Geography and the Environment

Pupil's Book

Standard 3



Tanzania Institute of Education

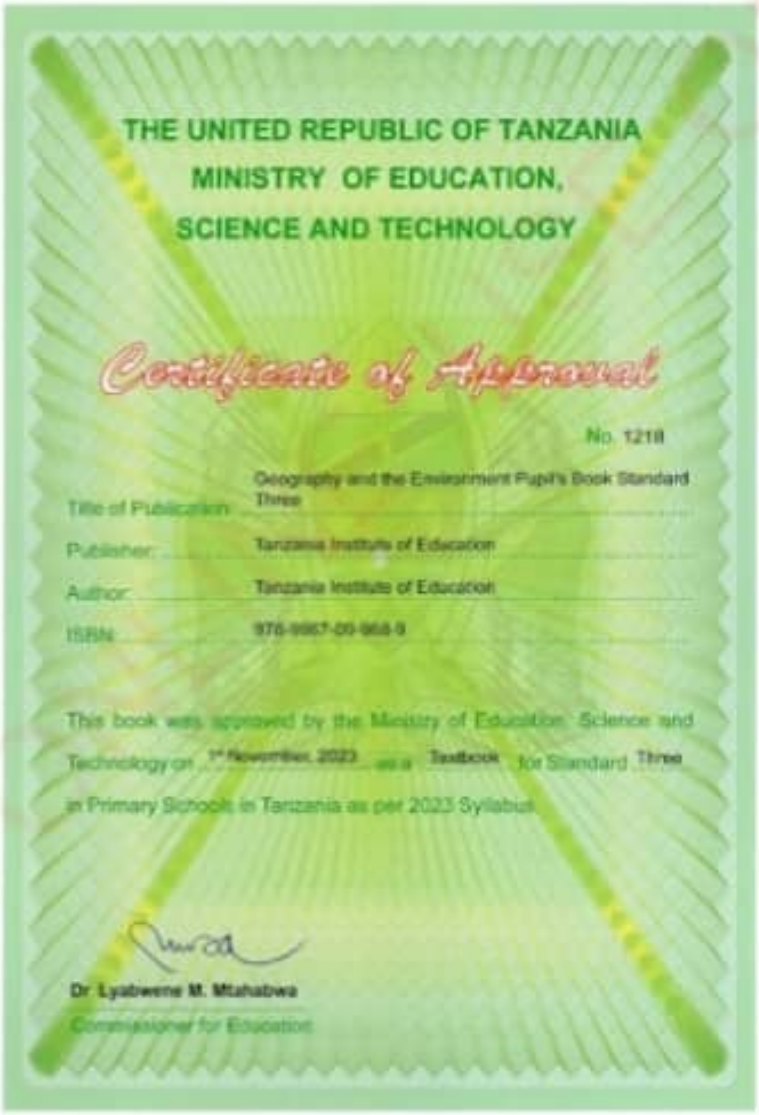
CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Geography and the Environment

Pupil's Book

Standard 3



THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION,
SCIENCE AND TECHNOLOGY

Certificate of Approval

No. 1218

Title of Publication: Geography and the Environment Pupil's Book Standard Three

Publisher: Tanzania Institute of Education

Author: Tanzania Institute of Education

ISBN: 978-9987-00-968-9

This book was approved by the Ministry of Education, Science and Technology on 1st November, 2023 as a Textbook for Standard Three in Primary Schools in Tanzania as per 2023 Syllabus.

Dr Lyabwene M. Mtahabwa
Commissioner for Education

Tanzania Institute of Education

CamScanner

FOR ONLINE USE ONLY

© Tanzania Institute of Education 2023

Published 2023

ISBN: 978-9987-09-968-9

Tanzania Institute of Education
Mikocheni Area
132 Ali Hassan Mwinyi Road
P.O.Box 35094
14112 Dar-es-Salaam

Telephone: +255735041170/735041168
Email: director.general@tie.go.tz
Website: www.tie.go.tz

All rights reserved. No part of this textbook may be reproduced, stored in any retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without a prior written permission from the Tanzania Institute of Education.

FOR ONLINE USE ONLY

CamScanner

FOR ONLINE USE ONLY

Table of Contents

Acknowledgements iv

Introduction vi

Chapter One 1

The concepts of Geography and the Environment 1

Chapter Two 15

Earth's relief 15

Chapter Three 29

Environmental conservation 29

Chapter Four 48

Environmental degradation 48

Bibliography 82

CamScanner

FOR ONLINE USE ONLY

Acknowledgements

The Tanzania Institute of Education (TIE) acknowledges the contributions of all the organisations and individuals who participated in the designing and development of this textbook. In particular, TIE wishes to thank the University of Dar es salaam (UDSM), Jordan University College (JUCo), the School Quality Assurance (SQA) Department, Teachers' Colleges and Primary Schools. Besides, the following individuals are acknowledged:

Writers:	Dr Christopher M. William, Dr Clement M. Mromba, Mr Karani H. Mdee, Ms Blandina F. Ajali, and Ms Selestina C. Lwanga
Editors:	Dr Lydia A. Kimaryo, Dr Verdiana T. Tilumanywa, Dr Johnstone M. Andrea, Dr Jackson R. Sawe, Ms Ndimbumi J. Mboneke and Ms. Dalia C.Kilamlya.
Designer:	Ms Mariam Matotola
Illustrators:	Mr Fikiri A. Msimbe and Mr Yohana P. Mwenda
Photographer:	Mr Chrisant A. Ignas
Coordinator:	Mr Karani H. Mdee

TIE also appreciates contributions from primary school teachers and pupils who participated in the trial phase of the textbook. The Institute would like to thank the National

CamScanner

FOR ONLINE USE ONLY

Environmental Management Council (NEMC), for editorial support on issues relating to the environment. Likewise, TIE would like to thank the Government of the United Republic of Tanzania for financing the writing and printing of this textbook.



Dr Aneth A. Komba
Director General
Tanzania Institute of Education

FOR ONLINE USE ONLY

CamScanner

FOR ONLINE USE ONLY

Introduction

This textbook, *Geography and the Environment* for Primary Schools, is written on the basis of the Geography and the Environment syllabus for Primary school Education Standards III-VI, issued by the Ministry of Education, Science and Technology in 2023. Some of the themes in this book have been taken from the previous book for Social Studies standards III and IV published in 2018 in accordance with the 2016 syllabus.

The book consists of four (4) chapters, namely The concepts of Geography and the Environment, Earth's relief, Environmental conservation and Environmental degradation. By learning the content of this textbook, you will acquire knowledge, skills and attitudes necessary for environmental conservation and for appreciating the value of our natural resources.

The content of each chapter is presented in the form of text, activities, diagrams, exercises and pictures to enable you to build the intended competencies. Each chapter has adequate exercises to test your understanding of the specific themes.

Additional learning resources are available in the TIE e-library, at *https://ol.tie.go.tz* or *ol.tie.go.tz*



Tanzania Institute of Education

CamScanner

Chapter One

The concepts of Geography and the Environment

Introduction

Human beings need to understand the relationship between Geography and the Environment so that they know the best ways to interact with their surroundings. Geography enables human beings to understand the surrounding environment and to conserve and use it sustainably. In this chapter, you will learn about the meanings, interaction and importance of learning Geography and the Environment. The competencies to be developed will enable you to value and care for the environment.

Think



Things that surround human beings

Meaning of Geography

Geography is a subject that deals with the study of human beings and their environment. Geography is concerned with the earth, the atmosphere and things that exist on the earth's surface. Geography is also concerned with the distribution of things and their interaction with human beings. The earth's surface comprises the continents and

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

the oceans. The continents and the oceans have various features which constitute the environment. Hence, Geography enables human beings to develop the basic skills that enable them to understand and interact with the environment in a sustainable way. Figure 1 illustrates the earth's surface.



Figure 1: *Earth's surface*

Meaning of the environment

On the earth's surface, human beings are surrounded by various things. These things and human beings are part of the environment. Therefore, the environment includes all the things that surround human beings. The things that surround human beings can be either natural or man-made. Natural things are those which are not created by human beings such as mountains, plants, animals, rivers, land and air. Man-made things include houses, roads, gardens, tables, cars and other things that are not natural. Information about the components that form the

FOR ONLINE USE ONLY

CamScanner

environment is summarised in Figure 2.

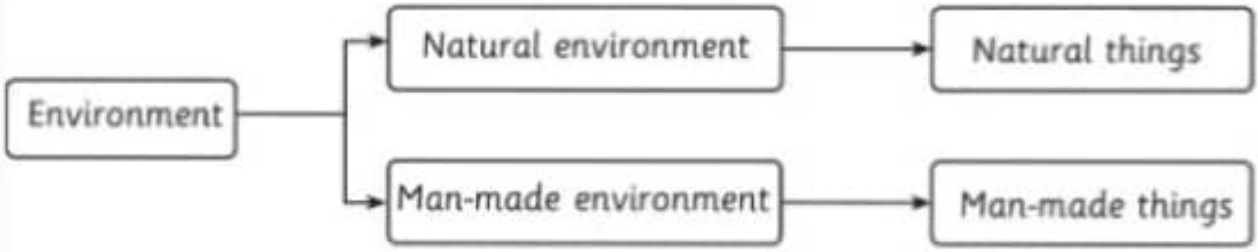


Figure 2: *Components of the environment*

Natural and man-made things can be found at home, school or elsewhere. Human beings depend on the environment for various activities that enhance their living. Thus, human beings are responsible for taking care of and conserving the environment. Figure 3 shows some of the things found in the environment.

