UNIT 7: NATURAL RESOURCES AND THEIR UTILIZATION

UNIT STRUCTURE

7.1 Learning Objectives
7.2 Introduction
7.3 Natural Resource: Meaning and Types
7.4 Exploitation of Natural Resources
7.4.1 Common land
7.4.2 Water Resources
7.4.3 Forest Resources
7.5 Let Us Sum up
7.6 Further Reading
7.7 Answers to Check Your Progress
7.8 Model Questions

7.1 LEARNING OBJEVTIVES

After going through this unit, you will be able to-

- understand natural resources as a sociological concept
- learn about the three kinds of natural resources- land, water and forests
- discuss about the issues relating to the distribution, access and control over such resources.

7.2 INTRODUCTION

Environmental sociology and the sociology of natural resources are two key sub disciplines of the sociological study on the interactions between nature and human society. Natural resource simple means materials or substances occurring in nature which can be exploited for economic gain. In the previous unit, we have discussed about the concept of Sustainable development where we have learned that Sustainable development is a concept based on the integration of economic, environmental, and social concerns. We have also learned that the central principles behind

sustainable development are equity and fairness among countries and generations, the long-term vision on the development process, systemic thinking and interconnection between economy, society and the environment. In this unit we shall engage with the questions of equity and fairness in the context exploitation of natural resources. Here we shall discuss about the some of the vital natural resources and issues relating to their distribution, access and control.

7.3 NATURAL RESOURCE: MEANING AND TYPES

Natural resources are useful raw materials that we get from the Earth. They occur naturally, which means that humans cannot make natural resources. Instead, we use and modify natural resources in ways that are beneficial to us. The materials used in human-made objects are natural resources.

Types of Natural Resources

- **RENEWABLE RESOURCES:** Food, water, forests and wildlife are all renewable resources. For resource use to be sustainable, the consumption rate should be maintained within the capacity of the natural systems to regenerate themselves. Current rates of depletion of the Earth's stocks of renewable resources and levels of pressure imposed on their regenerative capacity by means of production and consumption might already be, in some cases, beyond this threshold.
- **NON-RENEWABLE RESOURCES:** Minerals, oil, gas and coal are non-renewable resources: their use as materials and energy sources leads to depletion of the Earth's reserves. However, the time period during which reserves can be available can be extended by recycling or improving the efficiency of use. Eventually, limitations to the extent to which more efficient processes may expand the use of non-renewable resources stocks will be reached, requiring substitution with renewable resources and restrictions on the volume of activities that can be sustained by existing stocks.

7.4 EXPLOITATION OF NATURAL RESOURCES

The modern economy is resource-based economy and the development of a country or a region is based on its resources, especially natural resources. Nature has given us abundant resources in the form of water, air, heat, natural vegetation, soil, wild animals, metals, fossil fuel etc., Man by his technical skill and knowledge has been using all these resources in some way or the other from the dawn of civilization. The Earth's natural resources are vital to the survival and development of the human population. However, these resources are limited by the Earth's capability to renew them. Freshwater, forests and harvesting products are renewable, provided that exploitation does not exceed regeneration. Fossil fuels and metal ores are non-renewable. Although many effects of over exploitation are felt locally, the growing interdependence of nations, and international trade in natural resources, make their demand and sustainable management a global issue. Any element of our natural environment such as soil, water, forest, wildlife, minerals, that man can utilize to promote his welfare, may be identified as a natural resource. It can be classified into two categories; inexhaustible and exhaustible.

In the next part we are going to discuss three types of natural resources, that is, land (common land), water and forests and the control, access and distribution of these resources.

7.4.1 Common Land

Common land is land owned collectively by a number of persons, or by one person, but over which other people have certain traditional rights, such as to allow their livestock to graze upon it, to collect wood, or to cut turf for fuel. A brief history of common land shows that governance systems are highly localized and dependent on custom and practice. Such a dependence suggests the need for governance which is based on the incorporation of stakeholders using consensus building approaches.

Contrary to Garrett Hardin's argument warning of "the tragedy of the commons," many scholars, such as Elinor Ostrom and Robert Wade, have

correctly identified the importance of communities and institutions at a local level as a system for preserving the local natural environment and other common-pool resources (CPR). The South Asian experience since the colonial period supports their claim. While policies to manage forests by excluding local people from their management generally led to failures in conservation, the government's attempts to entrust forest management to local communities have tended to contribute to conservation. We are going to take up forests separately in a later section.

