk profile for South Africa** that includes climate impacts on major sectors of the country such as agriculture, water resources, human health, ecosystems, energy, infrastructure, and disasters. This lesson plan also includes the current and future health risks in South Africa due to climate change.

Thus, the use of this lesson plan allows you to teach Climate Science and Climate Change in your **Earth Sciences, Environmental Sciences, and Geography** classrooms.

Use this lesson plan to help your students find answers to:

- What is climate change? What are the causes of global warming?
- What are the global impacts of climate change?
- What are the impacts of climate change in South Africa?
- How will increased temperatures impact South Africa?
- How will changing weather patterns including changes in precipitation, storms, droughts impact South Africa in the future?
- What are the current and future health risks due to climate change?
- What risks does climate change pose to human health in South Africa with respect to malaria, dengue fever, and undernutrition?

About the Lesson Plan

Grade Level: High School, Undergraduate

Discipline: Earth Sciences, Environmental Sciences, Geography

Topic(s) in Discipline: Climate Change, Global Warming, Climate Change Risk Profile of South Africa, Health Impacts of Climate Change

Climate Topic: Introduction to Climate Change, Climate Variability Record, Climate and Health

Location: Africa, South Africa

Access: Online

Language(s): English

Approximate Time Required: 60-75 min

1 Contents

1. Reading (15 min) and Video Micro-Lectures (5-15 m)

A reading from the NASA Global Climate Change website that includes contains information about what is the scientific evidence for climate change, causes and impacts of climate change.

This can be accessed at:

<https://climate.nasa.gov/causes/>

Optional: A set of 7 of short video micro-lectures (2-5 minutes in length) on climate change and global warming developed by the National Research Council, The National Academies of Sciences, Engineering, and Medicine.

This can be accessed at:

https://www.youtube.com/playlist?annotation_id=annotation_709415&feature=iv&list=PL38EB9C0BC54A9EE2&src_vid=qEPVyrSWfQE

2. Readings: Climate Change in South Africa (30 min)

A set of two readings by Climatelinks: A Global Knowledge Portal for Climate and Development Practitioners, USAID, to explain climate change in South Africa.

This can be accessed at:

<https://www.climatelinks.org/sites/default/files/asset/document/2016%20CRM%20Fact%20Sheet%20-%20Southern%20Africa.pdf>
https://www.climatelinks.org/sites/default/files/asset/document/South%20Africa%20Climate%20Info%20Fact%20Sheet_FINAL.pdf

3. Reading (15 min): Climate Change and Human Health Impacts in South Africa

A reading by the World Health Organization on how climate change can impact human health in South Africa.

This can be accessed at:

<https://apps.who.int/iris/bitstream/handle/10665/246153/WHO-FWC-PHE-EPE-15.44-eng.pdf?sequence=1>

4. Suggested questions/assignments for learning evaluation

- What is climate change? What are the causes of global warming?
- What are the global impacts of climate change?
- What are the impacts of climate change in South Africa?
- How will increased temperatures impact South Africa?
- How will changing weather patterns including changes in precipitation, storms, droughts impact South Africa in the future?
- What are the current and future health risks due to climate change?
- What risks does climate change pose to human health in South Africa with respect to malaria, dengue fever, and undernutrition?

2 Step-by-step User Guide

Here is a step-by-step guide to using this lesson plan in the classroom/laboratory. We have suggested these steps as a possible plan of action. You may customize the lesson plan according to your preferences and requirements.

1. Introduction to the Climate Change

Introduce to your students what is climate change and global warming using a reading from the NASA Global Climate Change website. This resource contains information about what is the scientific evidence for climate change, causes and impacts of climate change.

This resource can be accessed at:

<https://climate.nasa.gov/causes/>

Optional: You may choose to provide your students with further information about global climate change using a set of video micro-lectures. This set of 7 of short video micro-lectures (2-5 minutes in length) have been developed by the National Research Council, The National Academies of Sciences, Engineering, and Medicine.

They include:

- What is Climate? Climate Change, Lines of Evidence Chapter 1
- Is Earth Warming? Climate Change, Lines of Evidence Chapter 2
- Greenhouse Gases. Climate Change, Lines of Evidence Chapter 3
- Increased Emissions. Climate Change, Lines of Evidence Chapter 4
- How Much Warming? Climate Change, Lines of Evidence Chapter 5
- Solar Influence. Climate Change, Lines of Evidence Chapter 6
- Natural Cycles. Climate Change, Lines of Evidence Chapter 7

This video playlist can be accessed at:

https://www.youtube.com/playlist?annotation_id=annotation_709415&feature=iv&list=PL38EB9C0BC54A9EE2&src_vid=qEPVyrSWfQE

2. Readings: Climate Change in South Africa

Use a set of two readings by Climatelinks: A Global Knowledge Portal for Climate and Development Practitioners, USAID, to explain climate change in South Africa to your students.

