

SESSION 1: SECTORS OF GREEN ECONOMY

A green economy is one which promotes development while making sure that the environment is protected. The term 'Green Economy' was first coined in a 1989 report for the Government of the United Kingdom by a group of leading environmental economists, titled "Blueprint for a Green Economy". Every economy has many sectors. A sector can be described as a part or a function of the economy. For example, agriculture, automotive, construction, transportation and healthcare are different sectors of economy.

To make the econmoy 'green' or environmental friendly there are some sectors where major changes can be made. We'll learn more about them in this lesson.

Since the sectors of green economy are all concerned about the environment, let's revise some common terms related to the environment as shown in Table 5.1.

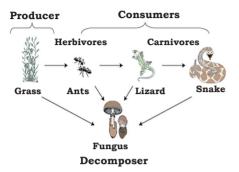
Table 5.1: Environment related Terms

Ecosystem

All the living organisms in a particular area and, the non-living environment with which the organisms interact, such as air, mineral, soil, water and sunlight, together form an ecosystem.







To understand how organisms and their surroundings are closely linked to each other, let us take an example of birds eating berries from a tree. The seed inside the berry comes out with the birds droppings. It falls into the soil and germinates (sprouts). It then grows into a new tree that produces more berries. We can see how plants, animals, soil, air and water are linked to each other.

Food Chain

This is a cycle in nature where food is produced by green plants; plants are consumed by plant-eating animals (herbivores); herbivores may get eaten by flesh-eating animals (carnivores); dead plants and animals are decomposed by decomposers into soil which in-turn feeds plants.

Sustainable Development

Sustainable means what is good for the economy as well as the future of the environment. For example, natural farming without using chemical fertilisers which permanently harm the soil.

Important Sectors of a Green Economy

The sectors or areas which are important for a environment-friendly economy are listed in Table 5.2.

Table 5.2: Sectors of Green Economy

Agriculture

Agriculture refers to growing crops for our food. It is the largest part of our

Sector

economy and the most important because it provides us with food. Agriculture may harm the environment by

- overusing land resources,
- cutting forests and
- polluting air, water and land by using harmful chemical fertilisers and pesticides.

Energy Resources

We use energy for all our daily functions but our demand is increasing by the day. The common energy



sources, such as oil, coal, gas,

etc., are harmful to health and environment. They are also limited and non-renewable.

What can we do?

- Support local, organic and natural farming (farming without use of harmful fertilisers and pesticides)
- Grow our own vegetables, if possible
- Eat in-season and locally produced food
- Select clean, renewable energy sources like solar lights whenever possible
- Avoid wasting electricity. Turn off lights and unplug appliances when you are not using them
- Avoid cars and use cycles or public transport





Sector

Construction

- · Construction and buildings affect global resources and climate.
- Use of sand and stones causes destruction of river beds and quarrying in mountains. These activities cause landslides, earthquakes and

destruction due to flooding.

- Construction activities also cause air pollution If a large scale construction project is and breathing problems.
- · Incorrectly designed buildings need more air-conditioning and electric lights, waste more water and use more energy overall.

Fisheries

• Overfishing has led to the depletion of future fish supplies.



- Some species of sharks, turtles and fish are becoming extinct. This will disturb the ecological balance and food chains in our ecosystem.
- This will also cause more dependence on other forms of food causing more pressure on agriculture sectors.
- Fishermen may lose their livelihood.

Forestrv

Forests are important for rainfall and to protect our land resources. Many tribes survive on forest products.

Deforestation or loss of forests leads to

- climate change,
- soil erosion,
- · loss of wildlife and damage to food-chain and ecosystems and
- less tree coverage which results in less rainfall and less oxygen and more pollution.

Tourism

Tourism can be great for local economies, but not if it harms the environment.



What can we do?

Energy-efficient or green buildings save electricity and water and use clean energy like solar and wind energy.

- We need to use cleaner energy in our buildings and avoid wastage of energy.
- We should talk to people about the advantages of using local construction materials.
- causing pollution we should inform the local authorities about them.

We can avoid the problems of over-fishing by telling people about sustainable fishing practices which control fishing and provide enough time for fish to breed and multiply.

If you eat fish, buy only those which are plentifully available and also in season (not during breeding season).

Sustainably managed forests can continue to support communities and without ecosystems damaging the environment and climate.