Long-term economic fluctuation in the pre-industrial world has been a major concern of economic historians. Recently, scholars have explored this phenomenon by linking population growth and environmental constraints. This approach, which can be called the Extended Malthusian Approach, provides an intuitively clear and very powerful explanation. However, empirical investigation needs to be done to deepen our understanding of how these variables interact with each other and generate long-term changes in the resources available to human beings.

A considerable number of studies assert that common-pool resources (CPR), or simply commons, can be well conserved when they are managed collectively by local people. Some consensus has already been reached about the attributes of resources and resource users for successful commons management. However, the process by which local people actually build a collective management system has rarely been studied. Such a study is indispensable for areas facing the rapid destruction of natural resources that need to know how local people become involved in such a collective process. The situation is especially serious in many developing countries.

The world is on the edge of an environmental crisis-close, very close to a situation which we have come to associate with Garrett Hardin's 1968 article, "The Tragedy of the Commons," especially when he concluded that the population growth of the less developed countries was central to the phenomenon we recognize as free-riding. However, such a perception needs to be re-examined.

When a large number of people make joint use of a certain resource, they often compete with one another. Resources can be beneficial to human beings, but there are often disputes and friction over how to acquire, maintain and manage them. For example, the questions of who should take the initiative, have priority rights, and have a say in the management and use of resources have always been of great concern to people living close to the resources.

In 19th-century South India, a significant portion of village land was not cultivated, but used by villagers to graze livestock and collect fuelwood, fodder, manure, and so on. In this sense, such uncultivated land supported agricultural production as village common land, although it was often classified as "waste land" by the colonial administration. The area of such common land was remarkably reduced from the middle of the 19th century through the 20th century mainly as a result of the reclamation of "waste" land.

Large and growing populations combined with rapid industrialization and urbanization place enormous pressures on natural resources, many of which are scarce and located in places of high biodiversity. The key themes are community and the commons. One key research question is how communities can effectively manage commonly held resources that are often limited and contested. It is imperative to examine the community and the commons as they pertain to population increases, state relations, and the influence of "environmentalism" and environmental policy.First it is necessary to challenge the general idea that common pool resource (CPR) management is naturally part of indigenous people's lives (i.e., they possess an innate conservation ethic). In actuality, CPR institutions are of relatively recent origin, most having emerged in the last few hundred years in response to specific resources pressures, especially population growth. Case studies from South Korea and Thailand, portray that local communities did draw on traditional cultural norms, especially Buddhism, to create consensus and cooperation. But these were largely adaptations to growing resource

pressures. Many CPR arrangements have endured across time and been relatively stable and effective. Yet in some cases,rapid change has also occurred. It is important to examine these changesand how local communities have adapted their resource practices.

One significant shift has been the movement away from hierarchicalto egalitarian social structures, leading to changes in resource ownership. It is important to examine the more recent and dramatic socialshifts that have occurred with the emergence of the modern state.This has greatly increased regulatory and financial (tax) pressures onrural communities. However, in certain occasions political pressures actually strengthened CPR institutions.The role of the state needs to be explored further. Environmental policy and the spread of environmental ideas or "environmentalism" should be assessed.

Case studies of Bhutan and Thailand notethat is difficult to generalize about government policies and popular reaction to them because this relationship has changed over time.These changes are highly contingent on region-specific historical, social, political, economic, and natural conditions.The international environmental community recognizes Bhutan and Thailand as having "pro-environmental" policy agendas. But in both cases these policies have placed greater restrictions on resource use, making resource access and development more difficult for many rural communities. The result has been greater tension between the state and communities. These two cases reveal environmentalism is still far from a universally accepted ideal. As such, the sustainable development ideal of harmonizing environmental policy with development remains a considerable challenge.

Another theme is the impact of the commercialization of natural resource, namely the development of timber and cash crop economies, and the growth of non-agrarian employment. The impact of these changes on rural societies is still not clear. While greater efficiency of commercial

land use may reduce some resource pressures, it may also create new problems. Non-agrarian workers potentially will weaken CPR arrangements because they might have less investment, hence less interest, in these institutions.

7.4.2 Water Resources

Access to clean water is one of the most fundamental of human rights, but currently more than one billion city-dwelling people lack access to clean water. Generally, it is not because water supplies are insufficient. Rather, this crisis is due to an inability to organize supply properly to meet demand. This failure is particularly frustrating in that nature contains the necessary mechanisms to provide clean, healthy water, including the filtering effect provided by healthy forests in watersheds. Yet in many parts of the world environmental mismanagement has led to a critical shortage of freshwater.