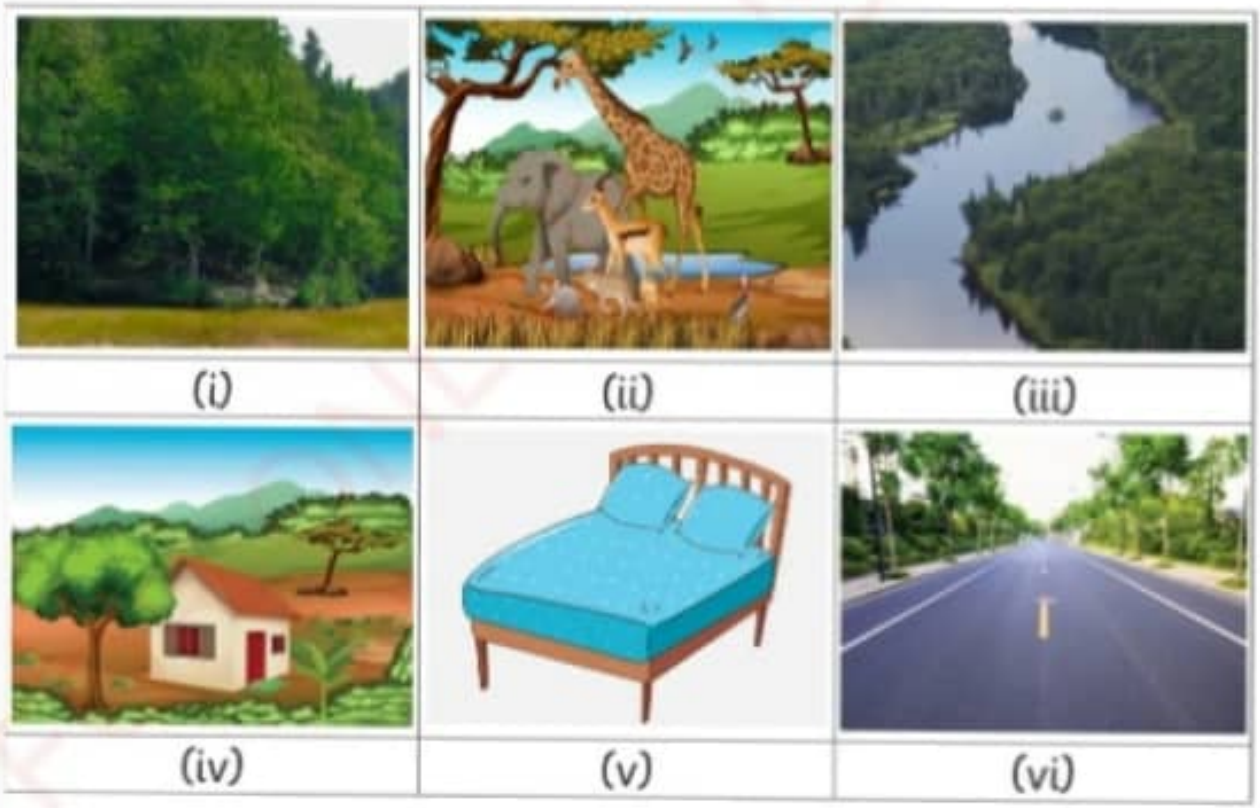


Figure 3: *Some of the things that form the environment*

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Our school environment



Activity 1

Observe various things found in your school environment, then:

1. Identify the natural and man-made things you have observed.
2. Explain the benefits of the things you have identified.

A school environment consists of all the things found at the school. These things are like classrooms, teachers' offices and houses, trees, flower gardens, play grounds, the national flag and toilets. Other things found in the school environment are dormitories, a library, laboratories and natural things such as rivers and hills. Inside the classroom there are desks, chairs, tables, books, a board and other teaching and learning materials. In addition, pupils, teachers and other staff are part of the school environment. The environment of one school may be different from or similar to that of another school, depending on the specific things found in a school. Basically, the things found in a school environment are important in teaching and learning processes; thus, they have to be cared for.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Activity 2

Observe Figure 4 and then answer the questions that follow:



Figure 4: *School environment*

Questions

1. What do you see in Figure 4?
2. What essential things, if removed from the school environment shown in Figure 4 would affect that environment? Give reasons.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Home environment

Activity 3

Observe Figure 5 and answer the questions that follow:



(i) (ii)

Figure 5: *Home environment*

Questions

1. What do you see in Figure 5?
2. Which of the things in Figure 5 are found in your home?

The home environment includes all the things found at home. These things can be inside or outside the house. The environment outside the house may include trees, flowers, birds, insects, animals, rivers, mountains, valleys and other things, depending on where one lives. The indoor environment may include beds, couches, cooking utensils, cleaning tools and other things found in the house.

The environment is often similar or different, depending on the things found in a given area. Therefore, it is not

CamScanner

necessary for one's home environment to be the same as another's. Similarly, the environment of a particular area does not necessarily have to be the same as that of another.

Exercise 1

1. Differentiate a home from a school environment.
2. A home environment may change according to the various activities undertaken at home.
   (a) Explain the activities that may help to create a beautiful home environment.
   (b) Explain the activities that may destroy your home environment.

Activity 4

On your way to school, do the following:

1. Observe the environment.
2. Identify the things you see.
3. From your observation, what things are not found at your home environment?

Relationship between Geography and the Environment

Geography and the Environment are related concepts that are difficult to separate. We have learnt that the environment encompasses all the things that surround us, while Geography explains those things. Therefore,

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Geography helps us to understand the environment that surrounds human beings and how to interact with them. Things like the forests, mountains, lakes, rivers, oceans, weather, land and animals around human beings constitute what we call is Geography and the Environment as a discipline. Therefore, it is important to study both at the same time.

Activity 5

Observe Figure 6 and answer the questions that follow:

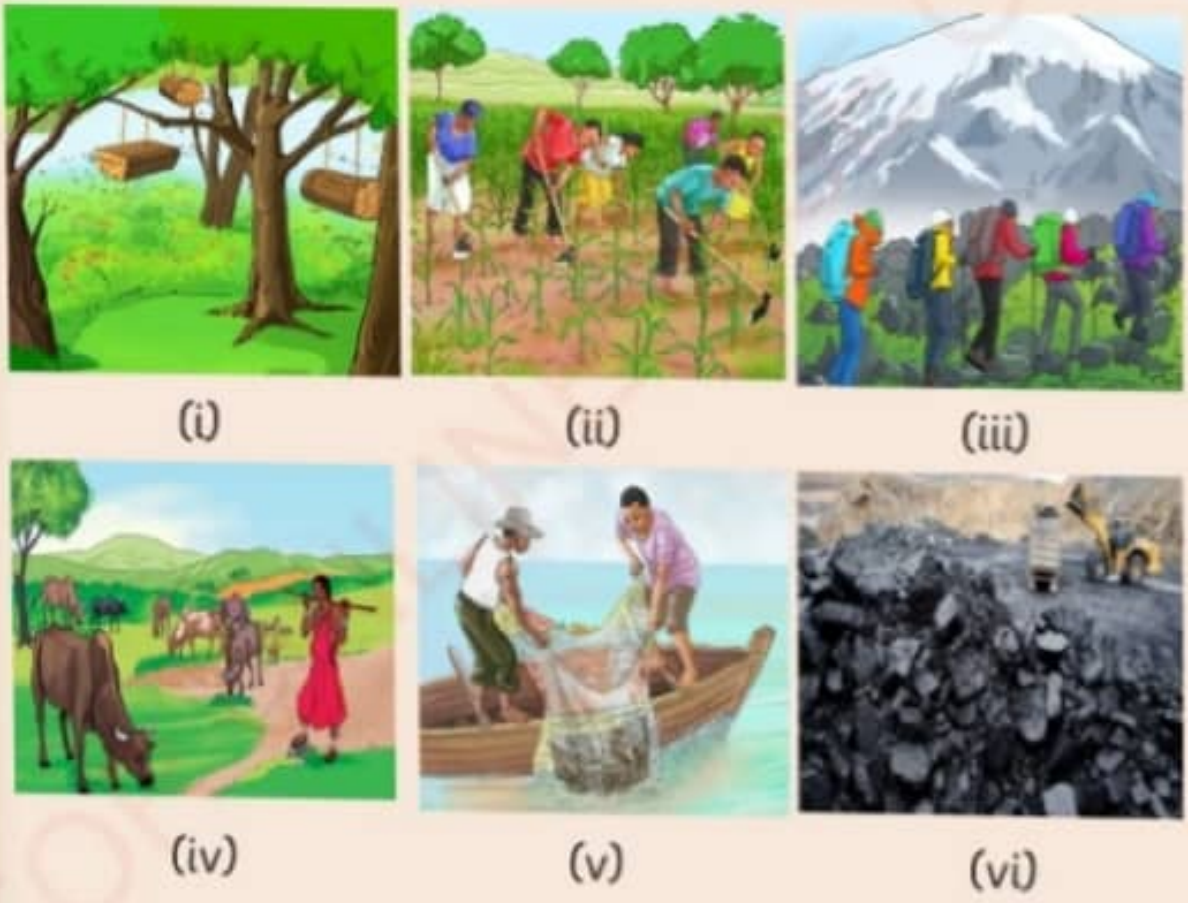


Figure 6: *Human activities*

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Questions

1. What activities are carried out in Figure 6?
2. Where are the activities carried out? Explain
3. Which of the activities seen in Figure 6 are undertaken in the environment you live in?
4. Why are some of the activities in Figure 6 not undertaken in the environment you live in?

Importance of learning Geography and the Environment

Learning Geography and the Environment enables us to understand our surroundings. It also helps us to recognise the resources we have in our environment and how to use, conserve and manage them. Examples of such resources are wildlife, rivers, lakes, oceans, forests, land, minerals and mountains.

Similarly, learning Geography and the Environment enables us to understand the human activities that can be undertaken in different areas. For example, in areas with rivers, lakes and oceans, fishing or tourism can be practised. Plain land is mostly used for agriculture and livestock keeping. Lumbering and beekeeping are undertaken in areas with forests.

Furthermore, learning Geography and the Environment enables us to understand the local weather condition of a particular area. For example, an area dominated by trees often has pleasant weather and is attractive. In addition, mountainous areas may have cooler weather due to the high altitude; thus people need to wear thick

CamScanner

clothes like sweaters when they are in such areas. Coastal areas often have warmer weather than inland areas. Therefore, those in warm coastal areas can wear lighter clothing to avoid or reduce the effects of heat. However, the temperature in coastal areas can vary depending on the elevation of land and the direction of winds. Geography and the Environment helps us to identify natural hazards such as floods, earthquakes and hurricanes, and how to avoid their effects on people and their property. Geography and the Environment also assists us in planning and building infrastructure and social services. Examples of infrastructure and providing social services include roads, hospitals and schools. Thus, learning Geography and the Environment enables human beings to identify areas in need of such services. Generally, it is important to learn Geography and the Environment so as to plan for appropriate and sustainable use of the resources found in the environment. The resources can be water, forests and land.