- Reduce, reuse and recycle paper so that fewer trees are cut.
- Avoid buying products, such as ivory which we can get only by harming animals.
- Buy only those products which are collected safely, such as honey collected without breaking beehives.
- While travelling, travel in groups, limit water and energy use and avoid wastage.
- There are hotels and travel companies which support ecotourism (tourism which protects the environment). Find out more about them and tell people about how to travel without harming the environment.



Sector

Transport

The transport sector consumes maximum petrol and diesel and causes a lot of pollution. The transport sector of a green economy aims at

• using cleaner fuels like electricity for vehicles.

• providing public transport, promoting cycling, etc., to discourage use of cars.

Water Management

Water is one of our most important resources. Billions of people worldwide lack access to clean drinking water or improved sanitation services – and population growth is making the problem more serious.

Waste Management

Throwing something away means losing the chance to reuse materials and can lead to land, air and water pollution.

Manufacturing Industry

Industries help in employment and economic growth, but harm the environment in many ways.

Industries should use methods to avoid and reduce pollution and to use clean sources of energy.

What can we do?

- Use public transport like buses or trains
- Walk or cycle when possible
- Use electric (battery-operated) vehicles if possible
- Use water wisely
- Turn off the tap when you are not using it
- Get leaking taps and pipes fixed immediately
- Don't let polluted water flow back to the land or water source before it gets a waste water treatment
- Reduce, reuse and recycle before throwing away things
- Separate the waste substances so that some products can be recycled and food waste can be composted
- Industries make items according to what customers prefer to buy
- If we buy 'green' or environment friendly products (less plastics, clothes made without chemical dyes, etc.) more industries will start making such products.

Practical Exercises

The practical activities will be facilitated by the teachers and necessary feedback will be provided by the teachers to the students.

Activity 1

Group Practice: Discussion on Sectors of Green Economy

Material required

Pen, paper

Procedure

- 1. Form groups of 4–5 students.
- 2. Each group should select any one sector (different groups should select different sectors) of a green economy.





- 3. Discuss within the group:
 - What is the importance of that sector for the country?
 - What can you do to contribute to a green economy (within that sector)?
- 4. Make a list of your points. Present your points to the class.
- 5. Other groups should give feedback and add any other important points that may have been missed.
- 6. The teacher will write the important points on the blackboard. Make a note of these points and start practicing them in real-life.

Activity 2

Group Exercise: Preparing a Poster on 'Sectors of Green Economy'

Material required

Pen, colouring material, chart paper

Procedure

- 1. Use same groups as created above.
- 2. Make a poster showing the sectors of green economy you discussed in the previous activity. This can be completed as homework if there is less time in class.

Check Your Progress

A. Multiple choice questions

Read carefully all the options given below the question and choose the correct option(s).

- 1. Which of the following actions would not help a green agriculture sector?
 - (a) Using chemical fertilisers
 - (b) Using organic manure
 - (c) Growing vegetables using vermicompost
 - (d) Buying or selling organic potatoes
- 2. Which of the following action will promote green economy?
 - (e) Use of non-renewable resources
 - (f) Sustainable development
 - (g) Social protection
 - (h) Creating jobs

B. Subjective questions

- 1. List all sectors of the green economy that affect your daily life.
- 2. Explain what you can do to help a green economy (in 4–5 lines).

What Have You Learnt?

After completing this session, you will be able to

- identify important sectors of a green economy.
- explain the role of each of these sectors in a green economy.

SESSION 2: POLICIES FOR A GREEN ECONOMY

Let us start by understanding what a policy is. A policy is like a 'rule' or a guideline followed by a government, company, school college, etc. A policy tells us what is to be done, who has to do it, how it is to be done and for (or to) whom it is to be done.

For example, National Policy on Skill Development and Entrepreneurship 2015, is a policy of the Indian government which aims to meet the challenge of skilling people at scale with speed and standard (quality). Stakeholders of skill development have been given different responsibilities to make sure that this policy is successful. The government has adopted many policies for sustainable development that make sure that there is economic development but the environment is also protected at the same time. In this lesson, we'll learn about some important policies followed in a green economy.

Policies for a Green Economy

India has adopted 'Sustainable Development' as a policy and it aims to reduce poverty, inequalities in the society (provide opportunities for all castes communities and gender(girls/boys), providefood, education, employment, energy resources and sanitation (cleanliness) while taking care of its natural resources.

