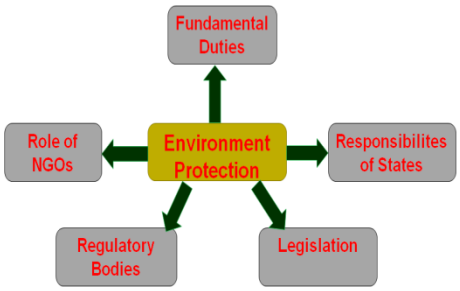
MSBTEs Study Material

<table>
<tr><td colspan="3"><Program Code: CE>: <Course Code:22447>: <Course Name: Environmental Studies>: < Unit-5:Social Issues and Environmental Education>: <UO:5a, 5b and 5c>: <Study Material></td></tr>
<tr><td><Dr. Ramesh Daryapurkar></td><td>Coordinator: Dr.B R Ambade;
<03 July 2020></td><td><Dr. D. K. Parbat></td></tr>
<tr><td>Key words:
Environment, Social issues, Education.</td><td>Learning Objective:

To understand and Manage Social Issues and Environmental Ethics as lifelong learning.
Understand about Fundamental rights of citizens about Environment and Government legislations on Environmental Protection</td><td rowspan="2">Diagram/ Picture

 
</td></tr>
<tr><td>Key Questions:

State article48 Aand 51 A (g) of constitution. State the environmental protection and prevention acts. State the role of CPCB, and MPCB.</td><td>Concept Map:
 
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<tr><td>Solved word Problem:

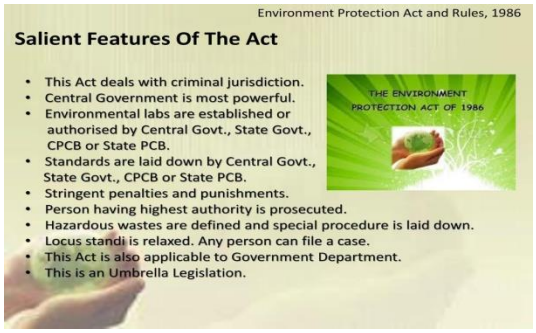
Answers of above questions are covered in study material.</td><td>Fundamental Duties

5a. Understanding Fundamental Duties of Citizens towards Environmental Protection.
Fundamental Duties
Article 51-A (g) says that “It shall be duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures.” The Directive principles under the Indian constitution
Remember – We must be aware about our Fundamental duties equally as we are about our Fundamental Rights !
State’s Responsibility
5a. Understanding Fundamental Duties of Citizens towards Environmental Protection.
<u>Article 48 A in The Constitution Of India.</u>
Protection and improvement of environment and safeguarding of forests and wildlife.
The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.
Article 48A was added by the Constitution vide 42nd Amendment in 1976.
To enable effective steps being taken for the purpose by both Centre and State Governments, 'Wildlife' and 'forests' have now been placed in the <u>Concurrent</u> List of the Seventh Schedule.

Environmental Protection and Prevention Acts:
➢ The Environment (Protection) Act, 1986
This is an umbrella / overarching and a wider general legislation in India to protect our</td><td> 

laws for controlling and preventing environmental pollution.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environment.

- **Other Rules and Acts of Environmental Protection**
  - Biomedical Waste (Management and Handling) Rules, 1998
  - Recycled Plastics, Plastics Manufacture and Usage Rules, 1999
  - Batteries (Management and Handling) Rules, 2001
  - Biological Diversity Act, 2002
  - Hazardous Wastes (Management and Handling) Amendment Rules, 2003
  - National Green Tribunal Act, 2010
  - Construction and Demolition Waste Management Rules, 2016

CPCB and MPCB Norms and Responsibilities

Central Pollution Control Board (CPCB):

