

SALWAN PUBLIC SCHOOL, RAJENDRA NAGAR
CLASS – X SUBJECT-SCIENCE
LESSON PLAN
CHAPTER-15: MANAGEMENT OF NATURAL RESOURCES

UNIT	CHAPTER -16: MANAGEMENT OF NATURAL RESOURCES
Class-Transaction	Total: 8 periods (approx. 40 min each) Sub-Topic: Natural resources and need to manage the natural resources Sub-Topic: Forest and wildlife Sub-Topic: 1.Water for all 2.Coal and petroleum
Pre- Requisite for the course	This lesson requires: 1. Identify the main natural resources present on the Earth:- Water, fossil fuel, soil, air and forest. 2. Knowledge about the exploitation of natural resources and awareness about the problem of pollution. 3. Understanding that there are limited resources like fossil fuel on earth and a need to manage our resources. 4. Knowledge of biodiversity and causes for loss of biodiversity. 5. Understanding about sustainable management and rising need to save environment.
Learning Objectives	Students will be able to: 1. Understand that our resources like wild life, water, coal, petroleum need to be used in a sustainable manner. 2. Know that management of forest resources has to take into account the interests of various stakeholders. 3. Analyze and comprehend that harnessing of water resources by building dams has social, economic and environmental implications. 4. Appreciate that local people should control their local resources and their use. 5. Understand that the judicious use of resources is necessary for benefits of all generations to come. SKILLS and COMPETENCIES

	1. Analytical skills (scrutinizing an observation) 2. Environmental skill (investigating and applying the knowledge to protect environment) 3. Critical thinking (Competitive evaluation of given information) 4. The ability to understand concepts (Inspecting and analyzing reasons for variation in established principles) 5. Teamwork and communication skills (working effectively with others) 6. Application Skill (Applying the knowledge gained in their daily life)
--	--

Sub-Topic	NATURAL RESOURCES- NEED TO MANAGE THE NATURAL RESOURCES (2-3 periods)
Pre- Requisite for the course	This topic requires knowledge of 1. Types of natural resources. 2. Pollution and different types of pollution. 3. Harmful effects of pollution.
Learning Objectives	Students will be able to: -identify our resources like wild life, forest, water, coal, petroleum -understand the need to use the resources in a sustainable manner. -list the environmental problems faced and measures to be taken to save the environment (eg-3R's- Reduce, Recycle, Reuse). -make environment friendly decisions to promote sustainable development.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner: -The facilitator introduces the chapter by brain storming They will ask various questions from previous knowledge:- Q1.List the natural resources. How are they different from man-made resources? Q2. Name the different types of pollution? Q3. Is pollution causing environmental problems? Q4. Is exploitation of resources good or bad for human

	beings? -Student's answers will be analyzed and scrutinized by holding a debate among students and tabulating critical points on black board. -A PPT or simple pictures of Ganga pollution will be shown to the students to sensitize them about the extent of harm which has been done to our holy river Ganga. -Evidence-based activity demonstration A simple activity will be performed using a pH paper to test two samples of water:-Contaminated and clean water. The observations will be analyzed and interpreted by the students. -The Graph on total <i>Coliform</i> bacteria count in Ganga river will also be analyzed and explained as a method to check contamination of water sample. Concept insight: Concept Of 3R's Reduce, Recycle, Reuse will be discussed to save environment. The latest concept of 5R's will also be discussed with Refuse and Repurpose as two new R's which are added to the list of 3R's.
Learning Outcomes	Students would be able to: -Understand the problems caused due to exploitation of natural resources. -Realize an immediate need to save our resources, environment and our planet earth by sustainable management. - Indulge in more environment friendly practices.
Assessment	Discussion of topic and Guided Practice: Continuously monitor student progress by asking oral questions in between the classes. Inquiry based learning (Critical Thinking and Problem Solving): Students will do the following questions:- Pg.278 Q1 and 2 at the end of the topic from NCERT book with the help of facilitator. The facilitator would take rounds and help the students in solving the questions. A short oral/written test can be taken to check proper assimilation of the topic discussed.

Self-Study, Assignments, Homework	NCERT text book back exercise- Pg 269. Q1 to 4 Extra Questions: Q1. Define natural resources and sustainable development? Q2. Mention three changes you would incorporate in your lifestyle in a move towards sustainable use of available resources. Q3. What is meant by 3-R strategy? Q4. Reuse is better than recycle. Justify the statement. Q5. Give two methods to check the contamination in water. Q6. What is equitable distribution of resources in a society and why it is necessary?
--	---

Sub -Topic	FOREST AND WILDLIFE (2 periods)
Pre- Requisite for the course	This topic requires knowledge of 1. Meaning of the term biodiversity and need to conserve biodiversity. 2. Uses of various forest produce.
Learning Objectives	Students will be able to: 1. Understand that forests are ‘Biodiversity hot spots’. 2. Know that management of forest resources has to take into account the interests of various stakeholders. 3. Functionally understand that local people, local knowledge and local needs are to be involved to conserve forest. (e.g. Amrita Devi Bishnoi of Rajasthan sacrificed her life for the protection of ‘Khejri’ trees.) 4. Realize that nature and wildlife enthusiast play important role in conservation of biodiversity as a whole. 5. Recognize that for sustainable management, people’s participation in the management of forest is important.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- -The facilitator introduces the chapter by brain storming They will ask various questions from previous knowledge:- Q1. Explain what do you understand by biodiversity? Q2. List the uses of forest. Q3. Which of the forest products are being used by the local people living around the forest?