It follows special policies to solve many problems, such as air and water pollution, waste management, conserving biodiversity (protecting different types of plants and animals), etc. Some important steps taken by the government under the sustainable development or 'green economy' policy are

• National Action Plan on Climate Change (NAPCC)

This is an action plan which includes different missions or plans within it which aim at sustainable development. A policy that comes with a fixed action date and budget becomes a 'mission'. NAPCC includes eight important

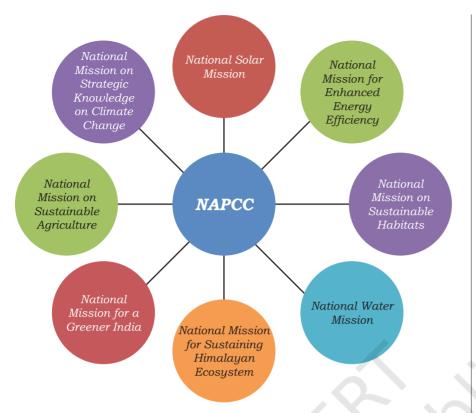


Figure 5.1 Missions under National Action Plan for Climate Change

missions covering different aspects of the environment as shown in Figure 5.1.

• Green India Mission (GIM)

The National Mission for a Green India or Green India Mission (GIM), is one of the eight missions under India's action plan for meeting the challenges of climate change.

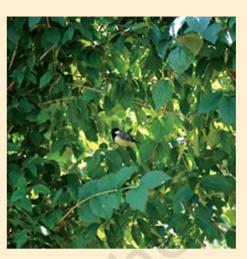
GIM is aimed at protecting, restoring and increasing forest cover. It includes a combination of plans for ecosystems, biodiversity, water, biomass, preserving mangroves, wetlands, critical habitats along with services like fuel, fodder, timber and non-wood forest produces (fruits, flowers, seeds, herbs, honey, etc). An example of a Green Economy project for forests is shown in Table 5.2. NOTES

Table 5.2: Green India Mission

The Mahua economy

Mahua flowers form a sweet smelling yellow carpet over large areas in forest ranges of Madhya Pradesh, Jharkhand, Chhattisgarh, Odisha, Maharashtra and Bihar. Forest dwellers, such as *Gond* and *Baiga* tribes collect Mahua flowers, fruits, seeds and leaves from February to April and sell it to forest departments at a price set by them. After April, the tree begins to bear fruits. These fruits are used to extract oil, which is a biofuel and also has medicinal properties. Mahua leaves are used to make eco-friendly plates, cones and bowls.

Mahua flowers are also used to make Mahua 'laddoo', 'halwa' and 'kheer' and even 'sabzi'. Mahua oil cakes are used as eco-friendly manure. Realising its cultural and economic importance, forest departments of many state governments are promoting jams, squashes, biscuits and jellies made from these flowers. This promotes economic development without causing damage to the forests.



Jawaharlal Nehru National Solar Mission also known as the National Solar Mission

This mission aims to meet India's energy needs sustainably. It aims to make India a global leader in solar energy (a renewable source of energy unlike coal, petroleum, etc.). Along with energy and ecological protection, the Solar Mission promotes local production and distribution of energy.

Figure 5.2 shows the success of the Solar Mission in Diu which became the first Union Territory in India to switch to 100% Solar Energy.

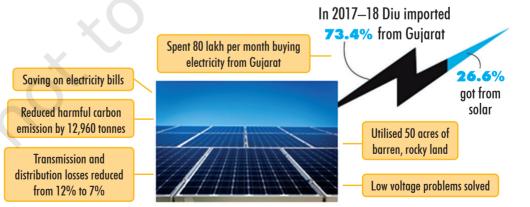


Figure 5.2 Implementation of National Solar Mission in Diu

• Swachh Bharat Abhiyan (SBA) or Swachh Bharat Mission (SBM) or Clean India Mission

This mission aims to clean up Indian cities, towns, and villages. One of its main aims is to achieve an Open-Defecation Free India by October 2, 2019, the 150th anniversary of the birth of Mahatma Gandhi, by constructing toilets across the country.