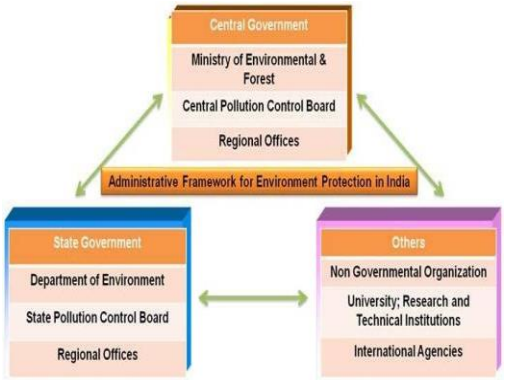
- A statutory organisation under the Ministry of Environment, Forest & Climate Change(Mo.E.F.C.) established in 1974.
- Apex organisation in India for pollution control as a technical wing of MoEFC.
- Co-ordinates the activities of the State Pollution Control Boards (SPCB) by providing technical assistance and guidance and also resolves disputes among them.
- CPCB along with SPCBs are responsible for implementation of legislation relating to prevention and control of environmental pollution.
- Conducts environmental assessments and research.
- Responsible for maintaining national standards under a variety of environmental laws.
- Advises the Union Territories on industrial and other sources of water and air pollution.

Maharashtra Pollution Control Board (MPCB):

- The **Maharashtra Pollution Control Board** (established 7 September 1970) is celebrsting its golden jubilee this year.
- It implements a range of environmental legislation in the state of Maharashtra.
- The MPCB functions under the administrative control of Environment Department of the Government of Maharashtra

Important responsibilities of MPCB:

- To plan comprehensive program for the prevention, control or abatement of pollution and secure executions thereof .
- To collect and disseminate information relating to pollution and the prevention, control or abatement thereof.



Role of NGOs

NGOs in Environmental Protection:

Non-governmental organizations (NGOs) :

- Any non-profit, voluntary citizens' groups which is organized on a local, national or international level.
- A term referring collectively to pressure and research groups, advisory agencies, political parties, professional societies and other groups concerned about environmental quality, resource use, and many other issues.
- Supposed to be working not for 'profit' but for a 'cause(s)'.
- The NGO's constitute a world wide net work interacting with Governments and Internal intergovernmental organizations in shaping national and international environmental policies.

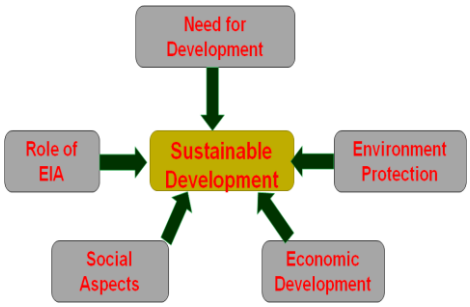
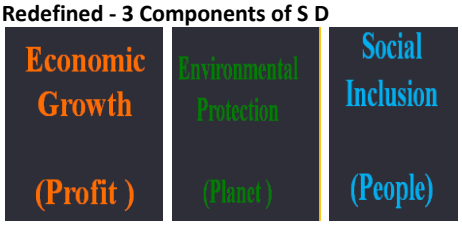
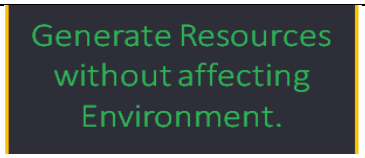
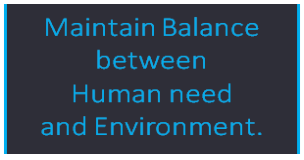
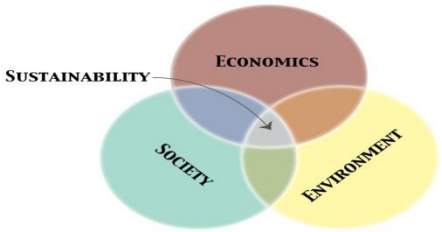
Role of NGOs in Environmental Protection:

- Creating awareness among the public on current environmental issues and solutions.
- Facilitating the participation of various categories of stakeholders in the discussion on environmental issues.
- Conducting participatory rural appraisal.
- Being involved in the protection of human rights to have a clean environment.
- Protecting the natural resources and entrusting the equitable use of resources.
- Data generation on natural resources, time line history of villages.
- Analysis and monitoring of environmental quality.
- Transferring information through newsletters, brochures, articles, audio visuals, etc.
- Organizing seminars, lectures and group discussion for promotion of environmental awareness.