Exercise 2

1. Why do we study Geography and the Environment?
2. What is the importance of having knowledge of natural hazards?
3. What natural resources are found in the environment you live in?

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Revision Exercise

Choose the letter of the correct answer

1. Which of the following activities sustain our natural environment?
   (a) Mining
   (b) Managing and conserving the environment
   (c) Building modern houses
   (d) Setting up industries

2. What activities can you do other than fishing, if you live in an area with rivers, oceans and lakes?
   (a) Irrigation farming
   (b) Harvesting crops
   (c) Timber processing
   (d) Hunting and selling hides

3. Learning Geography and the Environment provide us with knowledge of _____.
   (a) the relationship between human and the things that surround them
   (b) humans ability of a human to make beehives
   (c) how humans can organise the distribution of things in the environment
   (d) the way humans make seine nets

4. The climate of one area may differ from that of another because of _____.
   (a) people living in the area

CamScanner

(b) the relief and vegetation cover
(c) the animals present in the environment
(d) the insects in the environment

5. What are the resources essential for keeping bees?
   (a) Water, leaves and rocks
   (b) Trees, flowers and forests
   (c) Mountains, valleys and oceans
   (d) Rain, logs and leaves

6. What kind of weather do the coastal areas in Tanzania experience?
   (a) Cold
   (b) Cold and hot
   (c) Hot
   (d) Humid

7. If there was a river in your environment whose water is used for various purposes, what kind of knowledge from Geography and the Environment would enable you to ensure sustainable use of the river?
   (a) Weather
   (b) Environmental conservation
   (c) Irrigation farming
   (d) Fishing and tourism

Short answer items

8. What benefits do we get from planting trees in the school environment?

CamScanner

9. If your parents or guardians bought a big piece of land with a forest on it, what kind of activity would you advise them to undertake in that land?
10. What are the geographical and environmental factors that might guide you in selecting an area for undertaking agriculture?
11. Using the knowledge gained from Geography and the Environment, identify the appropriate land use in the environment you live in.

Vocabulary

Climate	the weather condition experienced over a long period of time in a region always over 30 years
Garden	an area planted with flowers, fruit trees, vegetables or shrubs
Hazard	a phenomenon that may potentially cause the loss of people's lives and property
Human activities	various functions, tasks, works or actions that people do to achieve certain purposes
Infrastructure	basic systems and structures such as roads, railways, banks or an hospitals that a country or an organisation needs to function properly

FOR ONLINE USE ONLY
DO NOT COPY OR PRINT

Land	the hard part of the earth that is not covered by water
Ocean	a large body of salt water that covers most of the earth's surface and surrounds its land masses
Resource	a substance which provides products that are essential for human life
Weather	the atmospheric condition experienced over a short period of time. It may be an hour, a day or a week

FOR ONLINE USE ONLY

CamScanner

Chapter Two

The earth's relief

Introduction

The earth surface is covered by a hard layer known as land. Land has various shapes that form earth's relief. In this chapter, you will learn about the meaning of the earth's relief, the major relief features, and the distribution and importance of such features. The competencies to be developed will enable you to interact well with the relief features in your environment.

Think



Various features of the earth's relief you have seen

Meaning of the earth's relief

The earth's relief is the appearance of various shapes of land on the earth's surface. These shapes create different kind of landscape on the earth's surface. The earth's relief consists of a distribution of relief features such as mountains, hills, plains, plateaus, basins and valleys. Human activities such as farming, construction and livestock keeping depend on the relief features of a given place. Therefore, it is important for us to understand the relief features so that we can interact with them in a sustainable manner.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Activity 1

1. Observe Figure 1 and identify the relief features:



Figure 1: *Various earth's relief features*

2. Observe and explain the earth's relief features found in the environment you live in.

Major relief features

Activity 2

Search for videos on the earth's major relief features in Tanzania on the Internet. Listen and watch the videos you have found, and then write a summary of your findings.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

The relief of a place is determined by the presence of various land shapes in the place concerned. The shapes are known as relief features. Relief features vary in appearance in relation to their heights and shapes. In order to understand the differences in land shapes, we need to learn about the earth's major relief features. Some of the major relief features are mountains, valleys, hills, plateaus, basins and plains. Figure 2 illustrates the major relief features.

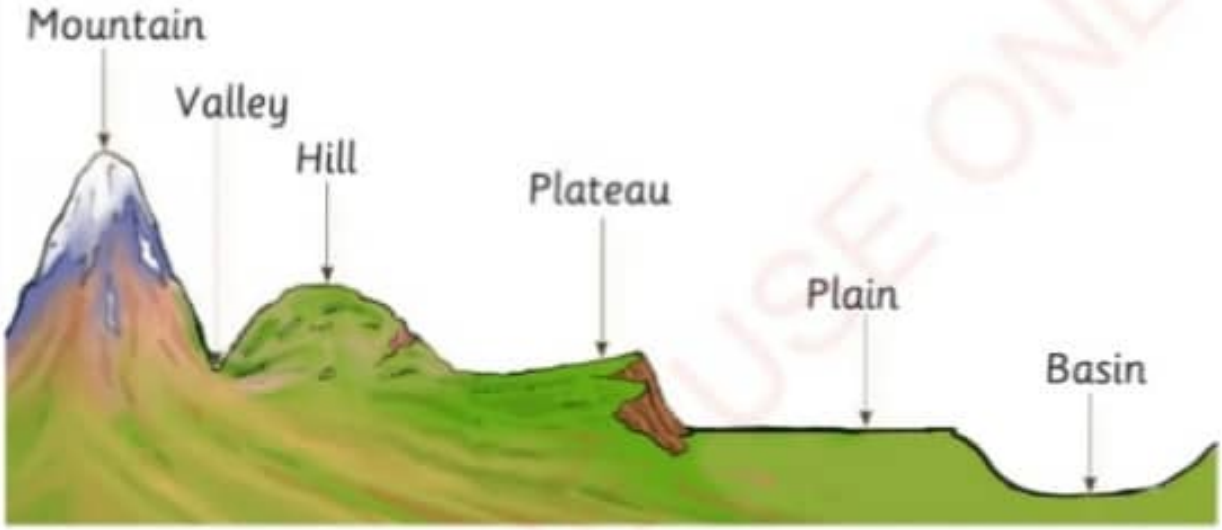


Figure 2: *Major relief features*

Distribution and importance of the earth's major relief features in Tanzania

Every land has a distinctive shape due to the presence of various earth's relief features on it. For example, Tanzania's relief is unique due to its distinctive appearance. The presence of mountains, valleys, plains, hills, basins and plateaus in Tanzania, is country's pride. These relief features are found in various regions in the country.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Activity 3

Using library or online sources, listen to or read about the distribution of the major relief features in Tanzania. Identify the activities undertaken around the earth's relief features in Tanzania and in the environment you live.

Mountains

A mountain is a landform with the highest altitude above the earth's surface. The top part of a mountain is called a mountain peak or summit. The peak of a mountain may have snow and ice on it or not. In addition, a mountain has steep slopes. Tanzania has several large and small mountains. For example, the highest mountain in Tanzania is Mount Kilimanjaro, which is located in Kilimanjaro Region. Mount Kilimanjaro has a height of 5,895 meters. The top of Mount Kilimanjaro is covered with ice and snow. This is beacuse, as you go higher, temperature decreases. Mount Kilimanjaro is also the highest mountain in Africa. Figure 3 shows the view of Mount Kilimanjaro.



Figure 3: *Mount Kilimanjaro*

CamScanner

FOR ONLINE USE ONLY

Some of the other mountains in Tanzania are Mount Meru in Arusha Region with a height of 4,566 metres, and Mount Rungwe in Mbeya Region with a height of 2,981 metres.

The Uluguru Mountains in Morogoro Region with a height of 2,630 metres and the Usambara Mountains in Tanga Region with a height of 2,290 are also found in Tanzania.

Hills

Hills are landforms that rise to a moderate height. Hills are generally shorter than mountains. Hills do not have steep slopes as mountains do. However, they have peaks as mountains do. Hills are found in various places in Tanzania. Some of the hills in Tanzania are Mererani in Manyara and Ngorongoro in Arusha, Sao and Kitonga in Iringa, and the Sekenke hills in Singida Region. Figure 4 shows a view of hills.



Figure 4: *Hills*

CamScanner

FOR ONLINE USE ONLY

Importance of mountains and hills

Relief features are essential for human life. Often mountains and hills are a good source of water because they attract rainfall. Water is used by human beings and other organisms for various purposes. Additionally, mountains and hills are tourist attractions. Tourists climb mountains and hills to see forests, waterfalls and various organisms. People engage in tourism-related activities such as pottery-making to earn money. Figure 5 shows a waterfall.



Figure 5: *A view of a waterfall*

In addition, on the slopes of some mountains there are thick forests with animals, which are tourist attractions. The trees found in forests provide wood and other building materials. Some trees provide medicines which are used by human beings to treat different diseases.

CamScanner

FOR ONLINE USE ONLY
IPLICATE

Exercise 1

Choose the letter of the correct answer

1. Which of the following characteristics distinguish a mountain from a hill?
   (a) Height and slopes
   (b) Height and soil fertility
   (c) Rocks and soil
   (d) Shortness and the abundance of snow

2. Why are the picks of certain mountains like that of Kilimanjaro are covered with ice?
   (a) They are very hot
   (b) They receive heavy rainfall
   (c) They are very cold
   (d) There is much water on them

Short-answer items

3. What challenges do masons face when building houses on hilly or mountainous areas?
4. What environmental impacts would result from farming on mountain slopes?
5. Mention the mountains found in the following regions:
   (a) Arusha
   (b) Mbeya
   (c) Morogoro

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Valleys

Valleys are areas of lower land which are found between two hills or mountains, as shown in Figure 6.



