

Observe the given picture and discuss.



Figure 6.1

- i. What could be the number of the animals shown in above picture, in Nepal?
- ii. How will human existence be affected if measures are not taken to conserve these animals?
- iii. What could be the reason behind the increment of temperature of the Earth's surface day by day?
- iv. As shown in the picture, are the mountains becoming bare or naked due to the melting of snow? How can this be prevented?
- v. How relevant is the use of traditional herbal medicine in this modern age?

There are various types of plants and animals around us. In order to preserve the existence of such organisms, it is necessary to maintain the good condition of the environment and habitats. Due to various human activities in the name of modernization and industrialization, the atmospheric conditions of Earth's surface are changing which is causing changes in climate. Climate change has affected the shelter and existence of organisms found on Earth, both directly and indirectly. Due to various natural causes and human activities, many animals and plants are decreasing in number and some have reached extinction. These organisms are rare, and many species of rare plants and animals are found in Nepal. It is our responsibility to protect them so that future generations can also learn about these plants and animals and utilize them. Since some plants have medicinal properties, they have been used as medicine since ancient times to solve various physical complications of the body. These plants are called medicinal plants.

6.1 Climate Change

Activity 6.1 Study of the effect of climate change

Fill in the table below by identifying possible environmental changes and their effects that occur in your locality or school due to climate change, and discuss them in class.

S.N.	Climate change	Effects of environmental changes

Climate

Climate is the average weather pattern for long time, typically about 30 years, in a certain geographical area. Generally, the climate of a place remains similar. Very small natural changes on Earth do not change climate. However, due to the emission of different types of greenhouse gases by human activities, the climate of the world has changed. As a result, the weather patterns of various regions have changed a lot.

Climate change

Climate change is a serious global problem, and developing countries are more affected by it than developed ones. Nepal's contribution to greenhouse gas emission is negligible, yet it is at a high risk of adverse effects of climate change. In addition to the natural up and down of the climate over a long period of time, there has been a gradual change in the Earth's climate due to changes in the composition of the atmosphere caused by direct or indirect human activities. The process of change in climate in the particular place in the long interval of time due to unstable nature and various human activities is called climate change. During climate change, the regular cycle of weather of a place is disturbed. Overall, climate change refers to a change in the statistical magnitude of the weather over a long period of time. Scientists around the world have studied climate change and its effects by analysing various sources such as weather data, satellite images, and research reports of the places affected by climate change. Climate change is also experienced in Nepal. Since the past, the temperature of Nepal is increasing at the rate of 0.06°C every year. Various water sources, like rivers, lakes, and fountains, are drying up every year, and the volume of water in rivers is decreasing. There is an equal chance of flooding due to glacial lake outbursts. Heights of mountains are decreasing due to the melting of snow. Based on all these facts, it can be said that climate change has a negative impact in Nepal as well.

Causes of climate change

The causes of climate change include both natural factors and human-induced activities. Due to poverty, illiteracy, and social inequality, the livelihoods of communities that depend on natural resources are considered more sensitive to the impact of climate change. Causes of climate change can be classified into two: natural and human-induced.

Natural cause

Various natural phenomena influence the environment. The emission of greenhouse gases takes place because of such natural

events, and consequently, climate change occurs. Some natural activities are given below:

a. Solar activities

Energy is produced in the sun because of thermonuclear fusion reactions. When the rate of this reaction changes, the energy produced in the sun also changes. This also affects the intensity of solar radiations that come on the surface of the earth. Such changes affect the weather. So, such variations in solar activities have a role in climate change.

b. Change in the reflectivity of the earth

The amount of solar radiation reflected from the earth depends on the nature of the earth's surface and atmosphere. About 70% of the solar radiation that reaches the earth is absorbed. It contributes to the natural changes on the surface of the earth like melting of ice due to climate changes. Greenhouse gases include water vapour too, which is formed due to the evaporation from seas, rivers, and other water sources. Fluctuation in the amount of light and heat radiations of the sun on the earth's surface results in a change in the rate of evaporation.

c. Volcanic eruption

Volcanoes have played a noticeable role in the climate. During volcanic eruptions, various gases, including carbon dioxide and aerosols, are emitted. Such gases and aerosols spread high up to the upper layer of the atmosphere and block solar radiation for some time, making the earth's surface cold. In addition, emitted greenhouse gases in such cases remain in the atmosphere for a long time trapping the solar radiations and increasing the temperature of the earth.