	➢ To inspect sewage or trade effluent treatment and disposal facilities; and to review plans, specifications etc. relating to the ETPs/ STPs, disposal systems as per the consent granted. ➢ To inspect air pollution control systems and to review plans, specifications etc. relating to the air pollution control systems in connection with the consent granted. ➢ Supporting and encouraging the developments in the fields of pollution control, waste recycle reuse, eco-friendly practices etc. ➢ Creation of public awareness and attending the public complaints regarding pollution.	➢ Helping the villages' administrative officials in preparation, application and execution of projects on environmental protection. **Prominent NGOs Operating in India for Environmental Protection:** ➢ Centre for Environmental Education (CEE) ➢ Centre for Science and Environment (CSE) ➢ CPR Environmental Education Centre (C.P.Ramaswami Aiyar Foundation) ➢ Kalpavriksh ➢ Narmada Bachao Andalon ➢ World Wide Fund for Nature **Prominent NGOs Operating in Nagpur** ➢ Green Vigil ➢ I-Clean ➢ VEAG
	Application of Concept/ Examples in real life: The concept is useful in understanding the environmental acts and the knowledge shall apply in our day to day life to safeguard and conserve the environment.	**Link to YouTube/ OER/ video:** https://youtu.be/vsbasQiGONk https://youtu.be/3jWA43w75xg https://youtu.be/kE6FHIKDgEc **Environmental Acts**
Key Take away from this UO: Understanding the environmental acts to prevent pollution.		

MSBTEs Study Material

<Program Code: **CE**>: <Course Code:**22447**>: <Course Name: **Environmental Studies**>: < **Unit-5:Social Issues and Environmental Education**>: <**UO:5d**>: <**Study Material**>

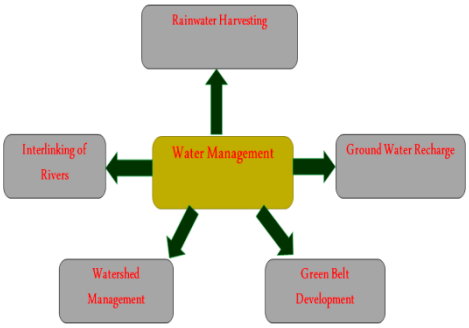
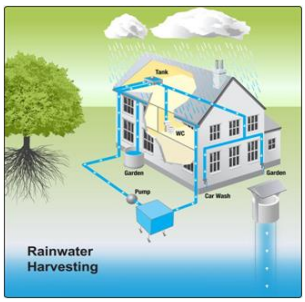
<**Dr. Ramesh Daryapurkar**>	**Coordinator: Dr.B R Ambade**; <**03 July 2020**>	<**Dr. D. K. Parbat**>
Key words: Environment, Suatainable development, EIA.	Learning Objective: To understand and Manage Social Issues and Environmental Ethics as lifelong learning. **Understand how to bring balance between development needs and environment protection; Role of EIA in Environment protection**	**Diagram/ Picture** 
Key Questions: Define sustainable development. Describe the aspects of sustainable development. Describe EIA.	**Concept Map:** 	
Solved word Problem: Answers of above questions are covered in study material.	**Sustainable Development** ➢ Sustainability could be defined as an ability or capacity of something to be maintained or to sustain itself. ➢ It's about consuming just what we need to live now, while leaving enough for people in the future to meet their social, economic and environment needs. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own need. ➢ Sustainable development is not just about the environment. Its focus is much wider than that. ➢ Sustainable Development is a balance between 3 aspects – Environment, Economic and Social ➢ Sustainable development is all about creating equal opportunity for all members to ensure a strong and healthy society. ➢ Sustainable development also focuses on finding better ways of doing things without affecting quality of our life. **Redefined - 3 Components of S D** 	   