- **SUPPLY AND DEMAND:** Water is, in theory, a quintessentially renewable resource. Water covers most of the world's surface, and over much of the world it falls unbidden from the skies. Yet because of the carelessness and profligacy with which water resources have been used, the speed of human population growth and the increasing demands for water, the provision of adequate, safe supplies of water is now a major source of concern, expense and even international tension.

The poorest members of society, unable to afford safe water, suffer the greatest impacts. One in five people in the developing world lives without a reliable water supply. Lack of clean water has dire short- and long-term health impacts including increased infant mortality and impaired ability to work, which reduce industrial productivity and put pressure on already overstretched health services. On the other hand, access to clean water can have dramatic positive health impacts. For instance, it is estimated that when clean water is available the risk of early death is reduced by 23 percent in Uganda and 30 percent in Cameroon (UNDP, 2006).

Today, around half the world's population lives in towns and cities, and of these people one-third live without clean water or adequate sanitation

(United Nations Human Settlement Programme, 2003). Municipal authorities have a variety of ways of supplying drinking-water, depending on where they are located, the resources available, social and political issues and the willingness of the population to conserve water. Most cities rely on the collection and diversion of existing surface and underground freshwater sources. Only minor amounts, on the global scale, are extracted directly from rainwater or from the seas. Until recently, the main focus of efforts to improve urban water supply has been within the cities themselves, including better distribution systems, treatment plants and sewage disposal. However, many authorities are now increasingly looking at land management systems that can help maintain pure water at the source.

- **WATER QUANTITY, QUALITY AND REGULARITY:** People have settled historically in areas rich with natural resources, and today most of the world's population lives downstream of forested watersheds (Reid, 2001). Societies have created strong cultural links with forests, and it is widely assumed that forests help to maintain a constant supply of good-quality water. Conversely, loss of forests has been blamed for problems ranging from flooding to aridity.
- **WATER RESOURCE MANAGEMENT:** Water resource management is the activity of planning, developing, distributing and managing the optimum use of water resources. It is a sub-set of water cycle management. Ideally, water resource management planning has regard to all the competing demands for water and seeks to allocate water on an equitable basis to satisfy all uses and demands. As with other resource management, this is rarely possible in practice.

Much effort in water resource management is directed at optimizing the use of water and in minimizing the environmental impact of water use on the natural environment. The observation of water as an integral part of the ecosystem is based on integrated water resource management, where the quantity and quality of the ecosystem help to determine the nature of the natural resources.

As a limited resource, water supply sometimes supposes a challenge. This fact is assumed by the project DESAFIO (the acronym for Democratisation of Water and Sanitation Governance by Means of Socio-Technical Innovations), which has been developed along 30 months and funded by the European Union's Seventh Framework Programme for research, technological development and demonstration. This project faced a difficult task for developing areas: eliminating structural social inequity in the access to indispensable water and public health services. The DESAFIO engineers worked on a water treatment system run with solar power and filters which provides safe water to a very poor community in the state of Minas Gerais.

Successful management of any resource requires accurate knowledge of the resource available, the uses to which it may be put, the competing demands for the resource, measures to and processes to evaluate the significance and worth of competing demands and mechanisms to translate policy decisions into actions on the ground.

For water as a resource, this is particularly difficult since sources of water can cross many national boundaries and the uses of water include many that are difficult to assign financial value to and may also be difficult to manage in conventional terms. Examples include rare species or ecosystems or the very long term value of ancient groundwater reserves.

- **AGRICULTURE:** Agriculture is the largest user of the world's freshwater resources, consuming 70 percent. As the world population rises it consumes more food (currently exceeding 6%, it is expected to reach 9% by 2050), the industries and urban development's expand, and the emerging biofuel crops trade also demands a share of freshwater resources, water scarcity is becoming an important issue. An assessment of water resource management in agriculture was conducted in 2007 by the International Water Management Institute in Sri Lanka to see if the world had sufficient water to provide food for its growing population or not . It assessed the current availability of water for agriculture on a global scale and mapped out locations suffering from water scarcity. It found that a fifth of the world's people, more

than 1.2 billion, live in areas of physical water scarcity, where there is not enough water to meet all their demands. A further 1.6 billion people live in areas experiencing economic water scarcity, where the lack of investment in water or insufficient human capacity make it impossible for authorities to satisfy the demand for water.