Figure 6.2 Volcano

Human-induced cause

Various activities done by human beings are also the cause of climate change. Greenhouse gases are abundantly produced due to human-induced activities, which form a thick layer above the earth's surface and trap solar heat, leading to a rise in temperature on the earth. Some causes are given below:

a. Production of greenhouse gases

While burning fossil fuels like coal, mineral oil, natural gases to produce heat energy and electrical energy, a tremendous amount of harmful gases, including greenhouse gases, are produced. This process also contributes to the increase in the temperature of the earth's surface.



Figure 6.3 Energy production centre

b. Industrialization

Different types of industries are established to produce cement, steel, electrical appliances, plastic clothes, and other materials. Fossil fuels are used to run such industries. Gases released by the combustion of such fuels pollute the environment and also play role in climate change.

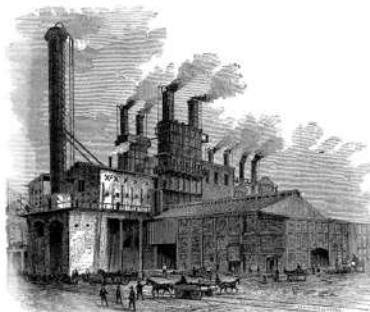


Figure 6.4 Factory

c. Deforestation

Forests are being cut down in an uncontrolled manner during the construction of roads, human settlements, and cultivation. Deforestation reduces the amount of carbon dioxide consumed by plants for preparing food, and consequently, the amount of greenhouse gases in the environment will be increased. This increases global warming. The forest is the main storage site of carbon emitted into the environment.



Figure 6.5 Deforestation

d. Burning of fossil fuels

Fossil fuels are used in most of the vehicles like cars, buses, planes, ships, trucks, etc. While burning such fuels, harmful as well as greenhouse gases, mainly carbon dioxide, are released. These gases pollute the environment and also increase the temperature of the earth.



Figure 6.6 Vehicles

Effects of climate change

Activity 6.2

Divide the students into several groups as per the need, collect photos and details of the effects of climate change on the mountains, hills, and terai by using the internet and newspapers, and then prepare a poster. Display the poster in class and discuss the effects of climate change on the environment and human life.

Over the past few decades, the rise in atmospheric temperature and the resulting climate-related disasters, like either extreme rainfall, no rainfall or drought, have adversely affected the Himalayan range and glaciers of Nepal, as well as the ecosystems dependent on them. Due to the rapid melting of snow caused by the rising temperature of the earth, the size of glacial lakes is increasing, and the risk of glacial lake outburst is also increasing. The negative impacts of climate change have been directly felt in areas related to livelihoods, such as forests and biodiversity, energy sources, human health, tourism, housing, and infrastructure development. Climate-related disasters, such as floods, landslides, and forest fires, have also caused the loss of a large amount of property every year. The effects of climate change are described below:

a. Drought and floods

Climate change brings the changes in the availability or pattern of rainfall in various areas, leading to the possibility of drought

in some areas and floods in others due to excess rainfall. Drought and floods affect agricultural production, which increases the risk of food crisis in the future.

b. Increasing sea level

An excess amount of greenhouse gases in the atmosphere results in an increase in the temperature of the atmosphere, leading to changes in the climate. This overall rise in temperature of the earth is called global warming. This rise in temperature also causes an increase in the volume of seawater. Besides, water formed by the melting of snow due to global warming also contributes to the rise of sea level. As a result, water levels reach the top of coasts and islands, destroying flora, fauna, and their habitats, and affecting local communities.

c. Effects on biodiversity

The increment in the earth's temperature caused by climate change brings changes in the life processes of organisms living on land and seas. These changes affect their growth, development, and physiology. Climate change also affects the adaptation of animal and plant species found in land and marine forms. As a result, the risk of extinction of those organisms increases.

d. Negative impact on human health

Climate change adversely affects various environmental components. This also impacts on human health. It causes health hazards in humans, like skin diseases, mental illnesses, nutritional deficiencies, etc.

e. Change in weather

Due to climate change, there has also been a change in the weather. Heavy rainfall occurs in seasons other than rainy season. Sometimes, there is drought during the rainy season. As a result, agricultural farming is affected because sometimes there is heavy rainfall and no rainfall when needed, and often there is too much rainfall for the crops that can easily grow with little water.