• Setting Up the National Green Tribunal (NGT) The National Green Tribunal is like a court for cases related to environmental protection, conservation of forests and other natural resources. It acts on disputes related to environmental issues and may ask people causing ecological damage to pay heavy fines, take actions to stop and correct environmental damage or even send such people to jail.

Practical Exercises

The practical activities will be facilitated by the teacher and necessary feedback will be provided by the teachers to the students.

Activity 1

Group Practice: Discussion on Initiatives for Promoting Green Economy

Material required

Current newspapers, pen, notebook

Procedure

- 1. Form groups of 4–5 students.
- 2. Within each group:
 - Make a list of green initiatives like the examples discussed in this lesson. Read the newspapers to find more examples.
 - Discuss the importance of these initiatives.
- 3. Two groups should volunteer and present their list in front of the class. The rest of the students can give feedback and add points from their own lists that have not been covered.
- 4. The teacher notes down the main points on the board.

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Activity 2

Essay on Important Initiatives taken in India for Promoting Green Economy

Material required

Pen, notebook

Procedure

- 1. Based on your discussion in the previous activity, write a two-page essay on important initiatives taken in India for promoting green economy. You can search on the Internet (if available) or read newspapers and magazines to find more information.
- 2. This activity can be done as homework if there is less time in class.

Check Your Progress

A. Multiple choice question Read carefully all the options given below the question and choose the correct option(s).

- 1. Which of the following is the main objective of sustainable development?
 - (a) Reducing poverty
 - (b) Promoting green agriculture
 - (c) Preventing ecological damage
 - (d) Achieving a balance between economic, environmental and social needs

B. Match the column A and B

1. Match the following policies with their main objective:

	Α	В
	1. National Solar Mission	A. Sanitation and cleanliness
	2. Green India Mission	B. Clean energy
	3. National Policy on Skill Development and Entrepreneurship	C. Protecting forest cover
	4. Swachh Bharat Abhiyan	D. Skill development at scale with speed and standard
C. Subjective question		

- 1. Describe the National Action Plan for Climate Change (NAPCC) in 4–5 lines.
- 2. Explain the importance of the Swachh Bharat Abhiyan in 4–5 lines.

What Have You Learnt?

After completing this session, you will be able to

- list examples of policies for a green economy.
- explain important policies for a green economy.

SESSION 3: STAKEHOLDERS IN GREEN ECONOMY

Let us start by understanding who is a stakeholder. Any person with an interest or concern in something (business, policy, activity) is known as a stakeholder. Since a green economy affects everyone and needs support from many people there are many stakeholders in a green economy. Since the environment affects you and your actions affect the environment, you are an important stakeholder too!

Sustainable development requires the active participation of all sectors of society and all types of people. People concerned with a green economy can be grouped into the major stakeholders' categories as shown in Table 5.3.

Table 5.3: Stakeholders in Green Economy

Government



Governments and local authorities make and implement sustainable development laws, policies, strategies, standards, programs, agreements with other countries and actions. Non-Governmental Organisations (NGOs)



Many individual social workers and NGOs help the government and society in implementing actions required for a green economy.

Business and Industry



The success of green economy depends on the active participation of both — public and the private sectors. Companies need to follow responsible business practices and protect the environment.

Farmers



Farmers produce food and agricultural products for the whole country. They are one of the most important parts of an economy and society. They have a big role in the success of a green economy.

Women

Women form one-half of the population and have a big role in households, society and the economy. Sustainable development is possible only if we focus on women's rights making them par



making them participate fully in a green economy.

Native Tribes

Native or indigenous people are the original residents of a region who still follow their ancient lifestyle. The green economy can benefit

many such tribes in the hills and forests of India.

Scientific and Technological Community



All areas of sustainable development need science and technology. Scientists can explain problems of technology to governments and policy makers. They can also provide sustainable solutions to improve people's lives.

Workers and Trade Unions



The workers are a very important part of our economy. Green policies aim at providing them

- a decent life and decent work in a healthy environment.
- access to health, water and sanitation.
- access to education and skills training.

Children and Youth



The youth are both the present and the future of our economy. They can participate actively in the protection of the environment and the promotion of economic and social development.