Figure 6: *A valley*

Some valleys have rivers flowing through them. Lakes may also form within valleys. For example, Tanzania has a major East African rift valley with several lakes. The lakes in this valley include Lake Natron in Arusha Region and Eyasi and Manyara in Manyara region. Others lakes in the east African rift valley are Lake Tanganyika in Kigoma, Katavi and Rukwa Regions. Lake Tanganyika is the deepest lake in Tanzania and Africa. There are also Lake Nyasa in Ruvuma, Njombe and Mbeya Regions.

CamScanner

FOR ONLINE USE ONLY
NOT TO BE DUPLICATE

The importance of valleys

Valleys are important because they collect water from elevated areas. Thus, valleys are an important source of water. Areas with valleys that contain lakes and rivers are habitats for aquatic organisms such as fish. Therefore, fishing is undertaken in these areas. Some valleys have fertile soil; therefore, they are suitable for irrigation farming. Additionally, the rivers in valleys can be dammed to generate hydro-electric power. Lakes and some rivers are useful for transporting people and goods using vessels such as ships and boats.

Plateaus

A plateau is a large area of flat elevated land that is relatively raised sharply above the surrounding land. Figure 7 shows the view of a plateau.



Figure 7: *A plateau*

CamScanner

Plateaus vary in shape and size. An example of a plateau in Tanzania is the Southern highland plateau in the regions of Iringa, Mbeya and Njombe.

The importance of plateaus

Some plateaus are used for human settlements and preserved as tourist attractions due to their beautiful outlook and pleasant weather. For example, Kitulo is a national park situated in the Southern highland plateau in Mbeya and Njombe. This park is located between the peaks of Kipengele, Uporoto and Livingstone mountain ranges. This is the first reserve in Africa to be established so as to conserve its natural plants and flowers. Other parts of the plateau are used for agricultural purposes.

Plains

A plain is a landform that is relatively flat. It is unlike a mountain or a hill. A large part of a plain tends to have a fairly uniform elevation as shown in Figure 8. In Tanzania, plains include certain parts of the Serengeti and Tarangire National Parks.



Figure 8: *A plain*

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

The importance of plains

Plains normally have fertile soil that is suitable for farming and livestock grazing. Similarly, plains are also suitable for building houses and other kind of infrastructure because they do not require much levelling. Figure 9 shows farming on a plain.



Figure 9: *Farming on a plain*

Plains are also good for sports and transport activities. In addition, these areas may have forests that provide habitats for animals and other kinds of organisms which are tourists' attractions.

Basins

A basin is a bowl-shaped depression on the earth's surface. Some basins contain water, while others do not. A basin

CamScanner

that contains water forms a lake. An example of a basin with water is Lake Victoria which borders Mwanza, Kagera, Mara, Simiyu and Geita regions. Lake Victoria is the largest lake in Tanzania and Africa.

Exercise 2

1. What is the difference between Lake Victoria and Tanganyika?
2. Which regions in Tanzania are found in the Southern highlands plateau?
3. In what type of the earth's relief feature would you prefer to build your house? Why?
4. What would happen if houses were built near valleys?

Revision exercise

Choose the letter of the correct answer

1. Which of the following earth's relief features can influence the formation of rain?
   (a) Plains
   (b) Valleys
   (c) Mountains
   (d) Basins

FOR ONLINE USE ONLY
DO NOT DUPLICATE
CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

2. In which region are the Usambara mountain ranges found?
   (a) Kilimanjaro
   (b) Morogoro
   (c) Tanga
   (d) Mbeya

3. Match the items in column A with the corresponding responses in column B

No.	Column A	Column B
(i)	Mountains	A. moderately elevated landforms with round flat peaks
(ii)	Valleys	B. there are no mountains, hills or any higher elevations
(iii)	Plains	C. highly elevated above the earth's surface
(iv)	Hills	D. areas of lower land often deep down between two hills or mountains

Short-answer items

4. What distinguishes the earth's relief of a given place?
5. With examples, identify the earth's major relief features found in the following regions:
   (a) Iringa
   (b) Morogoro
   (c) Mwanza
   (d) Kigoma

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

(e) Kilimanjaro
(f) Singida

6. With specific examples, explain the importance of the earth's major relief features found in Tanzania.

Vocabulary

Earth's surface	the outer part of the earth that consists of land and water areas
Elevation	a raised height than other areas above the sea level
Lake	a relatively large body of water that is totally surrounded by land
Tourism	a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for leisure, business, learning purposes or treatment

FOR ONLINE USE ONLY

CamScanner

Chapter Three

Environmental conservation

Introduction

The well-being of humans and other organisms depends on essential resources such as land, air and water which are found in their environment. Sustainable use of these resources depends on environmental conservation. Therefore, it is important for the society to understand environmental conservation so as to ensure sustainable utilization of available resources. In this chapter, you will learn about the meaning and importance of conserving the environment, and learn various ways of conserving the environment. The competencies to be developed will enable you to conserve the environment so as to achieve sustainable development.

Think



The quality of the environment in which you live

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Meaning of environmental conservation



Activity 1

Observe your school environment, and then explain:

1. the cleanliness of the school environment; and
2. the advantages or disadvantages of keeping the environment in the condition you have seen.

Environmental conservation is the act of protecting and preserving the things that surround human beings. The things includes forests, land, rivers, valleys, animals, mountains, air and oceans. Environmental conservation activities in Tanzania are carried out at different levels. The government has established institutions and offices to conserve the environment. There are environmental conservation offices at village, street and ward levels. There are also environmental conservation offices at district, regional and national levels. The offices at different levels are managed by environmental officers. The officers collaborate with government leaders to manage the environment.

Moreover, at each level there are environmental management committees. The committees include that of health and the environment. These committees are responsible to mobilize communities to participate in environmental management activities. These activities include planting and caring for trees. It is the responsibility of the government at each level to make by-laws and impose fines on anyone caught destroying the environment. In addition, the government of Tanzania

CamScanner

established the National Environmental Management Council (NEMC) in 1983 so that it could advise the government on matters pertaining to environmental management. Thus, we are supposed to conserve our environment to protect ourselves and other organisms.

The importance of environmental conservation



Activity 2

Use library or Internet sources to explore the importance of environmental conservation.

An environment that is clean and safe is pleasant, attractive and crucial for our well-being. A dirty environment hides insects and other harmful organisms. The insects and organisms include fleas, flies, mosquitoes, rats and snakes. The insects and organisms usually hide in a dirty environment.

Clean and safe environments prevent the spread of diseases such as skin diseases, diarrhoea, malaria, the bubonic plague and other kinds of diseases associated with a dirty environment. A clean environment that is free from destructive insects prevents damage to crops on farms, food and other kind of property at home. Moreover, a clean environment minimises the effect of climate change. We are supposed to conserve the environment to sustain and restore its quality. Similarly, we conserve the environment to avoid the effects of environmental degradation on human beings and other organisms.

CamScanner

established the National Environmental Management Council (NEMC) in 1983 so that it could advise the government on matters pertaining to environmental management. Thus, we are supposed to conserve our environment to protect ourselves and other organisms.

The importance of environmental conservation



Activity 2

Use library or Internet sources to explore the importance of environmental conservation.

An environment that is clean and safe is pleasant, attractive and crucial for our well-being. A dirty environment hides insects and other harmful organisms. The insects and organisms include fleas, flies, mosquitoes, rats and snakes. The insects and organisms usually hide in a dirty environment.

Clean and safe environments prevent the spread of diseases such as skin diseases, diarrhoea, malaria, the bubonic plague and other kinds of diseases associated with a dirty environment. A clean environment that is free from destructive insects prevents damage to crops on farms, food and other kind of property at home. Moreover, a clean environment minimises the effect of climate change. We are supposed to conserve the environment to sustain and restore its quality. Similarly, we conserve the environment to avoid the effects of environmental degradation on human beings and other organisms.

CamScanner

FOR ONLINE USE ONLY
DUPLICATE

Exercise 1

1. Why are we advised to conserve the environment?
2. List the harmful organisms that hide in dirty environments.
3. If you were given a chance to educate the society on how to avoid the outbreak of cholera, explain the things you would ask the society to consider.

Conservation of the school environment

Activity 3

1. Identify areas in the environment you live in which need to be cleaned and improved upon.
2. Mention the type of cleaning needed in the areas you have identified.
3. Identify the tools needed to clean and improve the condition of the areas you have identified.
4. Briefly explain how you cleaned and improved the environment you live in.

It is important to keep the school and home environment in a clean and safe condition. The school environment is conserved by cleaning and restoring degraded areas by planting trees, grass and flowers. We also control improper waste disposal and clean the classrooms, toilets and the school library. This makes the school environment clean, safe and pleasants as Figure 1 shows.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE



Figure 1: *Conservation activities at school*

Cleaning the classroom

Activity 4

1. Identify the areas to be considered when you are cleaning your classroom.
2. Identify the tools you would use to clean your classroom.
3. Specify the step you are required to follow when you are cleaning the classroom.
4. Follow the cleaning steps you have mentioned to clean your classroom.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

It is important to keep the classroom clean all the time. Before cleaning the classroom floor, you should clean the windows, the corners the ceiling, the chalkboard, the doors and walls. After cleaning those areas, clean the floor and finally clean the environment outside the classroom.

The tools that may be used for cleaning include a broom, a bucket for keeping clean water, a dusting cloth, a cobweb duster and a mopper. Other tools include a powder or liquid detergent, a duster, a dust pan and a dust bin. Dust bins should be differentiated using colours and labels to show the type of waste that should be disposed of in the bins.

Furthermore, we should know the steps to follow during cleaning. The important steps are:

(a) Removing cobwebs from the ceiling, windows, doors, corners and walls

(b) Cleaning the chalkboard

(c) Dusting-off desks and windows

(d) Sweeping the floor

(e) Collecting and sorting waste into waste that decompose and that which does not, and disposing them in appropriate bins

(f) Mopping the classroom floor

(g) Arranging the desks and tables

(h) Sweeping the classroom and picking-up garbages

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Activity 5

Observe Figure 2, and then identify:



Figure 2: *Cleaning a classroom*

1. activities done by the pupils in Figure 2.
2. missing cleaning tools in Figure 2.