Measures to control climate change

Activity 6.3

- a. Organize a drawing exhibition on the effects of climate change.
- b. Prepare a list on a chart paper by observing the activities going on around you or use the internet to find out the ways to mitigate climate change issues. Also, discuss these measures in the class.

The government of Nepal has formulated policies and programs to manage the adverse effects and risks of climate change. According to the Environmental Protection Act 2076, the government of Nepal, provincial government, local level, and other public bodies and the private sector can issue necessary orders by publishing notices in the Nepal Gazette regarding measures to be adopted to mitigate the adverse effects and risks of climate change. Various negative impacts are seen on the earth due to climate change. To control climate change, it is necessary to adopt measures to minimize it. Some measures are given below:

a. Reducing carbon emission

Global warming is increasing due to the excessive emission of carbon. Climate change can be controlled by reducing the amount of carbon emissions. For this, energy efficiency should be improved and emphasis should be given to the use and conservation of energy resources. Priority should be given to the use of alternative energy sources like solar energy and wind energy in transportation. This can reduce fossil fuel consumption and carbon emissions.

b. Emphasizing in carbon storage

Green plants utilize carbon dioxide to prepare their food and release oxygen into the environment, which is essential for organisms. So, emphasis should be given to the conservation of forest resources through plantation and the conservation of trees. This way more carbon can be stored within plants, helping to minimize the climate change.

c. Public awareness and change in behaviour

If we make our activities more environmentally friendly, we can minimize climate change.

We should make our habits more environmentally friendly and also participate in making the public aware.

Project work 6.1

Prepare a PowerPoint presentation on climate change by researching various newspapers, articles, and the internet, and present it to the class. Discuss your findings with your classmates.

6.2 Endangered plants and animals of Nepal

Identify the animals and plants shown in the picture. In the classroom, discuss the status of these creatures based on the information obtained from various newspapers, radio, television, or other means of communication.

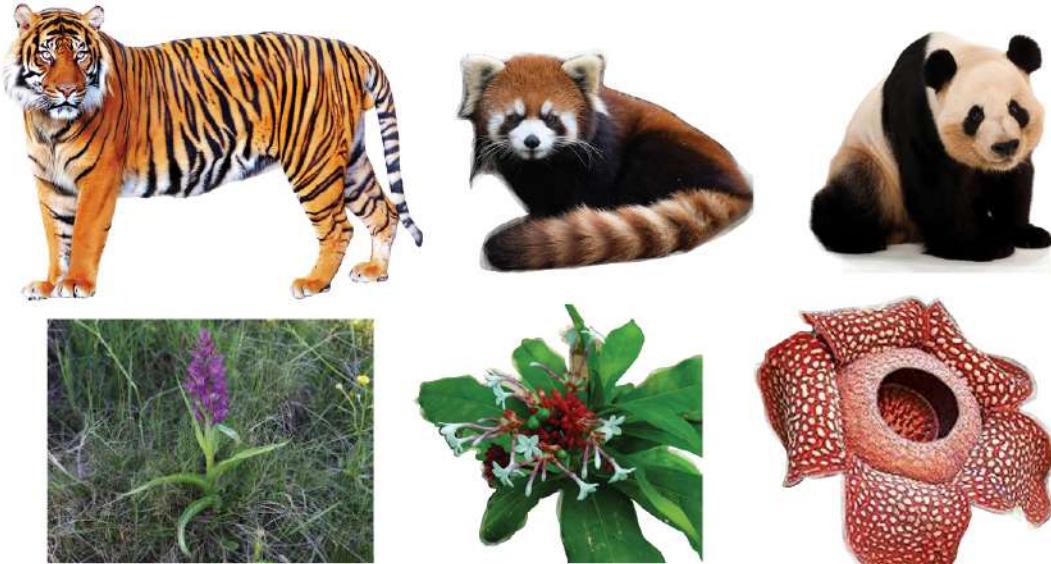


Figure 6.7 Endangered plants and animals of Nepal

The existence of many types of life on the earth is disappearing due to climate change and various other reasons. The number of many animals are decreasing, and some animals have become extinct. The organism that are about to become extinct are called

rare organisms, and such rare organisms are found in different parts of our country. The survival of all plants and animals depends on bio-diversity.