	Environmental Aspects Natural Resource Uses e.g. mineral sources, Fossil fuel consumption, forests, rivers, biodiversity etc.Avoiding over exploitation of renewable source system Environmental Management e.g. Solid waste management, Hazardous waste management, Conservation of biodiversity Energy efficiency, Electricity consumption Pollution control – air, water, land, noise etc., Concentration of Nox and SOx; Excessive nutrients in water bodies Change in land use/land cover **Economic Aspects** Profits, Cost savings, Ecomnomic Growth, R &D Cost of underemployment Job growth Revenue contribution to GNP **Social Aspects** Standard of living, education, community, employment, equal opportunity, social justice via equitable resources allocation. social services such as education, health etc. to all members of society especially the most needy ones. Gender equality Relative poverty Violent crimes per capita Health-adjusted life expectancy **Role of EIA in Sustainable Development** Environment Impact Assessment or (EIA) can be defined as the study to predict the effect of a proposed activity/project on the environment. A decision making tool, EIA compares various alternatives for a project and seeks to identify the one which represents the best combination of economic and environmental costs and benefits. If Sustainability is viewed as Product, EIA can be seen as a measuring tool to evaluate its usefulness and disadvantages / shortcomings. If Sustainability is an Objective, EIA could be one important milestone across the route to fulfill the objective. EIA ensures that any development "meets the needs of the present without compromising the ability of the future generations to meet their own needs. EIA process can be viewed as an Endeavour to answer a basic question: whether the identified impact will be positive, negative or uncertain? **Prevention is Better Than Cure** When an activity raises threats of harm to human health or the environment, pre-	   

	cautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.	
	Application of Concept/ Examples in real life: The concept is useful in understanding the concept of sustainable development and EIA the knowledge shall apply in our day to day life to safeguard and conserve the environment.	**Link to YouTube/ OER/ video:** **https://youtu.be/vsbasQiGONk** **https://youtu.be/3jWA43w75xg** **https://youtu.be/kE6FHIKDgEc** **Environmental Acts**
Key Take away from this UO: Understanding the concept of sustainable development and environmental impact assessment.		

MSBTEs Study Material

<Program Code: **CE**>: <Course Code:**22447**>: <Course Name: **Environmental Studies**>: < **Unit-5:Social Issues and Environmental Education**>: <**UO:5e**>: <**Study Material**>

<**Dr. Ramesh Daryapurkar**>	**Coordinator: Dr.B R Ambade**; <**03 July 2020**>	**Mentor** ; <**Dr. D. K. Parbat**>
Key words: Rain water harvesting, Ground water recharge, Green belt, water shed.	**Learning Objective:** To understand and Manage Social Issues and Environmental Ethics as lifelong learning. **Understand how Water Conservation is important and how it helps in greenbelt development, watershed management. Learn Pros and Cons of how interlinking of rivers.**	**Diagram/ Picture**  **Water conservation**
Key Questions: State the need of water harvesting. Describe Rain water harvesting, Ground water recharge, Water shed management and Interlinking of rivers..	**Concept Map:** 	
Solved word Problem: Answers of above questions are covered in study material.	**Rainwater Harvesting** Rainwater Harvesting - Basics • Rain is the first form of water in hydrological cycle and hence is a primary source of water • Rainwater harvesting means to understand the value of rain, and to make optimum use of the rainwater at the place where it falls. • The rainwater collected can be stored for direct use or can be recharged into the groundwater. Water harvesting can be undertaken through a variety of ways ▶ Capturing runoff from rooftops ▶ Capturing runoff from local catchments ▶ Capturing seasonal floodwaters from local streams ▶ Conserving water through watershed management **Rainwater Harvesting & Its Principles** What? :It is the activity of direct collection of rainwater Why? :To extend the fruits of the monsoon i.e. conserve rainwater How? : **Catch rainwater where it falls** or capturing the run off in a village or town while taking measures to keep that water clean by not allowing polluting activities to take place in the catchment. Where? : Any land anywhere can be used to harvest rainwater **Objectives of Rainwater Harvesting**	 

- Provide drinking water
- Provide irrigation water
- Increase groundwater recharge
- Reduce stormwater discharges, urban floods and overloading of sewage treatment plants
- Reduce seawater ingress in coastal areas.