Activity 6

Follow the steps you have learnt to clean your classroom.

CamScanner

FOR ONLINE USE ONLY

The importance of cleaning the classroom

Cleaning the classroom is important for the well-being of pupils in a learning environment. We clean classrooms in order to maintain the classroom infrastructure so that it lasts longer. We also clean the classroom to remove dust that can cause respiratory diseases such as asthma, cough and flu. Furthermore, we clean the classroom so as to learn in a clean and safe environment. Moreover, cleaning the classroom helps a pupil to develop a habit of cleaning in his or her environment.

Exercise 2

1. Why are we advised to clean classrooms?
2. Why are we advised to separate bins for keeping decomposable waste from those for keeping non-decomposable wastes?
3. Why do we dust off desks, chairs, tables and windows before mopping the floor?

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Activities for conserving school environment

Activity 7

Observe Figure 3; and then identify:



Figure 3: *Environmental conservation activities*

1. tools are used for cleaning in Figure 3.
2. activities done by the pupils in Figure 3.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE



Activity 8

1. Design dust bins and label them according to the type of waste to be stored in them. Then, place them in various areas around the school.
2. Use different techniques to prevent trespassing on the flower gardens, grass and trees in your school.
3. Watch or listen from videos about the preparation of compost manure using decomposable wastes. Use decomposable waste to prepare compost manure at home.

Environmental conservation by planting trees, grass and flowers

Trees, grass and flowers are plants which are attractive and which beautify the environment. Trees also help to regulate the weather and provide shades, and some flowers smell nice. A place with flowers that smell nice attracts living organisms such as butterflies, bees and birds. When trees, grasses and flowers disappear, the environment may experience drought.

Planting trees, grass and flowers

Before planting trees, grass and flowers, you should follow several steps. First, you need to know the types of grass, flowers and trees that are suitable in the environment. There are plants that require more water to thrive, while others need less water. Choosing appropriate

CamScanner

FOR ONLINE USE ONLY

trees, grass and flowers depends on the area where they will be planted. It is better to include some fruit trees.

Second, select a fertile area, and then clean it by ploughing and tilling it. Some trees may not require tilling of the land before planting them but may require digging holes for planting tree seedlings. In case the area you have selected is not fertile, you should improve the soil by mixing it with animal manure or compost before planting the seedlings.

Figure 4 shows pupils planting trees in the holes they have dug.



Figure 4: *Pupils planting trees*

CamScanner

FOR ONLINE USE ONLY

Third, select seedlings which are healthier and free from disease for planting. Fourth, it is important to care for the seedlings by watering them, if there is a shortage of soil moisture and by weeding whenever necessary. Furthermore, to prevent pests and diseases, use environment-friendly pests and disease control methods, For example, plant insect-repelling plants such as marigolds and calendula.



Activity 9

Watch or listen to videos on the preparation of tree nurseries, grass and flowers. Then:

1. prepare nurseries for trees, grass and flowers at your school;
2. identify areas for planting trees, grass and flowers.
3. Plant trees, grass and flowers by following the steps you have learnt; and
4. care for the trees, grass and flowers you have planted.

Exercise 3

1. What do you need to do to prevent the trees, grass and flowers from being damaged by pests?
2. Why do we add fertiliser to the soil before planting seedlings?
3. What are the benefits of planting trees, grass and flowers in our environment?

CamScanner

Conservation of the water sources in our environment

Activity 10

Use various sources of information such as books, newsletters and online sources to learn about the main water sources found in Tanzania and the ways used to conserve them.

Exercise 4

1. What are the water sources used by the people in the environment you live in?
2. Is the water you use at home clean and safe? Explain.

Water is essential for humans and other organisms. To ensure that we have access to clean and safe water, we should conserve the water sources. We can conserve water sources by planting water-friendly trees near them to prevent soil erosion and to conserve the water sources. Figure 5 shows pupils planting trees along river banks to conserve the river and prevent soil erosion.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE



Figure 5: *Tree planting along the river bank*

We can also conserve water sources by preventing the dumping of waste into them. Furthermore, in accordance with the existing laws, it is important to ensure that, the sewage from homes, industries or mines does not flow into water sources. Likewise, it is essential to prevent activities such as cloth washing and livestock watering from being done in water sources to avoid water pollution. Other human practices such as urinating or defecating and bathing near or in water sources also pollute water sources.

In order to conserve water sources, we should use water carefully. We are also supposed to increase water sources by harvesting rainwater. Additionally, we are supposed to educate people about the importance of conserving water sources and about proper water use. Everyone has a responsibility to conserve water sources in their

CamScanner

environment and to use water carefully. By conserving water sources, we will avoid waterborne diseases such as cholera, bilharzia, typhoid and diarrhoea. We can also prevent or reduce the drying up of water sources and a water shortage.

Maintaining clean air in our environment



Activity 11

Read online sources, books and newsletters about how to maintain clean air in the environment.

Human beings need clean air to improve their health. It is everyone's responsibility to ensure that the environment around him or her is clean. To live in an environment with clean air, we should control the sources of air pollution such as smoke from industries, vehicles and homes. The dust from mining activities also contributes to air pollution. One of the methods to reduce air pollution is to plant trees to reduce pollutants like carbon dioxide. This is because trees produce oxygen and absorb carbon dioxide during photosynthesis. Furthermore, we should avoid improper waste disposal, because decayed waste emits a bad smell. Therefore, we should conserve our environment to obtain clean air, protect human health and the lives of other organisms.

CamScanner

FOR ONLINE USE ONLY
DO NOT REPRODUCE

Land conservation in our environment



Activity 12

Observe the condition of the land in the area you live in. Then:

1. with examples, write a summary on the condition of the land in your environment; and
2. suggest ways to conserve the land in the area you live in.

Land is essential for the humans and other organisms. Plants grow and thrive on land and, in turn, we obtain food from plants. The land contains minerals such as gold, diamond tin. When they are mined, minerals are sold to generate income. Land has water that we use in doing various activities. Human beings and other living organisms find their habitats on land.

Since land is important to our lives, it is a good idea to ensure that land is not degraded. There are various ways to conserve land. The ways may vary depending on the environment and the specific needs of the area. Land can be conserved in the following ways:

The conservation of forests by preventing the random cutting of trees and the promotion of tree planting should be emphasised. These prevent soil erosion and enable soil to retain moisture. Controlling the environmental pollution caused by industries, agriculture and other human activities is also necessary for maintaining soil fertility and the quality

CamScanner

land. Planting trees in bare land improves the quality of soil and controls soil erosion.

Land conservation can also be achieved by adopting sustainable agricultural practices such as the use of organic manure. Likewise, we conserve land by avoiding inappropriate construction of infrastructure and mining practices that destroy the land. Generally, land is conserved by ensuring that waste is collected and properly managed to prevent pollution.

Rights and obligations in environmental conservation

The Environmental Management Act of 2004, provides rights to everyone living in Tanzania so that everyone lives in a clean, safe and healthy environment. The Act also provides responsibilities to everyone living in Tanzania to safeguard and maintain the environment and to inform the relevant authority about any activities or practices that may affect the environment.

Revision exercise

Choose the letter of the correct answer

1. In order to breathe clean and safe air, we should control the sources of air pollution such as _____.
   (a) bathing the water from industries
   (b) watering livestock in water sources
   (c) smoke from industries
   (d) washing clothes in water sources

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Short-answer items

6. What would you do to conserve your school environment?
7. Why are we advised to prevent the flowing of waste water from industries into water sources?
8. What would you do to conserve the water sources found in the environment you live in?
9. How can you maintain clean air in the environment you live in?
10. What methods can be used to conserve the land in your environment?
11. What would you do if there was a forest in your environment in which trees are cut down to make for charcoal?

Vocabulary

Cobweb a net of sticky threads made by a spider to catch insects

Compost a manure made from organic wastes such as grasses, farm residues and fallen leaves that rot in a special bin or pit

Garden the area of land next to a house, where flowers, grass and other plants are grown

Mop a rag used for washing floors which consists of a long stick with threads of thick strings or sponge fastened to one end

CamScanner

Chapter Four

Environmental degradation

Introduction

Human beings and other organisms need a clean environment for their well-being and growth. Environmental degradation affects the well-being of human beings and other organisms. Therefore, it is important to conserve the environment for the well-being of human beings and other organisms. In this chapter, you will learn about the human activities that destroy the environment and the effects of environmental degradation on human beings and other organisms. You will also learn how environmental degradation affects climate. The competencies to be developed will enable you to avoid environmental degradation in the environment you live in.

The source of environmental degradation and its effects

Think



Environmental degradation practices in the area you live in

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE



Activity 1

Observe the type of stoves used for cooking in the environment you live in. Then identify the environmental advantages and disadvantages of the source of the energy used for cooking in the environment you live in.

There are various sources of environmental degradation. These include littering; smoke from factories, vehicles and homes; dust from mines and industries; and waste water from industries, mining areas and homes. Other kind of environmental degradation result from defecating, bathing, washing clothes, cultivating and watering livestock in water sources, overuse and misuse of water, excessive cutting down of trees and the burning of forests.

Waste disposal

When human beings undertake various activities, they produce wastes. The waste can be in solid or liquid form. Some solid waste can decompose, while other kinds may not. Examples of wastes that decompose easily are food and plant remains. Examples of wastes that do not decompose easily are plastic bags, plastic buckets, plastic bottles and plastic lids.

Plastic waste destroys the environment because it takes a long time to decompose. Types of waste that do not decompose quickly affect soil fertility, prevent water penetration into the soil, prevent plants from growing and

CamScanner

affect the life of animals in the areas they live in. Thus, plastic waste should be collected and taken to specific places for recycling, as shown in Figure 1. Due to the great impact of plastic wastes on land, on 1st June 2019, the government of Tanzania banned the use of plastic carrier bags as they were causing land pollution.