The report found that it would be possible to produce the food required in future, but that continuation of today's food production and environmental trends would lead to crises in many parts of the world. Regarding food production, the World Bank targets agricultural food production and water resource management as an increasingly global issue that is fostering an important and growing debate. The authors of the book Out of Water: From abundance to Scarcity and How to Solve the World's Water Problems, which laid down a six-point plan for solving the world's water problems. These are: 1) Improve data related to water; 2) Treasure the environment; 3) Reform water governance; 4) Revitalize agricultural water use; 5) Manage urban and industrial demand; and 6) Empower the poor and women in water resource management. To avoid a global water crisis, farmers will have to strive to increase productivity to meet growing demands for food, while industry and cities find ways to use water more efficiently.

- **MANAGING WATER IN URBAN SETTINGS:** As the carrying capacity of the Earth increases greatly due to technological advances, urbanization in modern times occurs because of economic opportunity. This rapid urbanization happens worldwide but mostly in new rising economies and developing countries. Cities in Africa and Asia are growing fastest with 28 out of 39 megacities (a city or urban area with more than 10 million inhabitants) worldwide in these developing nations. The number of megacities will continue to rise reaching approximately 50 in 2025. With developing economies water scarcity is a very common and very prevalent issue.Global freshwater resources dwindle in the eastern hemisphere, and with the majority of urban development millions live with insufficient fresh water.This is caused by polluted freshwater resources, overexploited groundwater resources, insufficient harvesting capacities in the surrounding

rural areas, poorly constructed and maintained water supply systems, high amount of informal water use and insufficient technical and water management capacities.

In the areas surrounding urban centres, agriculture must compete with industry and municipal users for safe water supplies, while traditional water sources are becoming polluted with urban runoff. As cities offer the best opportunities for selling produce, farmers often have no alternative to using polluted water to irrigate their crops. Depending on how developed a city's wastewater treatment is, there can be significant health hazards related to the use of this water. Wastewater from cities can contain a mixture of pollutants. There is usually wastewater from kitchens and toilets along with rainwater runoff. This means that the water usually contains excessive levels of nutrients and salts, as well as a wide range of pathogens. Heavy metals may also be present, along with traces of antibiotics and endocrine disruptors, such as oestrogens.

Developing world countries tend to have the lowest levels of wastewater treatment. Often, the water that farmers use for irrigating crops is contaminated with pathogens from sewage. The pathogens of most concern are bacteria, viruses and parasitic worms, which directly affect farmers' health and indirectly affect consumers if they eat the contaminated crops. Common illnesses include diarrhoea, which kills 1.1 million people annually and is the second most common cause of infant deaths. Many cholera outbreaks are also related to the reuse of poorly treated wastewater. Actions that reduce or remove contamination, therefore, have the potential to save a large number of lives and improve livelihoods. Scientists have been working to find ways to reduce contamination of food using a method called the 'multiple-barrier approach'.

This involves analysing the food production

- **FUTURE OF WATER RESOURCES:** One of the biggest concerns for our water-based resources in the future is the sustainability of the current and even future water resource allocation. As water becomes more scarce, the importance of how it is managed grows vastly. Finding a balance between

what is needed by humans and what is needed in the environment is an important step in the sustainability of water resources. Attempts to create sustainable freshwater systems have been seen on a national level in countries such as Australia, and such commitment to the environment could set a model for the rest of the world.

The field of water resources management will have to continue to adapt to the current and future issues facing the allocation of water. With the growing uncertainties of global climate change and the long term impacts of management actions,the decision-making will be even more difficult. It is likely that ongoing climate change will lead to situations that have not been encountered. As a result, alternative management strategies are sought for in order to avoid setbacks in the allocation of water resources.

7.4.3 Forest Resources

For centuries, communities in Asia and the Pacific have established an intricate and dependent relationship with forests. They serve as a repository for natural wealth and play a significant role in social and economic development. Today, the Asian and Pacific Region's forests are under pressure from a rapidly expanding population, the need for development and the pressure for land from agriculture. In recent years however, there has been an emerging recognition of the wider values (direct and indirect) of forests. Such values include the appreciation of traditional and customary practices for forest management, the link between forests and climate change, the critical role of forests in providing environmental stability and quality, the conservation of biological diversity, the protection of groundwater resources and the multiple uses of forest resources.