Rainwater Harvesting Methods

Traditional methods

- Temple tanks of India
- Ponds

Modern methods

- Absorption pit method,
- Absorption well method,
- Well cum Bore method,
- Group Houses – Terrace water saving method

Groundwater Recharge

Groundwater recharge is a hydrologic process where water moves downward from surface water to groundwater.

Groundwater recharge is divided into two parts:

1) **Natural recharge**: The process of Recharge of ground water naturally is called natural recharge. Rainwater enters inside the soil through voids and the recharge happens naturally.
2) **Artificial recharge**: The practice of artificially obstructing the flowing rainwater and inducing its infiltration to increase the ground water reservoir is called artificial recharge. It is carried out when natural recharge cannot fulfil the requirements throughout the year.

Artificial recharge Methods

- Spreading method
- Injection method
- Induced recharge method (from surface water bodies)

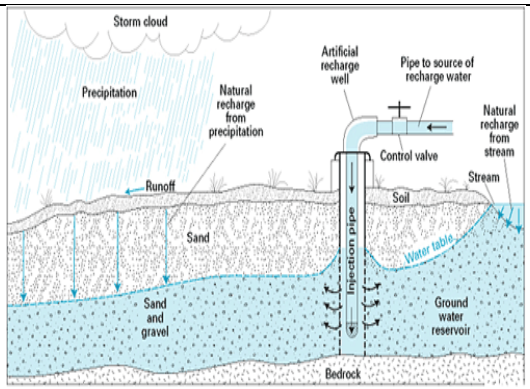
Other Methods of Artificial Recharge in Urban Areas

- Recharge through pits, trenches, wells, shafts
- Rooftop collection of rainwater
- Roadtop collection of rainwater

Watershed Management

Objectives and Approaches of Watershed Management

- A watershed is defined as any spatial area from which runoff from precipitation is collected and drained through a common point or outlet.
- Watershed management implies the wise use of soil and water resources within a given geographical area so



Greenbelt Development

Greenbelt Development in Urban Area

- Greenbelt land refers to an area that is kept in reserve for an open space - most often around larger cities.
- The main purpose of the green belt policy is to protect the land around larger urban centres from urban sprawl, and maintain the designated area for forestry and agriculture as well as to provide habitat to wildlife.

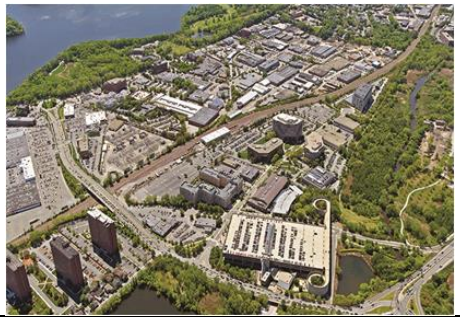
Greenbelt Development in Industrial Estate

The purpose of a green belt around the industrial site is to capture the fugitive emissions, attenuate the noise generated and improve the aesthetics.

The proposed green belt at the project site will form an effective barrier between the plant and the surroundings.

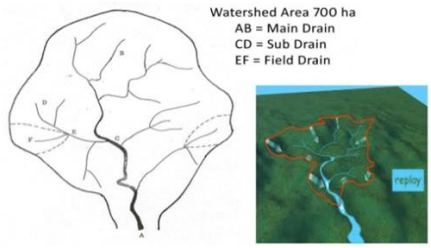
Open spaces, where tree plantation may not be possible, will be covered with shrubs and grass to prevent erosion of topsoil.

Adequate attention is paid to plantation of trees, their maintenance and protection based on the geology, soil condition and topography of the site area.



as to enable sustainable production and to minimize floods.