Figure 1: *Plastic waste for recycling*

Like other types of waste, liquid waste should be managed properly because, if incorrectly disposed of, It may be harmful to human beings and other organisms. Liquid waste includes sewage from homes, industries and mines. If solid and liquid wastes get into water sources, they pollute water and affect people and other living organisms such as fish, frogs, crocodiles and hippopotamus.

CamScanner

Smoke from industries, vehicles and homes

The smoke from industries, vehicles and homes is a source of air pollution. This is because it contains carbon dioxide, which causes air pollution and global warming. The use of firewood and charcoal as a source of energy for cooking produces carbon dioxide, which pollutes air and causes environmental degradation. Figure 2 shows air pollution by smoke from industries and vehicles.



Figure 2: *Air pollution*

Therefore, the society is advised to use new vehicles to reduce the amount of smoke from vehicles. Alternatively, the society should use electricity and gas-powered vehicles. In addition, industries should use cleaning technologies to clean gases before they are released into the atmosphere. Trees also help to absorb carbon dioxide from the air. Moreover, people should use alternative sources of energy

CamScanner

such as natural gas and electricity to minimise the use of firewood and charcoal, which produces carbon dioxide.

Human practices in water sources

Some of the human practices undertaken near or in water sources degrade the water sources. Activities such as disposing of the waste from homes and businesses, the washing of clothes and the watering of livestock in water sources pollute and degrade water sources. Other human practices such as urinating or defecating and bathing near or in a water source also pollute the water sources.

Although water sources are polluted, human beings fetch the same water for domestic use as shown in Figure 3.



Figure 3: *Practices that pollute water sources*

CamScanner

FOR ONLINE USE ONLY

To avoid pollution of water sources, we should use improved toilets and latrines, dispose of wastes in designated places, bathing in a shower and washing clothes away from water sources. Also, we should avoid watering livestock in water sources. In addition, laws that prohibit bad human practises near or in water sources should be enforced.

Activity 2

Visit a water source in your home area, and then:

1. identify different human activities undertaken near or in the water source; and
2. write a summary to explain how the activities destroy the water source.

Overuse and misuse of water

Water is essential for humans and other living organisms. Despite its importance, there is a high loss of water in our environment. The loss is due to overuse and misuse of water, for example leaving and neglecting leaking pipes and not closing water taps. Likewise, irrigation agriculture can use a large amount of water from rivers and dams.

Overuse and misuse of water can cause water sources such as rivers, dams and lakes to experience a water shortage. This may lead to inadequate water supply. Figure 4 illustrates the loss of water through a leaking pipe.

CamScanner

FOR ONLINE USE ONLY



Figure 4: *Water loss through a leaking pipe*

Exercise 1

If you were given an opportunity to educate members of your community about appropriate use of water, what would you ask them to consider?

In order to reduce water loss, we must use water carefully, like closing water taps after use. Similarly, we are supposed to repair damaged pipes and maintain proper use of water from different sources. We are also supposed to report to the water authorities any incidents of broken water

CamScanner

FOR ONLINE USE ONLY

pipes. Furthermore, the farmers doing irrigation farming are supposed to use sustainable irrigation technologies that save water.

Deforestation

Overuse of firewood and charcoal as sources of energy, contributes to the destruction of the environment. Cutting down trees for firewood and charcoal making causes the destruction of forests. It leads to the areas that were previously covered with trees to be bare. Bare land can be eroded and eventually lose its fertility. Figure 5 shows the destruction of a forest through the cutting down of trees.



Figure 5: *Forest destruction*

The burning of forests is also a source of environmental destruction. Forests provide habitats for living organisms

CamScanner

FOR ONLINE USE ONLY

such as butterflies, birds, elephants, snakes, monkeys, lions and leopards. Many organisms depend on forests for food, habitats and breeding grounds. The burning of forests destroys their habitats and may cause the extinction of some organisms. Forests help to prevent soil erosion and retain moisture in the soil. The burning of forests destroys the topsoil and can cause soil erosion, and ultimately lead to the loss of soil moisture and soil fertility. The burning of forests produces carbon dioxide, which causes global warming. Figure 6 shows the destruction of a forest by fire.



Figure 6: *Destruction of a forests by fire*

To reduce deforestation, people need to use energy serving stoves that use less charcoal or firewood. It is also advisable to use alternative charcoal that burns longer. Furthermore, people are advised to use alternative sources of energy such as solar, wind, water and natural gas for

CamScanner

domestic purposes. In addition, the society should protect and conserve forests, instead of burning them.

Human activities and environmental degradation

Human activities depend on the existence of a conducive environment. If human activities are not undertaken carefully, they contribute to the destruction of the environment, and thus, human beings cannot benefit from it. Some of these activities are farming, livestock keeping, fishing, industrial activities, mining and lumbering.

Farming

Farming is an activity that involves the production of various crops. Human beings produce food and cash crops. Some of the food crops produced are maize, rice, cassava, sorghum, millet, bananas and groundnuts. Cash crops include cotton, coffee, sisal, cashewnuts and tea. Depending on climate, these crops are cultivated in different regions in the country. Table 1 shows some of the main food and cash cropproducing regions in Tanzania.

Crop	Region
Maize	Mbeya, Iringa, Ruvuma, Morogoro, Rukwa, Dodoma, Kilimanjaro, Njombe, Katavi and Songwe
Rice	Mbeya, Rukwa, Morogoro, Pwani, Tabora, Mwanza and Shinyanga
Banana	Kagera, Arusha, Kilimanjaro and Mbeya

CamScanner

FOR ONLINE USE ONLY

Crop	Regions
Cassava	Tanga, Mtwara, Lindi, Mwanza, Ruvuma, Pwani, Morogoro, Kigoma and Mara
Tea	Njombe, Tanga, Iringa and Mbeya
Coffee	Kagera, Kilimanjaro, Arusha, Mbeya, Ruvuma and Songwe
Sisal	Tanga and Morogoro
Cotton	Mwanza, Shinyanga, Simiyu and Tabora
Cashewnuts	Mtwara and Pwani
Tobacco	Tabora, Ruvuma, Katavi and Iringa

Advantages of farming

Agriculture provides us with food and raw materials, which can be processed in industries. The selling of food and cash crops also provides us with local and foreign currency. Generally, agriculture provides employment and it is a national identity.

Effects of poor farming practices on the environment

Farming if not practised properly, can destroy the environment. For example, farming on mountain slopes causes soil erosion. Shifting cultivation that involves cutting down trees and burning grass and forests causes the loss of soil fertility, drought and soil erosion. Improper use of industrial fertilisers, pesticides and herbicides causes the loss of soil fertility and destroys soil living organisms. Figure 7 illustrates soil erosion which results from farming on the mountain slopes.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE



Figure 7: *Soil erosion on mountain slopes*

Addressing the effects of poor farming practices

There are different methods of controlling the effects of poor farming practices. These methods include contour farming to prevent soil erosion. Another method is mixed cropping, in which different crops are grown together on a farm. This kind of cultivation increases soil fertility. Crop rotation helps to increase soil fertility. For example, if a farmer cultivates maize this year, next year leguminous crops can be cultivated on the same farm to improve soil fertility. Mulching by using grass and crop remains can help to maintain soil moisture, control surface runoff and soil temperature.

CamScanner

Minimising the use of pesticides and industrial fertilisers can help to maintain soil fertility. Compost and manure can be used as a substitute of industrial fertilizers. Additionally, trees should be planted in bare lands and in places where shifting cultivation has been practised to prevent soil erosion.

Livestock keeping

Livestock keeping is an activity that involves rearing of livestock such as cows, goats, sheep, chickens and ducks. There are three types of livestock keeping: zero-grazing, free-range rearing and nomadic pastoralism. In zero-grazing, animals are kept and fed indoors. This type of grazing involves keeping a few animals. Sometimes, cattle, goats and sheep are kept on large farms owned by the government, companies or individuals. These large farms are called ranches.

Another type of livestock keeping is free-range rearing. In this kind of animal rearing, pastoralists take their livestock to grazing areas in the morning and bring them back in the evening. The other type of livestock keeping is called nomadic pastoralism. In this kind of livestock keeping, pastoralists move with their livestock from place to place, looking for pastures and water. Sometimes, livestock travel long distances before they reach a place where pastures and water are available.

In Tanzania, livestock keeping is common in Mwanza, Mara, Shinyanga, Tabora, Singida, Dodoma, Kilimanjaro

CamScanner

Arusha and Manyara. Some of the ethnic groups, that practise livestock keeping are the Maasai, Barbaig, Sukuma, Nyamwezi, Chagga and Gogo. Of these, the Masai, Barbaig and Sukuma practise nomadic pastoralism. These ethnic groups move with their livestock from place to place in search of pastures and water.

Advantages of livestock keeping

There are many advantages of livestock keeping, including the provision of meat, milk, skin, hooves and manure. Animal skins are used to make various items such as shoes, bags, belts and drums. Hooves are used to make glue. Animal manure is used to fertilise soil. When animals are sold, we obtain income.

The effects of poor livestock keeping on the environment

When a large number of livestock graze in a small area, they can deplete all the grass and other vegetation, leaving the land bare, as illustrated in Figure 8. Likewise, when large groups of livestock walk over the same area for a long time, they remove vegetation cover and loosen the soils. When the soil is loose, it is easily eroded by wind or water. Furthermore, nomadic pastoralism leads to the cutting down of trees for making kraals for livestock, human shelter and firewood for cooking.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE



Figure 8: *Bare land as a result improper grazing*

Ways of controlling the effects of poor livestock keeping on the environment

One of the ways of controlling the effects of poor livestock keeping on the environment is to avoid keeping a large number of livestock in a small area. Reducing the number of livestock can help reduce the effects of livestock keeping on the environment. Thus, it is important to educate livestock keepers on the advantages of keeping a few quality breeds of livestock that have higher yields such as abundant quality milk, meat and skin. In addition, it is important to motivate and educate livestock keepers about the importance of undertaking zero-grazing and avoiding nomadic pastoralism.

CamScanner

Exercise 2

1. Explain what happens if a large number of livestock pass through the same area for a long time.
2. How can farming activities cause environmental degradation?