Due to human activities and changes in nature in course of modern development, the existence of animals has decreased. There is a chance of extinction of many plants and animals. The main reasons for this are as follow:

- a. Due to the adverse effects of weather and climate change, the distribution pattern of plants and animals is affected
- b. Uncontrolled use of biological resources is causing a decline in their numbers.
- c. Growing new species of plants without any research has affected the indigenous species of plants.
- d. Rearing new species of animals without any research has displaced indigenous or prevailing animals of that area.
- e. Environmental pollution is increasing.

Project work 6.2

Observe the various plants and animals in your surroundings. Ask the elders in your neighbourhood and make a separate list of the plants and animals which were found there in the past and are not found currently. What are the reasons for their decline? Find out how to protect them, and also, your role in protecting them. Prepare a short report based on the points below, with your analysis, and present it to the class:

- a. List of local plants and animals
- b. Plants and animals that are declining
- c. Reasons for their decline
- d. Measures that can be adopted for their conservation
- e. Your role in conservation

6.3 Conservation measures for endangered and rare plants

Various species of plants are found in our country. Among them, some important plants are Jatamasi, Champ, Sarpagandha, Panch aule, Lauth Salla, etc., which have been decreasing. These plants are used by human for various purposes, but because they are being used without considering their status, they are going to be extinct in the near future.

Therefore, protection of these plants is a must. Various efforts have been made to protect them. The Government of Nepal has implemented the “Control of International Trade of Endangered Wild Fauna and Flora Act, 2073” for the conservation of rare wild animals and plants. This act includes various rules related to controlled breeding, study research, and sales distribution of rare wild animals and plants. Some conservation measures for protecting rare plants are as follows:

a. Conservation of natural habitat

Collecting firewood, fodder leaves, and grasses from the forest, forest fires, and the extension of pasture land lead to the loss or destruction of natural habitats of wildlife. These activities should be controlled. Rare plants can be conserved by the protection of their natural habitat. Haphazardly grazing of cattle in the forest area should be stopped by humans. Besides, such places should be identified and conserved.

b. Conservation of rare and endangered plants

The varieties of raw materials required for conducting different types of industries and factories are obtained from different types of plants. While collecting such raw materials, the existence and protection of useful plants should be kept in mind. They should not be destroyed in such a way that they cannot be produced again. Their theft and smuggling should be controlled.

c. Increasing the production of saplings through modern methods to expand the number of rare plants

To increase the number of rare plants, their seed should be collected and grown in a nursery. Modern techniques like tissue

culture can also be adopted to produce many saplings at a time. After that, afforestation of rare and useful plants can be widely done.

d. Formulation and implementation of appropriate laws

Rules and laws should be made to conserve plants that are about to go extinct and those that are prone to extinction. The information regarding laws should be spread to the public and should be implemented effectively.

e. Medicinal use and conservation of rare plants

It is necessary to make the public aware that most of the rare plants can be used for medicinal purposes. Public awareness raising programs about the rare plants should be organized at the local level. Local people, communities, and organizations should be mobilized for protecting rare plants.

6.4 Measures of conservation of wildlife

Due to various human-induced and natural causes, fauna is endangered, extinct, and becomes rare. Various fauna or animals are at the danger of extinction due to the change in the ecosystem, destruction of habitat, adverse effects on the environment, poaching and illegal trade. To control the illegal hunting and trade of wildlife, the “Control of International Trade of Endangered Wild Fauna and Flora Act, 2073” has been implemented by the government. The following are the conservation measures of rare fauna:

a. Study and research

Extensive study and research work should be carried out to find out the exact status of the nature and the ecosystem available, for the conservation of rare animals and birds.

b. Conservation of natural habitat

All animals and birds flourish in their own natural habitat. Therefore, the natural environment, such as forests, streams, watersheds, pasture lands, etc., should be protected for the conservation of rare flora and fauna.

