

Lesson Plan: Climate Change Impacts in Madagascar

As a **High School** or introductory **Undergraduate** teacher, you can use this lesson plan to **introduce climate change and its impacts in Madagascar**.

This lesson plan provides an introduction to climate change, causes and impacts of climate change globally, climate change risk profile for Madagascar that includes climate impacts on major sectors of the country such as agriculture, water resources, human health, coastal ecosystems and fisheries. This lesson plan also mentions health risks arising from uncertain epidemics due to changing climate.

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

Use this Lesson Plan to help the students to understand and find answers to:

1. What is Climate Change? What are its causes?
2. What are the impacts of climate change on Madagascar?
3. What are the impacts of climate change on agriculture, water resources, human health, coastal ecosystems and fisheries in Madagascar?
4. What mitigation practices can be adopted to control the impacts of climate change in Madagascar?

About the Lesson Plan

Grade Level	High School, Undergraduate
Climate Topic	Climate Change Impacts in Your Country
Location	Africa, Madagascar
Access	Online
Language(s)	English
Approximate Time Required	60 mins

Contents

1.	Reading (15 min) and Video (5-15 min)	A reading from the NASA Global Climate Change website that includes information about what is the scientific evidence for climate change, causes, and impacts of climate change. This can be accessed here . Optional: A set of 7 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 here
2	Reading 1 (World Bank)	A reading by Climate Change Knowledge Portal of the World Bank that explains climate change and impacts in Madagascar. This can be accessed here .
3	Reading 2 (USAID)	This reading is the Climate Change Risk Profile fact sheet for Madagascar by Climatelinks: A Global Knowledge Portal for Climate and Development Practitioners USAID. This can be accessed here .
4	Reading 3 (WHO)	This report by the World Health Organization is a Climate and Health Country Profile for Madagascar. This can be accessed here .
5	Classroom/Laboratory Activity (15 min)	A classroom/laboratory activity based on a reading and video on Madagascar. This reading and video explains the causes and impacts of Madagascar on Madagascar and also states the possible solutions to counter the crisis. The reading can be accessed here. The video can be accessed here.

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	Introduce Climate Change through the readings and videos	<p>This reading titled, “The Causes of Climate Change” from the NASA Global Climate Change website, provides introductory information on climate change and global warming. It contains information on the scientific evidence of climate change, its causes and impacts.</p> <p>This can be accessed here.</p> <p>Optional: This set of 7 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. This can be used to provide additional information on climate change.</p> <p>They include:</p> <ol style="list-style-type: none"> 1. What is Climate? Climate Change, Lines of Evidence Chapter 1 2. Is Earth Warming? Climate Change, Lines of Evidence Chapter 2 3. Greenhouse Gasses. Climate Change, Lines of Evidence Chapter 3 4. Increased Emissions. Climate Change, Lines of Evidence Chapter 4 5. How Much Warming? Climate Change, Lines of Evidence Chapter 5 6. Solar Influence. Climate Change, Lines of Evidence Chapter 6 7. Natural Cycles. Climate Change, Lines of Evidence Chapter 7 <p>This video playlist can be accessed here.</p>
2	Discuss causes and impacts of Climate Change in Madagascar	<p>Use this interactive website by the Climate Change Knowledge Portal of the World Bank to have your students understand the impacts of Climate Change in Madagascar. This resource includes the following:</p> <ol style="list-style-type: none"> I. Climate Change Overview of Madagascar II. Country Summary III. Current Climatology: Climate Trends and Variability in Temperatures and Precipitation IV. Climate Projections V. Vulnerability of Madagascar to Climate Change <p>Each section contains relevant climate change information including data, projections, and visualizations. The data is visualized through interactive graphs and users can select different indices, model projections, timescales, and sectors to better understand the impacts of climate change in Madagascar.</p> <p>This can be accessed here.</p>
3	Further understanding on impacts of Climate Change on key sectors in Madagascar	<p>You may wish to have your students explore climate change and its risks in Madagascar in more detail through a resource from climatelinks: A Global Knowledge Portal for Climate and Development Practitioners of the USAID.</p> <p>This factsheet on climate risks in Madagascar includes information on:</p> <ol style="list-style-type: none"> I. Current and future climate impacts and vulnerabilities II. Climate impacts on key sectors of: <ol style="list-style-type: none"> 1) Agriculture 2) Water Resources 3) Human Health 4) Coastal Zones

		5) Fisheries This can be accessed here .
4	Discuss impacts of Climate Change on Health, in Madagascar	Use a reading by the World Health Organization (WHO) to stress to your students how climate change can impact human health in Madagascar. This factsheet (8 pages) titled Climate Change and Health: Country Profile: Madagascar includes information on: I. Current and Future Climate Hazards II. Current and Future Health Risks due to Climate Change III. Co-benefits to Health from Climate Change Mitigation This resource can be accessed here .
5	OPTIONAL Classroom/Laboratory Activity on the 'Lake Chad Crisis'	You may wish to conduct a {roleplay} activity in your classroom/laboratory to further engage your students in understanding the climate crisis in Madagascar; specifically on the impact of climate change on food security and water security in Madagascar.

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 Madagascar
- discuss how changing weather patterns due to climate change could affect Madagascar's future
- describe the current and future health risks and economic impacts on Madagascar due to climate change

Additional Resources

1.	Reading	Climate Risk Country Profile for Madagascar : This reading by Climate Change Knowledge Portal of World Bank explains in detail the Climatology, Climate related Natural Hazards & Impacts and Policies and Programs in Madagascar.
2	Reading	Madagascar Greenhouse Gas Emissions Fact Sheet : This fact sheet by Climatelinks: A Global Knowledge Portal for Climate and Development Practitioners of the USAID, gives information about change in GHG Emissions in West Africa (1990-2011), GHG Emissions Relative to GDP and Mitigation Targets.
3	Reading	Intended Nationally Determined Contribution, Madagascar : This report provided by UNFCCC is a submission of commitment towards mitigating Climate Change by Madagascar.
4	Reading	Climate Risks in Food for Peace Geographies- Madagascar : This factsheet by Climatelinks: A Global Knowledge Portal for Climate and Development Practitioners of the USAID, provides an overview of climate risks in Madagascar, including how climate change will potentially impact three key sectors in the country: agriculture and livelihoods; health and nutrition; and water, sanitation and hygiene.

5	Reading	Climate Risks in Urban and Urbanizing Geographies- Madagascar : This profile by Climatelinks: A Global Knowledge Portal for Climate and Development Practitioners of the USAID, provides information on climate risks and their impacts in Madagascar’s growing urban centers.
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Credits / Copyrights:

1	Reading “The Causes of Climate Change”	by the NASA 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	Reading “Climate Change Risk Profile for Madagascar”	By Climate Change Knowledge Portal of the World Bank
4	Reading “Climate Change Risk Profile for Madagascar”	By Climatelinks : A Global Knowledge Portal for Climate and Development Practitioners, USAID
5	Reading “Climate Change and Health: Country Profile: Madagascar”	By World Health Organization
6	Additional Resources	Climate Risk Country Profile for Madagascar Madagascar Greenhouse Gas Emissions Fact Sheet Intended Nationally Determined Contribution, Madagascar Climate Risks in Food for Peace Geographies- Madagascar Climate Risks in Urban and Urbanizing Geographies- Madagascar