Industries

An industry is a place where machines are used to process and produce products. The products may be clothes, mattresses, vehicles, motorcycles, foods and drinks. There are two types of industries. The first type includes industries which process raw materials. The second includes industries which produce consumable goods. An example of a raw material-processing industry is a cotton processing industry that produces cotton fibers. Examples of industries that produce goods from raw materials or products from processing industries are textile industries that produce clothes from cotton fibers. A carpet-producing industry uses sisal fibers to produce carpets. Moreover, a sugar industry uses sugarcane to produce sugar.

Advantages of industries

Industries help to process and transform raw materials into finished and semi-finished products for different uses. Industries help to increase the national income through taxation. The country also earns foreign exchange through the export of industrial products. In addition, industries provide employment opportunities to a large group of

CamScanner

people. Furthermore, industries create opportunities for individuals to become self-employed by establishing entrepreneurial activities around industrial areas.

Effects of industrial activities on the environment

Industries cause environmental pollution as they produce harmful gases, smoke, dust, solid and liquid wastes, and noises. Such pollution can cause various diseases including skin diseases, cough and flu. Industrial smoke contributes to climate change. Climate change is associated with extreme flood events and prolonged drought. In addition, improper discharge of liquid wastes can lead to water and soil pollution, hence affecting the organisms that live on land and in water. Moreover, improper disposal of solid waste from industries such as plastic bags or plastic bottles damage the environment. Figure 9 illustrates how industries pollute the environment.



Figure 9: *Environmental pollution*

FOR ONLINE USE ONLY

Ways of controlling the effects of industrial activities on the environment

The Environmental effects of manufacturing activities can be controlled by locating industries far away from human settlements. Industries should establish a system of treating and cleaning waste water for reuse. Industries should reduce emissions by having in place smoke-cleaning technologies for cleaning up toxic substances and dust before they are released into the atmosphere. Industries should plan for recycling waste that can be used for other purposes. For example, used paper can be recycled to make new paper. Paper can also be used to make charcoal energy. Other kinds of garbage can be transformed into organic fertilisers. In addition, industries should install soundproof systems to reduce noise pollution.

Mining

Mining is a process of extracting useful substances from the earth. Examples of substances that are mined are coal, gold, diamond, gravel, salt and sand. These substances are called minerals. Minerals are naturally-occurring resources found on land. Tanzania is rich in minerals such as gold, diamond, iron, coal, nickel, tanzanite and uranium. Table 2 shows some of the minerals and the areas where they are found.

CamScanner

FOR ONLINE USE ONLY

Table 2: Some of the minerals found in Tanzania

Minerals	Mining area
Gold	Kahama in Shinyanga, Chunya in Mbeya, Mpanda in Katavi, Amani in Tanga, and Sekenke, Manyoni in Singida and Geita
Tin	Kyerwa in Kagera
Diamond	Mwadui in Shinyanga
Tanzanite	Mererani in Manyara
Coal	Kiwira in Mbeya and Mchuchuma in Njombe and Songwe
Ruby	Mahenge and Kilosa in Morogoro
Salt	Uvinza in Kigoma and on the shore of the Indian Ocean
Iron	Liganga in Njombe, Mbeya, Uluguru Mountains in Morogoro and Mbambara near Lake Tanganyika
Lime stone	Chunya in Mbeya, Kilwa in Lindi and Tanga
Copper	Mpanda in Katavi
Mica	Ulanga in Morogoro
Uranium	Manyoni in Singida, Bahi in Dodoma, and Namtumbo in Ruvuma

Advantages of mining

Mining provides employment to people and raw materials for different industries. Minerals such as gold and diamond are used as ornaments. Salt is used for flavouring food, as medicine and for preserving food such as fish and meat. Diamond is used as an industrial abrasive for cutting hard materials like glass and for drilling rocks. Some of the

CamScanner

minerals are exported to earn foreign exchange. Minerals promote our national identity in the international community. For example, tanzanite is found only in Tanzania, which makes our country popular in the world.

The effects of mining on the environment

Although mining has several benefits, it can cause environmental degradation if the best and environment-friendly mining methods are not used. When mining ends, it leaves behind large pits. If these pits are not filled and the landscape restored, they destroy the appearance of the mined area. The destroyed land is unsuitable for other uses. The dust from mines can cause lung and eye diseases. Chemicals such as mercury, which is used to process minerals, if not properly managed, may contaminate water sources and affect human beings and aquatic organisms. Figure 10 illustrates the effects of mining activities on the environment.



Figure 10: *Landscape damaged by mining activities*

Ways of addressing the effects of mining

The large open pits left behind after mining has ended can be restored through backfilling or by allowing natural flooding of the pits. Another way is to plant trees and grass in the affected areas to restore vegetation. The treatment of gaseous and liquid wastes before they are released into the environment is another way of reducing the negative effects of mining.

Exercise 3

1. What kind of industrial wastes can degrade the environment?
2. Which component of the environment is affected by the waste from industries?
3. Explain how mining activities affect human health.

Fishing

Fishing is an economic activity that involves harvesting aquatic organisms, including fish. Fishing takes place in marine and fresh-water environments. Salt water sources include oceans, while fresh water sources are rivers, lakes, ponds and dams. Some of the salt-water fish are snapper, rabbit fish, octopuses, mackerel, jacks, kingfish and sharks. Examples of freshwater fish are tilapia, catfish and the Nile perch. Tanzania is rich in fishing areas, including the Indian Ocean, Lake Victoria, Lake Tanganyika and Lake Nyasa. Others are the River Kagera, River Mara, River Rufiji, Great Ruaha River. River Wami and River Pangani.

CamScanner

Mtera, Nyumba ya Mungu and Kidatu are some of the dams used for fishing in Tanzania.

Advantages of fishing

Fishing activities have many advantages. The provision of food and employment is one of advantages of fishing. Communities that live near fishing areas can engage in fishing and fish vending. Fishing provides raw materials for industries that process fish. Fishing contributes togovernment revenue through taxation. In addition, fishing provides foreign exchange through the export of fish and fish products.

Effects of fishing on the environment

Fishermen use different ways to catch fish. Fishing methods can be appropriate or inappropriate to the environment. Appropriate fishing methods include the use of proper nets that are standard and ideal for fishing. Inappropriate fishing methods are those that damage fish and destroy their breeding grounds. These methods involve using poisons and explosives. Poisons and explosives destroy marine and fresh-water environments. Poisons and explosives kill fish and other aquatic organisms. The breeding grounds for aquatic organisms are also destroyed by poisons and expolosives, leading to the extinction of marine life. Poisoned fish, in turn, affect consumers by causing diseases such as cancer. Moreover, fishing using seine nets is one of the improper fishing ways because it catches everything, including small fish, eggs and other aquatic organisms. Figure 11 shows a seine net used in fishing.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

oak, pine and eucalyptus. Lumbering can be done in either natural or artificial forest. Lumbering is one of the important economic activities undertaken in forests. In Tanzania, lumbering activities are mainly carried out in the regions of Iringa, Njombe, Tabora, Lindi, Kilimanjaro and Mtwara. Figure 12 illustrates the preparation of logs for lumbering.



Figure 12: *Preparation of logs for lumbering*

Advantages of lumbering

Lumbering provides employment to the people who are involved in lumbering and related activities. It is a source of government revenue obtained by taxing the people, companies and industries involved in lumbering. It provides foreign exchange through the export of timber. It provides

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

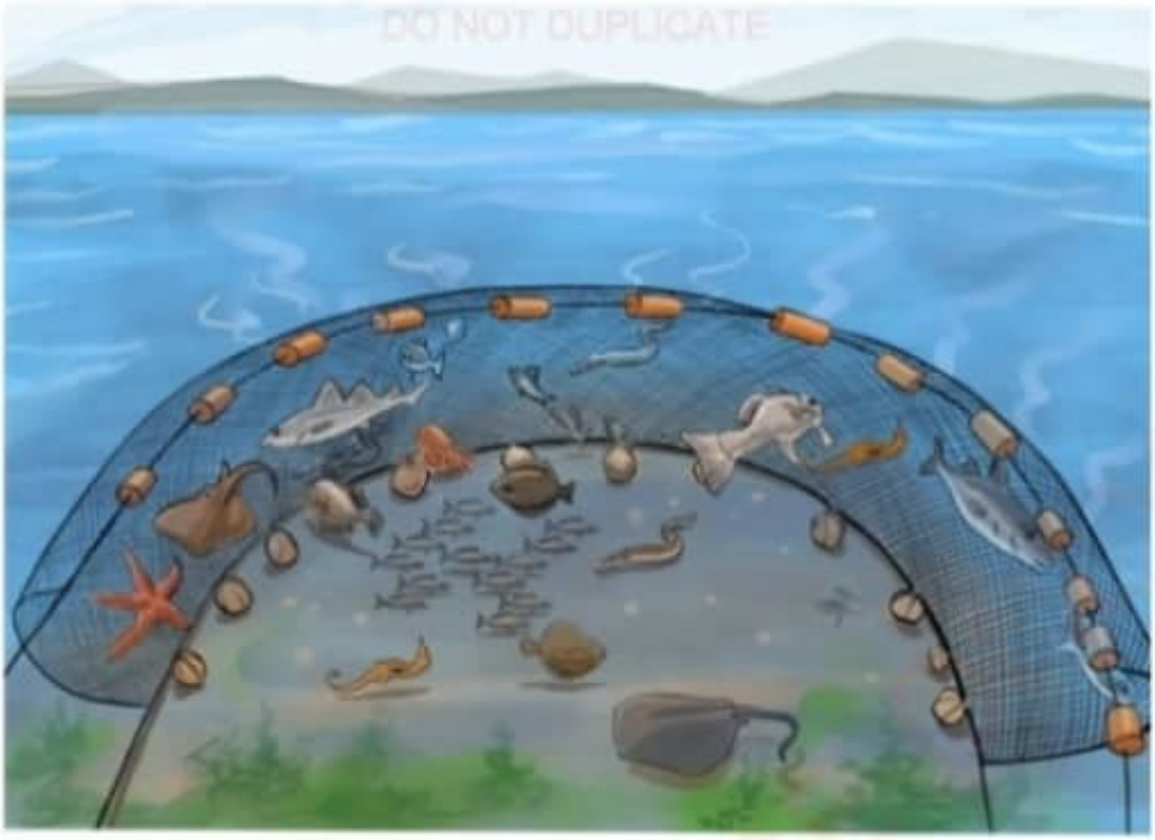


Figure 11: *A seine net*

Ways of addressing with improper fishing

Improper fishing is sometimes known as illegal fishing. The effects of improper fishing can be controlled by educating fishermen on the effects of using explosives, poisons and seine nets. The laws restricting improper fishing should be strongly enforced in order to improve fishing activities. Furthermore, fishermen should be supported so that they purchase and use friendly fishing tools such as fishing nets with an acceptable size at least two and half inches.