c. Strict prohibition of poaching of the conserved wildlife

The main reason behind the extinction of various fauna is their illegal hunting and trade. Therefore, the rules formulated to control and prevent the hunting of endangered and rare animals and birds should be effectively implemented for their protection.

d. Managing ex-situ conservation of rare wildlife

The number of rare animals and birds can be increased by creating a suitable environment for them in the ex-situ conservation area and keeping them in aquariums, botanical gardens, zoos, and similar habitats.

e. Provision of laws and their effective implementation

Suitable rules and laws formulated for the conservation of rare wild animals and birds should be effectively implemented. Due to this, illegal activities will be controlled, and rare animals can be protected.

f. Promoting public awareness

It is necessary to conduct various programs to increase awareness among the public about the importance of rare animals and birds, the reason for the decline in their number, conservation measures to be adopted and benefits of their conservation, and the participation of local people and public responsibility.

Activity 6.4

Search on the internet about any rare plant and animal you like and prepare a description on chart paper with the title “My favourite rare animal or plant.....” which includes its current status, characteristics, reason of extinction, conservation measures, and a picture. Then, present it in the class.

Protected animals and birds

In addition, the following animals and birds are protected in our country: 27 species of mammals, 9 species of birds, and 3 species of reptiles. The list is as follow:

Table: protected animals and birds

Mammals	Birds
1. Pigmy Hog	1. Great hornbill
2. Red Panda	2. Cheer pheasant
3. Black buck	3. White stork
4. Gaur Bison	4. Black stork
5. Wild yak	5. Sarus crane
6. Wild water buffalo	6. Bengal florican
7. Grey Wolf	7. Impeyan pheasant
8. Hispid hare	8. Lesser florican
9. Swamp deer	9. Crimson horned pheasant
10. Asiatic wild elephant	
11. Lynx	
12. Striped Hyena	
13. Assamese Monkey	
14. Indian Pangolin	
15. Chinese Pangolin	
16. Himalayan musk deer	
17. Clouded leopard	
18. Great Tibetan sheep	
19. Bengal Tiger	
20. Snow Leopard	
21. Tibetan Antelope	
22. Gangetic Dolphin	
23. Leopard cat	
24. Spotted Linsang	
25. One-horned Rhinoceros	
26. Four-horned Antelope	
27. Brown Bear	

6.5 Medicinal plants of traditional use, found in Nepal

Identify the picture given below and discuss:



Figure 6.8 Medicinal herbs

- What are the names of the plants given above?
- For what purpose can these plants be used?
- What are these plants commonly called?
- What are the advantages of cultivating these plants on a commercial basis?

The plants shown above are commonly used as home remedies for various ailments. Various parts of these plants are used as raw materials for making different types of medicines. So, they are commonly called medicinal plants. Malabar nut (ASURO), Asiatic pennywort (GHOD TAPRE), aloe vera (GHIU KUMARI), holy basil (TULSI), neem, etc. are common medicinal plants found in various regions of Nepal. According to the Department of Plant Resource, more than 7000 flowering plants are found in Nepal, more than 700 species of plants are identified as medicinal plant and used as medicine. The highest number of medicinal plants is identified in the Karnali region. There is a need for further study and research regarding the correct use of such plants, their market management, proper and sustainable use, and also the utilization of our traditional knowledge and skills.

Activity 6.5

Prepare a list of medicinal plants found in your locality and home, and write their uses in the table given below. Also, discuss them in class.

S.N.	Name of medicinal plants	Part of plant used as medicine	Uses
1.	Amala		
2.			
3.			

In this chapter, we discussed some of the medicinal plants identified in Nepal:

Holy Basil (Tulsi)

Its scientific name is *Ocimum tenuiflorum*. It is a multipurpose medicinal plant found everywhere in the world. It produces more oxygen and is important from a religious point of view. Therefore, according to our tradition, people who have reached the end of their life are kept near this plant to compensate for the lack of oxygen. Tulsi is used as a spice in various dishes. It is also used in tea. All parts of the plant, including the leaf, shoot, flower, root, and seeds are important. These parts can be used as medicine. Consuming it stimulates the appetite and promotes active and smooth digestion. The plant also possesses antimicrobial properties and is used to destroy harmful microorganisms that affect animals and humans. It is used for various purposes, such as disinfection, purifying water, and gargling. In rural areas, its leaves are boiled with water and consumed during throat pain or cold and infections.