- The term watershed management is synonymous with soil and water conservation with the difference that emphasis is on flood protection and sediment control besides maximizing crop production.



watershed with main and sub drains

The watershed aims at improving standards of living by increasing the earning capacity, by offering facilities such as electricity, drinking water, irrigation water, freedom from fear of floods, drought etc.,

The main components of watershed programme are:

1. Soil and water conservation
2. Water harvesting
3. Crop management and
4. Alternate land use systems

Objectives and Approaches of Watershed Management

Classification of Watersheds based on the size

- Micro - within crop fields,
- Small - few thousands of hectares area as drainagae
- Large watersheds : The river basins

The outcome of watershed management:

- The productivity of agriculture is enhanced;
- The allied activities of industries are promoted; Cottage industries are developed;
- Social forestry provides an additional source of income;
- Soil erosion is checked; Ecology is maintained in a healthy and sustainable condition;
- More employment opportunities are created.

Interlinking of Rivers

Necessity of Interlinking of Rivers

- Indo-Gangetic rivers are perennial and are fed from rain waters and other glacial sources.
- On the other hand, peninsular rivers are rain fed and are heavily dependent on southwest monsoon.

Advantage of Green Belt Development:

Air Pollution control: Trees help in removing carbon dioxide and other pollutants from air and by release of oxygen into the air thereby improving air quality. A green belt development can also help in removing particulate matter from the air by trapping it to improve air quality.

Noise control: A green belt reduces the intensity of sound and functions as a barrier. Trees can either deflect, refract or may absorb sound to reduce its intensity. Trees can also modify suitably the humidity and climate which affects sound intensity.

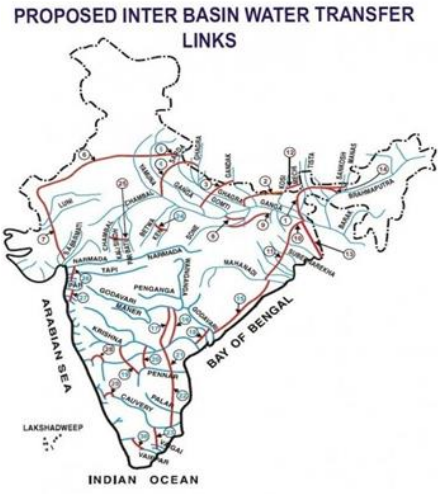
Soil erosion control: through improvement of soil quality

Water conservation: A green belt helps in containing water run off

Greenbelt Development: Purpose, Advantage and Design!

Following are the key points of the manual which need to be followed by all industries before establishing their units in certain areas:

- No forest land shall be converted.
- No agricultural land shall be converted into industrial area.
- Any industry established nearer to a green belt should be concealed from general sight.
- Land taken for development projects should provide space for appropriate waste water treatment.
- Treated waste water shall be used to raise green belt.
- The green belt between two adjoining large industries shall be one km.
- Space should be made available for storage of solid wastes so that these could be reused if required.
- Lay-out of a project must conform to the landscape of the area
- Planting of trees alongside of roads is mandatory.



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Hence, Indo-Gangetic plains witness devastating floods whereas peninsular states suffer from severe droughts.
If this excess water is transported to the peninsular rivers, the issues of floods and droughts can be resolved.
Therefore the interlinking of rivers will provide for equitable distribution of river waters.

National River Linking Project?

Proposes to transfer water from ‘water surplus’ basin to ‘water deficit’ basin
Interlinking of 37 rivers across the country through a network of 3000 storage dams
This would form a gigantic South Asian Water Grid.

The project has two components:
<u>Himalayan Component</u> - 14 projects to link different rivers of the Himalayan Region.
<u>Peninsular Component</u> - 16 projects to link the rivers of South India.

Water conservation is essential to fulfil the water demand in future.
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Pros of rivers interlinking

Control floods and droughts
Solve the drinking water crisis
Hydropower generation (About 34,000 MW)
Dry Weather Flow Augmentation
Irrigation benefits to farmers – reducing dependence on rainfall
Commercial benefits - inland waterways to reduce transportaiton costs
Defense
Employment generation
Making many areas habitable.