Lumbering

Lumbering is the felling of trees which can be used for domestic and commercial purposes. Trees suitable for producing timber are felled and sawn. Some of the trees commonly used to make timber are mahogany, ebony, teak, iroko,

CamScanner

raw materials like timber for making paper and for timber processing industries. Timber is also used in the construction of canoes, boats and houses. Timber can also be used to make furniture such as tables, chairs, cabinets, boards, doors and cupboards. Furthermore, trees help to control soil erosion and serve as wind breakers.

Effects of lumbering

Lumbering involves cutting down trees something that can cause environmental degradation. The areas where trees are cut remain bare, leading to soil erosion. Illegal lumbering causes deforestation and loss of the living organisms that depend on forests. Lumbering destroys habitats for animals and birds. This may lead to extinction of the living organisms that depend on forests. Illegal lumbering can also limit the supply of timber and wood, and ultimately the loss of government revenue.

Ways of addressing the effects of lumbering

There are different ways of dealing with the effects of lumbering on the environment. The ways include planting trees in deforested areas. People should be advised to use non-wood materials for construction purposes. The laws and regulations on forest harvesting should be enforced. Education on the effects of deforestation should be provided to communities.

CamScanner

FOR ONLINE USE ONLY
NOT FOR DUPLICATE

Exercise 4

1. What are the fishing methods used to conserve fishing areas?
2. What should be done to sustain lumbering activities while avoiding environmental degradation?

Effects of environmental degradation on the climate

Activity 3

Study Figure 13 and then answer the questions that follow.



Figure 13: *Effects of climate change*

1. What do you see in Figure 13?
2. What do you think has caused what you have seen in Figure 13?
3. What should be done to prevent it?

CamScanner

FOR ONLINE USE ONLY

Environmental degradation contributes to climate change in an area. The average weather condition in a specific area recorded for 30 years or more is known as climate. Climate includes various elements of weather such as temperature, humidity, rainfall, wind and atmospheric pressure.

The climate of an area changes with a change in its weather elements over a long period of time. Climate change is caused by natural processes such as volcanic eruptions and human activities that produce carbon dioxide and other greenhouse gases that cause an increase in temperature. Climate change is largely associated with human activities that produce a large quantity of carbon dioxide. When carbon dioxide and other greenhouse gases are released into the atmosphere, they create a layer that prevents heat from escaping from the earth's surface. This process causes an increase in temperature on the earth's surface.

Rising temperature leads to various challenges. For example, in Tanzania, since 2012, the increase in temperature has caused a significant reduction in the amount of ice and snow on the peak of Mount Kilimanjaro. The ice and snow on the world's highest mountains and in the polar regions have also melted due to the increase in temperature resulting from climate change. When ice melts, it turns into water that flows into the sea thus, causing the rise in sea level. The rise in sea level causes floods in coastal areas.

Likewise, climate change leads to either droughts or heavy rainfall that may result in floods and strong winds.

CamScanner

Figure 14 illustrates extreme floods caused by climate change.



Figure 14: *Effects of floods*

Climate change is also associated with the increase in , and the outbreak of diseases that did not previously exist. For example, highland areas that did not experience malaria before, now have malaria-causing mosquitoes due to the increase in temperature as a result of climate change. All these have significant effects on human beings and other organisms.

Climate change mitigation measures

Climate change can be mitigated by forest conservation and afforestation. Forests and trees absorb carbon dioxide from the atmosphere. Carbon dioxide contributes

CamScanner

to global warming. The use of alternative energy sources such as solar, natural gas, hydroelectricity and wind help to reduce excessive cutting of trees. The air pollution caused by greenhouse gases from industries, the aviation industry and vehicles which contribute to global warming should be controlled.

In farming, people have to use appropriate industrial fertilisers, especially those rich in nitrogen. This is because the nitrous oxide gas emitted during agricultural activities contributes to global warming when it is released into the atmosphere. Therefore, farmers are advised to practise organic farming, which is sustainable and environment-friendly.

Adaptation to the effects of climate change

Climate change often affects the environment surrounding us. The effects of climate change such as drought, extreme heat and floods pose serious challenges to humans such as famine and diseases. Since climate change will continue to exist, it is necessary to adapt to both its current and future effects. Some of the strategies for adapting to the effects of climate change are planting drought-tolerant and disease-resistant crops; and crops that mature early such as millet, sweet potatoes, cassava, pulses and sorghum. In areas where irrigation is practised, it is important to use the drip irrigation system that uses a little amount of water. Furthermore, the harvesting and storage of rain water for use during water shortages is another way of adapting to the effects of climate change.

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Revision exercise

Choose the letter of the correct answer

1. What environmental effect will occur if people burn forests?
   (a) Soil turning black
   (b) Drought and the loss of soil fertility
   (c) New grass growing quickly
   (d) Fire burning for a long time

2. What is the effect of using seine nets for fishing?
   (a) Seine nets destroying fish traps
   (b) Seine nets causing fish diseases
   (c) Seine nets capturing small fish and eggs
   (d) Seine nets catching large fish only

3. Improper storage of plastic wastes destroys the environment because the waste _____.
   (a) takes up a lot of space
   (b) emits foul odours
   (c) takes a very long time to decompose
   (d) can explode

4. Which of the following is a source of water pollution?
   (a) Planting trees near water sources
   (b) Removal of waste from near water sources
   (c) putting plastic bottles near water sources
   (d) Dumping wastes near water sources

5. What are the causes of climate change?
6. How can we reduce global warming?

CamScanner

FOR ONLINE USE ONLY

Test

Section A: Choose the letter of the correct answer

1. Geography is concerned with _____
   (a) human beings and their environment
   (b) environmental conservation
   (c) various features of schools, classrooms and wild birds
   (d) oceans, the atmosphere and various types of minerals

2. What are the effects of environmental degradation on human beings?
   (a) Wind and rain
   (b) Famine and disease
   (c) Clean and safe air
   (d) Coldness and hotness

3. Which of the following are the effects of air pollution on human health?
   (a) An increase in theft
   (b) Respiratory diseases
   (c) An increas of living organisms
   (d) Increased flooding

CamScanner

FOR ONLINE USE ONLY

Vocabulary

Abrasive	a substance used for grinding, polishing or cleaning a hard surface
Backfilling	a process of returning materials removed during extraction into the underground part of a mine
Breeding area	a special environment suitable for fish to lay eggs and for the growth of young fish
Energy	any material that can be used to generate electricity and other forms of power
Greenhouse gases	gasses in the earth's atmosphere which trap heat
Kraal	an area surrounded by a barrier used for keeping livestock
Mercury	a liquid metal used by small-scale miners in extraction of gold
Seine net	a fishing net that is used to encircle fish or other aquatic organisms

CamScanner

FOR ONLINE USE ONLY
DO NOT DUPLICATE

Section C: Matching items

13. Match the items in column A with those in column B to produce a meaningful statement

No.	Column A	Column B
(i)	Carbon dioxide	A. study of the relationship between humans and the environment
(ii)	Mining	B. causes excessive cutting of trees
(iii)	Environmental conservation	C. an example of a basin
(iv)	Industries	D. contribute to global warming
(v)	Wood and charcoal energy	E. the highest mountain in Africa
(vi)	Geography	F. process raw materials
(vii)	Lake Victoria	G. leaves behind large pits
(viii)	Mount Kilimanjaro	H. promotes sustainable use of resources and prevents the outbreak of disease

CamScanner

4. Which of the following gases is the most responsible for global warming?
   (a) Oxygen
   (b) Dust
   (c) Carbon dioxide
   (d) Hydrogen

5. Which of the following types of landscape are affected by floods due to the rise in sea level?
   (a) Mountains
   (b) Beaches
   (c) Valleys
   (d) Grasslands

Section B: Short-answer items

6. Explain how fishing activities can contribute to environmental degradation.
7. List the elements of weather.
8. List the lakes in Tanzania which are found in the Great East African rift valley.
9. Explain the importance of forests to living organisms.
10. Why are we advised to reduce the use of plastic products?
11. How can we adapt to the effects of climate change?
12. What packaging alternatives would you recommend over plastic packaging?

FOR ONLINE USE ONLY
CamScanner

Bibliography

Engler, H. J., Matthews, T., Bushaw, W., & Stooksberry, L. (2018). *Geography framework for the 2018 national assessment of educational progress.* U.S. Department of Education.

Joseph H. (2010). *An introduction to physical Geography and the environment.* Pearson education Limited.

KICD. (2021).*Republic of Kenya upper primary level designs subject social studies grade 6* (1st ed.). Kenya Institute of Curriculum Development.

Leslie, A. D. (2021). *Environmental Geography: People and the Environment. Understanding our World.*

Taasisi ya Elimu Tanzania. (2018). *Maarifa ya Jamii, Kitabu cha Mwanafunzi Darasa la 3.* Taasisi ya Elimu Tanzania.

Taasisi ya Elimu Tanzania. (2018). *Maarifa ya Jamii, Kitabu cha Mwanafunzi Darasa la 4.* Taasisi ya Elimu Tanzania.

Taasisi ya Elimu Tanzania. (2018). *Maarifa ya Jamii, Kitabu cha Mwanafunzi Darasa la 5:* Taasisi ya Elimu Tanzania.

Wizara ya Elimu, Sayansi na Teknolojia. (2023). *Muhtasari wa Somo la Jiografia na Mazingira Elimu ya Msingi Darasala III - VI.* Taasisi ya Elimu Tanzania.

CamScanner