Figure 6.9 Tulsi plant

Neem

Its scientific name is *Azadirachta indica*. It is a tall tree. Its all parts like leaves, root, stem, flower, and fruit are used for making a variety of Ayurvedic medicine. Its parts are extremely bitter in taste, and neem juice is very useful in skin-related health problems.



Figure 6.10 Neem plant

It is also known to be a natural purifier of blood, destroying and reducing the bad cholesterol in the body. To minimize high blood pressure, neem juice is consumed. But excessive consumption may lead to extreme low blood pressure and complications.

Heart-leaved moonseed (Gurjo)

Its scientific name is *Tinospora cordifolia*. It is found in most of the nurseries and forests of Nepal.

It is a climbing shrub. It grows by taking the support of other plants and can be propagated from the stem. It is found from the terai region to the Himalayan region of Nepal. It boosts the immunity of the body. So, this helps to prevent infections. It is a multipurpose medicinal plant having anti-oxidant properties. Its optimum consumption does not have negative effect on the body, but its excessive consumption reduces the sugar level in the blood.



Figure 6.11 Heart-leaved moonseed (Gurjo)

Asiatic pennywort (Ghod tapre)

Its scientific name is *Centella asiatica*. It is found in the tropical places. It is a herbaceous plant. This plant has a slightly aromatic smell and is a perennial plant that lives for more than two years. It creeps along the ground and is specially found spreading like a green carpet in swampy and shady places in paddy fields, banks of streams, etc. All of its parts can be used for medicinal purposes.



Figure 6.12 Asiatic penny wort (Ghod tapre)

It also possesses antimicrobial and anti-oxidant properties. Its consumption is beneficial because it is neuroprotective in function. Its regular consumption enhances mental capacity and memory power. It contains anti-stress formula. Its consumption relieves depression and anxiety. From ancient times, this herb has been used as a medicine for the common cold. Its fresh flower is crushed and made a paste to apply on burnt skin and wounds. It is believed that, its paste can treat skin related problems. It is used as raw material for making various medicines. Similarly, Ghod tapre is used to make cosmetics like skin care cream, skin toning, etc.

Turmeric

Its scientific name is *Curcuma longa*. This plant is also a perennial herb. Its stem is modified into underground rhizome. It contains an organic chemical called curcumin, which makes it yellow-coloured. Medicinal property of this plant is the presence of curcumin. Turmeric



Figure 6.13 Turmeric

also contains vitamin A, B, B2, and C abundantly. Other minerals like calcium, phosphorus, and iron are found in it. Turmeric contains antimicrobial property. It makes our diet spicy and attractive and also kills harmful microorganisms found in our food. Consumption of turmeric enhances our body's immunity. It is cultivated in Nepal since ancient times. It helps to destroy the toxins in the body, and is also used for the treatment of leprosy, scabies, etc. Turmeric is beneficial to prevent respiratory diseases, heart-related diseases, etc. It is used to make cosmetics and is also used as a natural dye for colouring various materials.

Malaber nut (Asuro)

Its scientific name is *Adhato vasica*. This plant is a medium-sized shrub. It is found in the range of Chure mountains and up to Mahabharata range. This plant is full of medicinal properties. It contains chemicals like vasicine, vasicinone, hydroxyl vasicine. Because of these chemicals, it is used in the treatment of respiratory ailments. Malabar nut leaves are boiled with water, and this water is used to gargle for the treatment of teeth and gum ailments. Because of the microbial property of this plant, its consumption prevents various infections. Its flower is used as medicine in the burning sensation of the urinary tract. To get relief from common cold, it can be also used in tea. Juice of its flower and leaf helps to clear mucus from lungs and respiratory tract and also helps to widen respiratory pathways. It is cut down to make manure in fields.



Figure 6.14 Asuro

Calamus (Bojo)

Its scientific name is *Acorus calamus*. It is an erect herb with aromatic parts. It grows on swampy land and on the bank of ponds, ditches, etc. It grows easily without any care from human. Its leaves are like sword-shaped, and its modified root-like structure is called rhizome. Rhizome is used as traditional medicine. It is beneficial for throat-related health disorders. It is used to relieve pain and to treat upset stomach. But its excessive use causes nose bleeding.