- **DISTRIBUTION AND DIVERSITY OF FORESTRY RESOURCES :** In 1995, world forest resources, including natural forests and plantations, were estimated at 3 454 million hectares (ha) or 26.6 per cent of the total land area of the world (FAO 1997). The Asian and Pacific Region accounts for 16 per cent of the global forests. Of the seven countries which contain more than 60 per cent of the world's forests, two, namely People's Republic of China and Indonesia, are in the Asian and Pacific Region. Within the

region, Southeast Asia has the largest forest area followed by Northeast Asia, South Pacific and South Asia respectively.

A comparison of forest area per capita in 1995, shows that at least 15 countries within the region exceeded the world average of 0.6 ha per capita, while 6 countries fell within the regional average of 0.17 ha per capita. Temperate and tropical forests are two of the major forest types in the Asian and Pacific Region. The 1995 Forest Resource Assessment (FRA) estimated that 40 to 45 per cent of the forests in the region are located in temperate areas of Australia, New Zealand, Japan, Democratic People's Republic of Korea, Republic of Korea, Mongolia and in some areas of People's Republic of China.

In addition, the temperate countries have at least 60 per cent of the region's plantation resources which account for more than 16 per cent of the forest area in the Temperate Zone, but only 7 per cent in tropical countries. With respect to natural forests, Southeast Asia is particularly important, as it has 40 per cent of the region's total forest resources. Based on the data classification used by the World Conservation Monitoring Centre (WCMC), the major forest ecosystems in the region are mangroves, tropical forests, non-tropical, and sparse trees and parkland (Iremonger 1997). In addition to these classifications, frontier forest can be identified which are forest areas large enough to support their biodiversity and ensure the long-term survival of their plant and animal species. Using the World Resources Institute (WRI) (WRI 1997) set of criteria for frontier forest, Indonesia and Papua New Guinea have the majority of the world's remaining frontier forest.

- **CAUSES OF FOREST LOSS AND DEGRADATION:** Deforestation and forest degradation is caused by a number of factors. These include natural factors, such as fire, disease and weather-induced stress, but more often than not, are factors exacerbated by human activities, such as land clearing for agriculture, overgrazing, over-extraction of timber and harmful logging practices. The direct causes of deforestation and degradation, however, are obscured by the underlying causes of poverty, inequitable resource tenure, population pressures, corruption, misguided policies, and

institutional failures. A major direct cause of deforestation in the Asian and Pacific Region is the clearing of forests, both planned and unplanned, for permanent cropland and pasture. Poor forest harvesting practices, followed by encroachments, once concession operations have ceased, contribute significantly to the degradation of the remaining forests. In many cases, shifting cultivation and overgrazing have caused widespread degradation of forests in the region, and even complete deforestation in extreme instances. The estimated number of people involved in shifting cultivation in the region varies between 25 million and 40 million. Although the destruction of forests directly attributed to felling of industrial timber is extensive, it is difficult to accurately estimate the actual extent. The harvesting operations for logging concessionaires are usually defined by government regulations and codes of practice, which in some areas, particularly in Southeast Asia will include a reforestation programme. However, the limited resources of governments often prohibit adequate monitoring of the logging practices of concessionaires. In recent years, fires have caused serious damage to forests in the region. It is reported that in India, fires affect about 53 per cent of the forest area, or about 35 million ha, each year. In People's Republic of China, 43 690 ha were burnt in 1999; in Mongolia more than 3 million ha were burnt in 1996 and in Indonesia, 3.2 million ha were burnt in 1982-1983, and 160 000 in 1994. The period 1997-1998 was the worst for forest fires in the region. The wild fires that raged in Indonesia, Papua New Guinea, Australia and Mongolia prompted their respective governments to declare national disasters and seek international support to fight the fires. In Indonesia alone, the 1997-1998 fires burned an estimated 2 million ha in Sumatra and Kalimantan. Large quantities of smoke generated by slow burning ground fires affected human health both in situ and in the neighbouring countries. The smoke also interfered with transportation systems and disrupted the multimillion dollar tourism industry (see Box 17.3). The fire was exacerbated by the drought associated with the El Nino weather pattern, which turned most forests into drier habitats, and increased the flammability of forest vegetation. Severe outbreaks of insects, pest and diseases can potentially

be environmentally devastating with costly economic repercussions, in particular for plantation forestry (with a reduced diversification of species). The causes of pests and diseases vary, depending largely on a host of factors that include climate, human interference, destruction of habitats of the pest's natural predators, or even the introduction of exotic plant species that are vulnerable to insect pest and disease attacks.