Example: Multiple stakeholders come together for implementation of a solar lighting project

On a daily basis, more than 15 crore people face darkness, or at best, the dim glow of candle-lights or kerosene lamps, whose smoke is poisonous. Scientists, social workers and NGOs have come together to empower rural women and youth to make simple solar lights. A project called <u>'Liter of Light'</u> is bringing light to places that need it most, by recycling plastic bottles to make lamps.

Making bottle lamps

Plastic bottles are filled with water and bleach (to prevent growth of algae). The bottles are then installed onto roofs of houses and begin working as a mirror on the roof, becoming a natural light bulb during the day. However, these bulbs can work only during the day.

Making lamps with solar cells

The project offers the parts needed to make the simple solar-powered lights to women and teaches them how to assemble them. The women assemble them by hand, learning how to make copper strips into circuits. This way they also learn how to repair the solar lights with local parts and local skills. People can payback for the parts after they start making money from selling the lamps.

Benefits

- Instead of depending on expensive, polluting electricity, villagers have a source of almost free, clean energy.
- People trained in making and repairing solar lamps have another source of income.
- Plastic bottles are recycled.
- Crime rates have been found to drop due to better lighting.

Practical Exercises

The practical activities will have to be facilitated by the teacher and necessary feedback will have to be provided by the teachers to the students.

Activity 1

Group-practice — Discussion on Stakeholders of Green Economy

Material required

Pen, paper

Procedure

- 1. Form groups of 4–5 students.
- 2. Each group should select any two stakeholders of the green economy. Discuss within the group
 - (a) What is the role of the stakeholder?
 - (b) Why are they important for a green economy?
- 3. Each group should present their points to the whole class (The teacher should assign groups such that all stakeholders are covered).

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Activity 2

Hands-on Activity 'Making Solar Bulb'

Material required

Cardboard box, plastic bottles, printed paper, scissors and tape

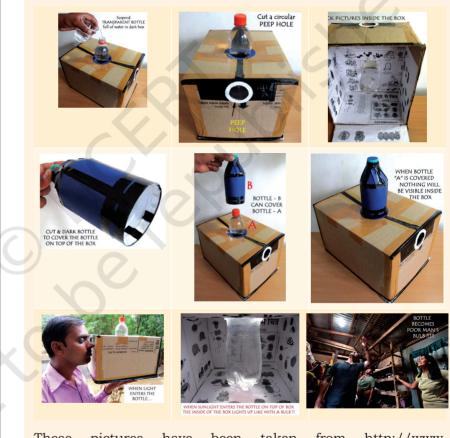
Procedure

- 1. Follow the steps shown in table to make your own solar bulb.
- 2. Convince your parents and school authorities to start using them.

Sunlight Your Home

Follow the steps shown in pictures in Table 5.4 to make your own 'solar bulb'

Table 5.4: Steps to make a solar bulb



These pictures have been taken from <u>http://www.</u> <u>arvindguptatoys.com/toys/Sunlightyourhome.html</u> you can also watch a small video on how to make these bottle bulbs at <u>https://bit.ly/2r911vD</u>

Check Your Progress

A. Multiple choice question

Read carefully all the options given below the question and choose the correct option(s).

- 1. Which of the following stakeholders makes policies for a green economy?
 - (a) Non-government organisations
 - (b) Scientific community
 - (c) Government
 - (d) Private sector

B. Subjective question

1. List any five stakeholders. Describe why they are important for the green economy.

What Have You Learnt?

After completing this session, you will be able to

- identify important stakeholders of green economy.
- explain the role of each of these stakeholders.

SESSION 4: GOVERNMENT AND PRIVATE AGENCIES

As we have learnt in previous lessons, many groups of people (stakeholders) are responsible for the success of a green economy. Two of the most important groups are the government and private agencies.

Let's learn more about the role of the government and private agencies in the various sectors of green econmy (construction, tourism, industry, transport, renewable energy, waste management, agriculture, water, forests, fisheries, etc.)

The Government

Governments (Figure 5.3) and local authorities make and implement sustainable development laws, policies, strategies, standards, programs and agreements with other countries.

Almost all Ministries of the Government of India are involved in decision making



Figure 5.3: Government

for sustainable development. However, major participation is by the Ministries of Environment, Forests and Climate Change, Agriculture, Water Resources, Finance, Industries, Rural Development, Commerce and Non-conventional Energy Sources.