Figure 6.15 Bojo

Caterpillar fungus (Yarsagumba or Yarchagumba)

Its scientific name is *Cordyceps sinensis*. Yarsagumba is found at the height of 3000m-5000m from sea level, in the snow-covered grasslands. It is a long, white, or brown-coloured fungus of about 5-8 cm and grows on the body of a caterpillar. Yarsagumba belongs to fungi group. It reproduces by spores. From the old yarsagumba on the land, many spores spread in the atmosphere. These spores get adhered on the body of a caterpillar of a type of butterfly. These spores germinate in the body of that larva. Then, hyphae of such fungus spread into the body of larva in search of food. The caterpillar can move for some time, but later they become relaxed when the hyphae spread extensively in the body of the larva. Finally, the larva dies under the soil. Then, this fungus receives the nutrients from the dead body of the caterpillar and grows. Therefore, yarsagumba has two parts: upper part is fungus and the lower part is caterpillar. In the winter, yarsagumba seems like an insect in which the fungus is fully developed. In the rainy season, when snow melts, the fungus completely mummifies the dead insect. This fungus has no root, stem, leaf, flower, and fruit. It is used for making medicine in Ayurveda. It is an energy booster when consumed with honey or milk. It is rare, and its collection, use, sales, and export is prohibited by the government.



Figure 6.16
Yarchagumba

Mugwort (Tite paati)

This medicinal plant belongs to the category of herbs. Its scientific name is *Artemisia vulgaris* and it is found in the mid-hilly region of Nepal. This plant is used for the production of various types of cosmetics, perfumes and organic pesticides. Generally, this herb grows everywhere.



Figure 6.17 Tite pati

Farmers also use it as grass, which is dried to make bedding materials (litter) for cattle. Nowadays, scented oil is extracted from this plant.

Aloe vera (Ghiu kumari)

Its scientific name is Aloe vera. Generally, it grows in dry places. Its leaves are thick, fleshy, and serrated. This plant stores food and water in its leaves and water accumulated in the leaf is gel-like. This gel is used as a remedy for various ailments. In Ayurveda, Ghiu kumari is also considered as "SANJIVANI". Vitamins A and C, which are required for human beings, are found abundantly in Aloe vera. Regular consumption of Aloe vera juice is beneficial for abdomen, bone joint, and skin-related problems. When its gel is applied to the skin, it provides relief from cracking of the skin and sunburn and also helps to maintain moisture in the skin and makes it glow. It does not allow pimples, dandruff, etc. to occur on the skin. Applying its gel to the hair makes the hair shiny and also strengthens the roots. When applied to a burned area, the wound heals faster.



Figure 6.18 Aloe vera

Project work 6.3

Collect different types of medicinal plants/herbs found around your home and school and paste them one by one on each page of a notebook. Also, write their availability and uses on each page. In this way, prepare a handbook of herbs by collecting information about these medicinal plants.

Project work 6.4

Apart from the medicinal herbs mentioned above, inquire about the medicinal plants found in your locality and prepare a short report on their availability, use, and conservation measures. Discuss these plants in the class.

Exercise

1. Choose the correct option for the following questions:

- a. Nowadays, sometimes there is low rainfall and sometimes heavy rainfall, which has affected the agricultural production. What may be the reason for this?
 - i. Volcanic eruption
 - ii. Climate change
 - iii. Decline of rare wildlife
 - iv. Change in atmospheric pressure
- b. What is the reason for the increase in the volume of sea level?
 - i. Heavy rainfall
 - ii. Low rainfall
 - iii. Global warming
 - iv. Deforestation
- c. Which of the following groups is a group of endangered animals?
 - i. Swamp deer, Asiatic wild elephant, stripped hyena
 - ii. Asiatic wild elephant, stripped hyena, jackal
 - iii. Antelope, tiger, leopard
 - iv. Asiatic wild elephant, tiger, bear
- d. In which group of plants, does Tulsi belong?
 - i. Endangered plant
 - ii. Medicinal plant
 - iii. Thorny plant
 - iv. Creepers
- e. The union of a type of caterpillar with a specific fungi forms Yarsagumba. In this, what is the relation between caterpillar and fungi?