Cons of Interlinking rivers

Interlinking and diverting the rivers’ flow causes interference with nature and hence it may threaten natural ecosystem.
These projects are very expensive.
Dams constructed takes up a part of forests and reducing the space for forests can impact the cycle of waterfall. Construction of dams causes displacement of many people on the other hand.
All interlinked rivers can become polluted even if few were less polluted.
Few believe that these projects are not practically possible, because rivers change their directions periodically.
Currently states have authority over rivers that are in their region. With this project, these rivers can become a property of Central Government. Interlinking rivers may aggregate the disputes between States / Centre.

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<td>Application of Concept/ Examples in real life:
The concept is useful in understanding the Water conservation.</td>
<td>Link to YouTube/ OER/ video:
https://youtu.be/vsbasQiGONk
https://youtu.be/3jWA43w75xg
https://youtu.be/kE6FHIKDgEc
Environmental Acts</td>
</tr>
<tr>
<td colspan="3">Key Take away from this UO:
Understanding the concept of Rain water harvesting, Ground water recharge, Water shed management and interlinking of rivers.</td>
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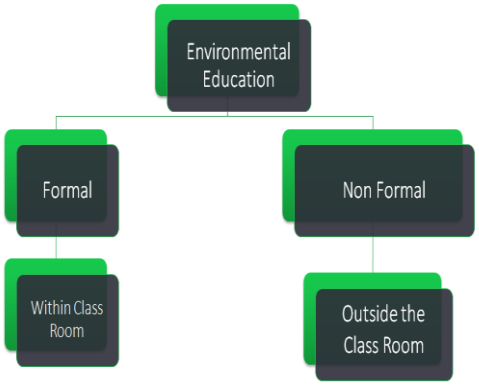
<Program Code: **CE**>: <Course Code:**22447**>: <Course Name: **Environmental Studies**>: < **Unit-5:Social Issues and Environmental Education**>: <**UO:5f**>: <**Study Material**>

<Dr. Ramesh Daryapurkar>	**Coordinator: Dr.B R Ambade;** **<09 July 2020>**	**Mentor ; <Dr. D. K. Parbat>**

Key words:
Environmental education. Ethics, IT sector.

Learning Objective:
To understand and Manage Social Issues and Environmental Ethics as lifelong learning.
Understand the need of Environmental Education, difference between formal and non-formal education, Role of IT in education.

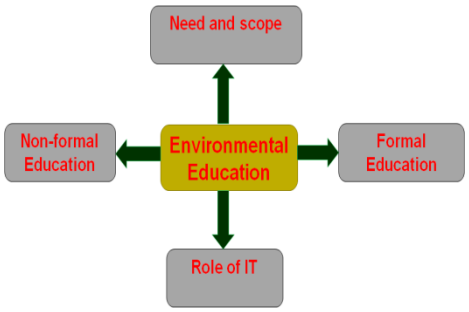
Diagram/ Picture



Key Questions:

Define Environmental education.
Describe formal and informal education.
Describe role of IT in environmental education.

Concept Map:



Solved word Problem:

Answers of above questions are covered in study material.

Environment Education

Objectives of Environment Education

- To improve the quality of environment
- To create awareness among the people on environmental problems and conservation
- To create an atmosphere so that people participate in decision-making and develop the capabilities to evaluate the developmental programmes

Environmental Education – Types

Man as a part and parcel of the Environment has to recognise the role and improtance of environment.

In order to protect the environment and to get protection from it, mankind needs environmental education.

Environmental education needs to be a lifelong affair rather than a matter of formal schooling.

Two Types:

- **Formal Education**
- **Non-Formal Education**

Both formal and non-formal environmental education must have common goals, objectives and principles.

Formal Education

Level	Objectives
Primary Education	Awareness of Environment
Secondary Education	Relevance for real-life situation of environment (Understanding)
Higher Secondary Education	Conservation of natural resources of environment (Skills)
College & University Education	Sustainable Development by solving problems of Environment

- **Formal Education:** Formal education is given in schools, colleges and a university etc., limited to a specific period, and has a well defined and systematic curriculum.
- Formal environmental education begin at primary school level.
- The medium of imparting environmental education is not only through books but also through first hand experiences in field activities and eco-development camps etc.