- A. First, use the factsheet Climate Change Risk Profile: Southern Africa which is a factsheet on climate change risk profiles for the southern part of the African continent. This factsheet (9 pages) includes the climate summary, historical and future climate, impacts on major sectors such as agriculture, water resources, human health, ecosystems, energy, infrastructure, and disasters, for Southern Africa including the country of South Africa.

This resource can be accessed at:

<https://www.climatelinks.org/sites/default/files/asset/document/2016%20CRM%20Fact%20Sheet%20-%20Southern%20Africa.pdf>

- B. Next, use the factsheet Climate Change Information Factsheet: South Africa to emphasize the climate impacts and vulnerabilities for South Africa. This factsheet (4 pages) includes current and future temperature projections, precipitation and flooding, drought, sea level rise and storm surge, and winds and storms.

This resource can be accessed at:

https://www.climatelinks.org/sites/default/files/asset/document/South%20Africa%20Climate%20Info%20Fact%20Sheet_FINAL.pdf

3. Reading: Climate Change and Human Health Impacts in South Africa

Use a reading by the World Health Organization (WHO) to stress to your students how climate change can impact human health in South Africa. This factsheet (8 pages) titled Climate Change and Health: Country Profile: South Africa includes information on climate hazard projections for South Africa and current and future health risks of climate change in South Africa. You could use this factsheet to help your students better understand what risks does climate change pose to human health in South Africa with respect to malaria, dengue fever, and undernutrition.

This resource can be accessed at:

<https://apps.who.int/iris/bitstream/handle/10665/246153/WHO-FWC-PHE-EPE-15.44-eng.pdf?sequence=1>

4. Suggested questions/assignments for learning evaluation:

Use the tools and the concepts learned so far to discuss and determine answers to the following questions:

- What is climate change? What are the causes of global warming?
- What are the global impacts of climate change?
- What are the impacts of climate change in South Africa?
- How will increased temperatures impact South Africa?
- How will changing weather patterns including changes in precipitation, storms, droughts impact South Africa in the future?
- What are the current and future health risks due to climate change?
- What risks does climate change pose to human health in South Africa with respect to malaria, dengue fever, and undernutrition?

3 Learning Outcomes

The tools in this lesson plan will enable students to:

- learn about climate change and global warming
- understand the impacts of climate change in South Africa
- discuss how changing weather patterns due to climate change could affect South Africa's future
- describe the current and future health risks in South Africa due to climate change

4 Additional Resources

If you or your students would like to explore the topic further, these additional resources will be useful.

1. Webpage; 'South Africa' on Climatelinks

Climate Change in South Africa specific factsheets, case studies compiled by Climatelinks, USAID.

This can be accessed at:

<https://www.climatelinks.org/countries/south-africa#climate-info>

2. Reading; 'South Africa's Intended Nationally Determined Contribution (INDC)'

Document submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

This can be accessed at:

<https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/South%20Africa/1/South%20Africa.pdf>

3. Webpage; 'INDCs as communicated by Parties*' on UNFCCC

UNFCCC webpage for accessing the INDCs for various nations.

This can be accessed at:

<https://www4.unfccc.int/sites/submissions/indc/Submission%20Pages/submissions.aspx>

4. Teaching Modules; 'Climate Change and Human Health Lesson Plans'

Educational material by the National Institute of Environmental Health Sciences (NIEHS).

This can be accessed at:

<https://www.niehs.nih.gov/health/scied/teachers/cchh/index.cfm>

5 Credits/Copyrights

All the teaching tools in our collated list are owned by the corresponding creators/authors/organizations as listed on their websites. Please view the individual copyright and ownership details for each tool by following the individual links provided.

We have selected and analyzed the tools that align with the overall objective of our project and have provided the corresponding links. We do not claim ownership of or responsibility/liability for any of the listed tools.

1. Reading; 'The Causes of Climate Change'

By [NASA's Global Climate Change website](#).

2. A set of videos; 'Climate Change: Lines of Evidence'

Presented by National Research Council, [The National Academies of Sciences, Engineering, and Medicine](#).

3. Readings; 'Climate Change Risk Profile- Southern Africa' and 'Climate Change Information Fact Sheet- South Africa'

By [Climatelinks](#): A Global Knowledge Portal for Climate and Development Practitioners, USAID.

4. Reading; 'Climate and Health Country Profile- 2015: South Africa'

By [World Health Organization \(WHO\)](#).

5. Additional Resources

[Climatelinks, USAID](#)

[UNFCCC](#)

[NIEHS](#)