- i. Symbiotic ii. Parasitic
 - iii. Predator iv. Saprotrophic
- f. In chickenpox, neem powder paste is applied to the affected parts, and neem leaves are spread on the bed. It helps to heal chickenpox. What property in neem helps to do so?
- i. Anti-inflammatory property
 - ii. Anti-oxidant property
 - iii. Anti-microbial property
 - iv. Anti-pyretic property
- g. Which part of Bojo is used for medicinal purposes?
- i. Rhizome ii. Leaf
 - iii. Stem iv. Flower
- h. Rama has been coughing for a long time? For this, which medicinal plant helps to get relief from cough?
- i. Boiled neem water ii. Aloe vera juice
 - iii. Boiled tulsi water iv. Yarsagumba powder
- i. What is the reason for the natural disaster shown in the given picture?
- i. Climate change ii. Deforestation
 - iii. Heavy rain fall iv. Volcanic eruption

2. Write the differences:

- a. Weather change and climate change
- b. Endangered plants and medicinal plants
- c. Greenhouse effect and climate change

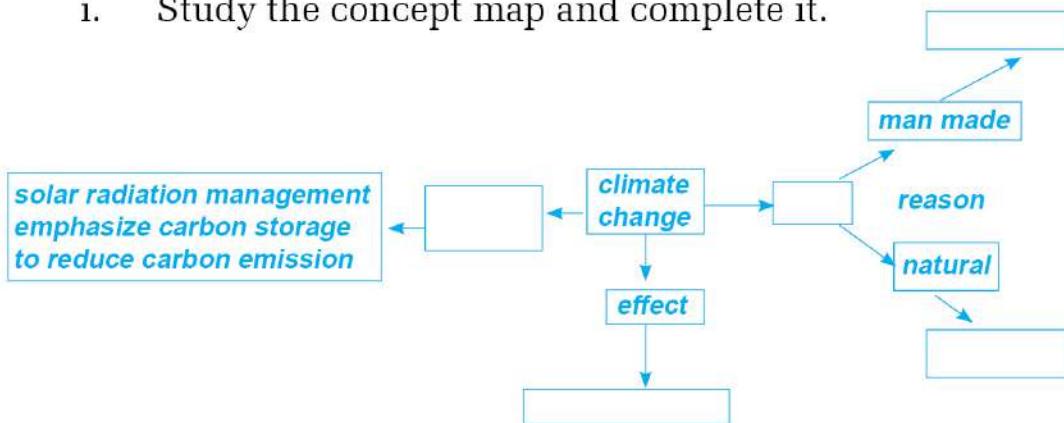
3. Give reason:

- a. The main causative factor of non-seasonal rainfall is climate change.
- b. Sea level rises due to climate change.
- c. Climate change also causes the extinction of animals.
- d. Endangered animals can be protected by conserving their natural habitat.
- e. The use of medicinal plants is beneficial for human health.
- f. Tulsi is called a life-giving plant.
- g. Neem is a multipurpose medicinal plant.
- h. Yarsagumba is used as an energy-booster herbal medicine.

4. Answer the following question:

- a. What is climate change?
- b. Write the main reasons for climate change.
- c. Describe the effects of climate change.
- d. What types of animals are called rare animals?
- e. What measures can be adopted to protect rare animals?
- f. Many plants are being extinct in Nepal due to climate change. What role can you play to protect such plants? Describe in brief.
- g. In order to protect and promote the medicinal herbs found in Nepal, it is essential to train the local people on the processing of herbs and their use. Explain your opinions.
- h. By protecting Yarsagumba and increasing its production, the economy of the country can also improve. Explain this statement.

- i. Study the concept map and complete it.



- j. Analyse the differences between part A and part B by observing the given picture.



- k. Look at the picture thoroughly and explain its role in climate change.



- l. The one-horned rhinoceros is on the verge of extinction. What can be done to protect it? Write in brief.
- m. We can find different types of medicinal herbs in our locality. But we depend on others for the treatment of common ailments. Identify the main reason for this and write about what can be done to maximize the use of local medicinal herbs.