- The formal sector of environmental education includes pre school, primary, secondary and higher education as well as teachers and environmental professionals in training and retraining.
- Environmental education under this sector is considered and prepared as an interdisciplinary subject of study.

Non Formal Education

- Those who do not have adequate access to formal education, environmental education and awareness can be acquired by programmes that fall outside the formal education system.

Non-formal education

Non formal Environmental Education	
Adult Education	Foundation Courses
Rural Youth and Non-student Youth	Centers of Excellence
Children Activities	Development of Trained manpower
Eco-development Camps	Environment Awareness Campaign
Non-governmental Organizations (NGOs)	Research and Development Programme

Role of IT in Environment and Health
Environment and Health

The environment considerably affects our health - both positively and negatively. For example, hazardous chemicals, pathogenic bacteria, and air pollution make us ill and worried and this detrimentally affects our quality of life.

The relationship between the environment and health has been established due to the growing use of IT.

Most of us now are aware about major environmental concerns and issues related to human health - thanks to the sudden growth of Information Technology.

The computer age has turned the world around due to IT spreading the knowledge ultrafast.

A few examples of the use of IT that aid environmental studies include software such as using Geographical Information Systems (GIS).

- GIS is a tool to map land-use patterns and document change by studying digitized toposheets and/or satellite imagery.
- With GIS, any change in greenbelt cover can be noticed even without visiting the site.
- With online monitoring systems of Effluent Treatment Plants and Air Pollution Control Systems and its direct linking to Pollution Control Board's website / server made direct and effective monitoring quite easy and officer-independent.
- We can see air pollution REAL TIME data on major squares in our city – thanks to IT.
- IT has made it extremely simple to get the environmental information for any study through internet which is now a powerful tool to help increase public awareness about environmental issues.

Role of IT in Health Sector (during Pandemic)

- Specialized software can analyze data for epidemiological studies, population dynamics and a variety of key environmental concerns.
- This looks at infection rates, morbidity or
- The process of non-formal environment education is experience based involving exercises of solving environmental problems.
- The history of non-formal environmental education is much older than that of the formal system of education.

Non formal education includes organisation of extra-curricular activities like eco development camps, posters and essay-writing competitions, exhibitions, seminars, nature camps, nature-club activities, audio visual slides, mobile exhibitions etc.

Arts and Crafts, folk dances, ballet and street plays are also used to impart informal environmental education by many organisations and NGOs.

- The non-formal environmental education is designed for any age group, participating in social, economic and cultural development of the community.
- Different methods or approaches such as forming of groups, arranging exhibitions, public lectures, meetings, environmental campaigns are followed here.
- Non-formal environmental education is the type of intentional education for the development of environmental concepts, skills, attitudes and ethics.

	mortality and the etiology (causative factors) of a disease. • With Artificial Intelligence, computers have become increasingly efficient to analyse and predict infection rates / spreads. **References** 1. Prof. Erach Bharucha, 2004. Textbook for Environmental Studies. University Grants Commission, New Delhi, India. 2. Dr. Y. K. Singh, 2006. Environmental Science. NEW AGE INTERNATIONAL (P) LIMITED, PUBLISHERS, New Delhi, India. 3. 2nd Edition, Laxmi publications, New Delhi, India. 4. R. Rajgopalan, 2011. Environmental Studies: From crisis to cure, Oxford University Press, New Delhi, India.	
	Application of Concept/ Examples in real life: The concept is useful in understanding the environmental education and ethics.	**Link to YouTube/ OER/ video:** https://youtu.be/vsbasQiGONk https://youtu.be/3jWA43w75xg https://youtu.be/kE6FHIKDgEc **Environmental Acts**
Key Take away from this UO: Understanding the concept of Rain Environmental education, the role of IT in environment and health.		