Role of the Government

- The government makes policies and provides funds for implementing plans and policies.
- It makes legislations (laws), such as 'The Environment (Protection) Act, 1986' to protect the environment and take actions against law-breakers.
- It sets up missions, such as the Green India Mission and National Solar Mission to act on green economy projects.
- It works with scientists and educates the public on environmentally safe practices (pollution control, chemical-free farming).

Private Agencies

The government alone cannot make the green economy successful in such a large and diverse country like ours. Private agencies (Figure 5.4), non-government agencies, social workers, private companies and individual citizens need to work together with the government for the success of promoting green economy.



Figure 5.4: Private Agencies

Role of private agencies

- The role of private agencies include following laws and policies made by the government.
- Making sure government policies are being followed by participating in government missions
- Reporting people or groups who break the law
- Educating people and creating awareness about green economy activities

• Providing information to the government and helping it implement green policies.

Table 5.5 shows some examples where private agencies and social entrepreneurs have provided solutions for green economy projects to solve problems faced by the government:

Table 5.5: Examples of Green Projects

Swachh Cooperative integrates informal waste pickers into Pune city's Solid Waste Management system. This project has become a success with the support of government and the waste pickers. Over 9000 entrepreneurial wastepickers now work with dignity and provide a decentralised waste management system. They ensure efficient disposal of wet waste through biogas regeneration, along with recycling of solid waste.

DEEP Modern Chulha Society of Development and Environment Protection (DEEP) developed the 'Modern DEEP Chulha' that uses biomass to reduce consumption of wood by 50%. This chulha reduces smoke by 80%, reducing environmental and health problems. The project trains masons and welders, to produce the *chulhas*, thus increasing employment and entrepreneurship opportunities. The initiative was started in 35,000 households of Solan district in Himachal Pradesh in 1995.

Enbiolet Green Solution Foundation (GSF) has created a bio-toilet solution for hygienic sanitation in villages and slums in cities that lacked sewage systems. Users or donors fund these bio-toilets while GSF provides training on toilet use and servicing involving the local population creating employment and entrepreneurship opportunities.

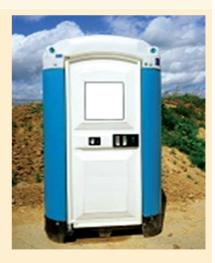
The bio-digester tank forms the basis for this eco-friendly toilet. Using aerobic bacteria, this tank converts human waste into environment standard compatible water, which is used for flushing, or even for irrigation.

Green benefits

- Water conservation due to less flushing
- Efficient sewage system
- Decrease in soil and water contamination
- Decrease in diseases due to hygienic sanitation
- 130 green jobs per 1000 toilets







NOTES

Practical Exercises

The practical activities will have to be facilitated by the teacher and necessary feedback will have to be provided by the teachers to the students.

Activity 1

Group Practice - Discussion on Role of Government and Private Agencies

Material required

Pen, paper

Procedure

- 1. Form groups of 4–5 students.
- 2. Each group should suggest ideas for green economy projects like the examples in this lesson, to solve environmental problems and create jobs. They can read books, newspapers, or on the Internet to get ideas. They need to discuss the importance of the project and how it can help a green economy.
- 3. Each group has to present their points to the whole class.

Activity 2

Preparing Posters on Green Sectors

Material required

Pen, pencils, colours, chart-paper

Procedure

1. Use same groups as created in the previous activity. Make a poster showing any existing or suggested green economy project (smokeless chulha or electric vehicles, or organic farms, etc.). These projects can be from any of the green economy sectors you have learnt about. This activity can be completed as homework if you have less time in class.

Check Your Progress

A. Multiple choice questions

Read carefully all the options given below the question and choose the correct option(s).

- 1. What is the main role of the government in a green economy?
 - (a) Making policies
- (b) Making inventions
- (c) Creating awareness
- (d) Using new technologies

- 2. What is the main role of private agencies in a green economy?
 - (a) Helping the government in implementing policies
 - (b) Making policies
 - (c) Making laws
 - (d) Making national budget
- 3. Who is responsible for the success of green economy in the country?
 - (a) Government
 - (b) Social Workers
 - (c) Individual citizens
 - (d) All of the above

B. Subjective question

1. Explain with examples the role of government and private agencies in a green economy.

What Have You Learnt?

After completing this session, you will be able to

• differentiate between the role of government and private agencies in a green economy.

Notes