➢ **CONSEQUENCES OF FOREST LOSS AND DEGRADATION:**

The costs and negative effects of deforestation are well documented. Where deforestation occurs in an unplanned and wasteful manner, the economic losses can be substantial, particularly from the loss of timber and other commercial resources. At community forest level, deforestation causes severe hardships and social disruptions for forest-dwelling and forest-dependent people. While the effects of deforestation are relatively simple to identify, the effects of forest degradation are subtler. Degradation can lead to a host of problems including loss of soil fertility and nutrient recycling capability, reduction in productivity and growth, decline in species richness, erosion of genetic diversity, decline in stock density and crown cover, reduction in the economic value of timber crops, and decreases in wildlife populations. Another serious negative impact of deforestation and degradation is the loss of wildlife habitat. Forests, particularly natural forest areas, are the single most important repositories of terrestrial biological diversity.



CHECK YOUR PROGRESS

Q1: What are natural resources? What are the two types of natural resources?

Q2: What is Water Resource Management?

Q3: What are some of the human activities which cause deforestation and forest degradation?

Q4: What is argument about Common Pool Resources(CPR) which challenges G. Hardin's argument on 'tragedy of commons'?

Q5: Which sector is the largest user of world's fresh water resources?



7.5 LET US SUM UP

- Natural resource simple means materials or substances (resources) occurring in nature which can be exploited for economic gain.
- Types of natural resources- renewable and non-renewable.
- Contrary to Garrett Hardin's argument warning of "the tragedy of the commons," many scholars, such as ElinorOstrom and Robert Wade, have correctly identified the importance of communities and institutions at a local level as a system for preserving the local natural environment and other common-pool resources (CPR).
- Because of the carelessness and profligacy with which water resources have been used, the speed of human population growth and the increasing demands for water, the provision of adequate, safe supplies of water is now a major source of concern, expense and even international tension.
- Lack of clean water has dire short- and long-term health impacts including increased infant mortality and impaired ability to work, which reduce industrial productivity and put pressure on already overstretched health services.
- Today, around half the world's population lives in towns and cities, and of these people one-third live without clean water or adequate sanitation (United Nations Human Settlement Programme, 2003).
- Water resource management is the activity of planning, developing, distributing and managing the optimum use of water resources.
- Agriculture is the largest user of the world's freshwater resources, consuming 70 percent.
- In the areas surrounding urban centres, agriculture must compete with industry and municipal users for safe water supplies, while traditional water sources are becoming polluted with urban runoff.
- The Asian and Pacific Region's forests are under pressure from a rapidly expanding population, the need for development and the pressure for land from agriculture.

- Deforestation and forest degradation is caused by a number of factors. These include natural factors, such as fire, disease and weather-induced stress, but more often than not, are factors exacerbated by human activities, such as land clearing for agriculture, overgrazing, over-extraction of timber and harmful logging practices.
- The costs and negative effects of deforestation are well documented. Where deforestation occurs in an unplanned and wasteful manner, the economic losses can be substantial, particularly from the loss of timber and other commercial resources.



7.6 FURTHER READING

1) Tragedy of the Commons (1968), byGarrett Hardin

2) Community, Commons and Natural Resource Management in Asia. Edited by Haruka Yanagisawa

3) Managing forests for cleaner water for urban populationsby S. Stolton and N. Dudley

7.7 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: Natural Resources are materials (resources) occuring in nature which can be used by humans for living a fullfilling life on one hand and make economic gains on the other.

Ans to Q No 2: Water resource management is the activity of planning, developing, distributing and managing the optimum use of water resources.

Ans to Q No 3: Deforestation and degradation are caused human activities such as land clearing for agriculture, overgrazing, over-extraction of timber and harmful logging practices.

Ans to Q No 4: The argument which challenges Hardin's idea of 'tragedy of commons' is that common-pool resources (CPR), or simply commons, can be well conserved when they are managed collectively by local people.

Ans to Q No 5: Agriculture is the world largest user of the world's fresh water resources (70 percent)



7.8 MODEL QUESTIONS

Short Questions (Answer each question in about 150 words)

Q1: Write a short note on constraints on water supply in the context of urban areas.

Q2: Write a short note on distribution of forest resources in the global context.

Long Questions (Answer each question in about 300-500 words)

Q1: What are the causes and consequences of forest loss and degradation?

Q2: Discuss the importance of communities and institutions at a local level as a system for preserving the local natural environment and other common-pool resources (CPR).

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