	Students answers will be analyzed and scrutinized to explain the role of four Stakeholders of forest- • Local people • Forest department • Industrialist • Conservationist - Needs of each group of stakeholder from the forest will be discussed to explain the fact that exploitation of forest will lead to i) the exhaustion of resources ii) loss of biodiversity - Local people have developed practices to ensure that resources are used in a sustainable manner. i) The case of Amrita Devi Bishnoi of Rajasthan who sacrificed her life to protect Khejri trees will be discussed. ii) Chipko Andolan in Garhwal. - A small debate will be initiated to discuss that which of the four stakeholders should have the authority to manage forest produce. - Students will be asked to do role play to understand how people's participation in the management of Arabari forest of West Bengal revived the degraded Sal forest. - Students will enlist the suggestions/approaches required for conservation of forest and for sustainable management of forest.
Learning Outcomes	Students would be able to- 1. Understand the problems caused due to exploitation of forests and role of stakeholder in the conservation of forest. 2. Realize that local people play important role in management of forest and sustainable development. 3. Adopt environment friendly practices to save fossil fuels and for sustainable development
Assessment	Discussion of topic and Guided Practice Continuously monitor student progress by asking oral questions in between the class. <u>Inquiry based learning</u> (Critical Thinking and Problem Solving): Students will do questions on pg 273 Q.1 and 2 at the end of the topic from NCERT book with the help of facilitator.

	The facilitator would take rounds and help the students in solving the questions. A short oral/written test will be taken to check proper assimilation of the topic discussed.
Self-Study, Assignments, Homework	NCERT text book back exercise Pg 278-279- Q3 and 4 Extra Questions: Q1.List any two industries based on forest produce. Q2.Give an example of a community for whom conservation of forest and wildlife has been a religious tenet. Q3. Why local people have an interest in forest conservation. Q4.Why are forest called “biodiversity hot spot”? Q5.Write the ecological functions of forests. Q6. Enlist the stakeholders of forest. Q7.What is the importance of forest as a natural resource? Q8.Explain giving an example where active involvement of local people lead to efficient management of forest.

Sub -Topic	1.WATER FOR ALL 2. COAL AND PETROLEUM (4 periods)
Pre- Requisite for the course	This topic requires knowledge - about the meaning of the term rainwater harvesting. -need to build up dams and their advantages and disadvantages. - what are fossil fuel and how they were formed in nature?
Learning Objectives	Students will be able to: 1. Understand that irregular rainfall pattern leads to water scarcity 2. Analyze and know that efficient management of water resources requires flood control, inter-linking of rivers, artificial recharging and mass awareness programs. 3. Functionally understand the advantages and disadvantages of building dams in modern India. 4. Realize that rainwater harvesting is an alternative to the Mega-projects like Dam. 5. Recognize and acknowledge that watershed management recharges ground water, rejuvenates

	rivers, and mitigates flood and drought. 6. Enlist the traditional methods of water harvesting. 7. Realize that fossil fuel is getting exhausted very fast and their burning cause global warming. 8. Understanding that there are limited sources of fossil fuel on Earth and there is an immediate need to look for alternative sources for fossil fuel.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Sub-Topic-I- WATER FOR ALL -The facilitator introduces the chapter by Brain storming They will ask various questions from previous knowledge - Q1.Explain what do you understand by Rain water Harvesting - Q2.Discuss the rainfall pattern in India. Identify regions of water scarcity and abundant rainfall. - Students' answers will be analyzed and scrutinized to explain the management of water resources. -A map of India will be shown to understand rainfall pattern. -PPT/video will be shown to explain irrigation methods like dam, tank and canals. -A small debate will be initiated to discuss advantages and disadvantages of building dams in modern India. - Role of watershed management to recharge ground water, to rejuvenate rivers and to mitigates flood and drought will be discussed and analyzed. -Students will be asked to make a presentation on traditional methods of water harvesting like Khadins, Nadis, Kulhs, Bundhis etc. and their respective states. -Students will draw the diagram of Khadin- a traditional system of water harvesting and understand its construction and functioning. -Students will make a list of advantages of storing ground water. Sub-Topic-II- COAL AND PETROLEUM - Students will be asked to name the fossil fuels and discuss the steps for the formation of fossil fuel. - A small video or a short film will be shown to the students to show the extent of pollution and global warming caused due to burning of fossil fuel. - Students will be asked simple questions to understand the

	environment friendly ways to reduce fossil fuel consumption. For e.g. a question will be asked which one will be a better choice? -Taking a bus, using your personnel vehicle or walking/cycling.. -Using bulbs or fluorescent tubes. -Using a lift or staircase. -Wearing extra sweater or a heating device during winter. Each answer will be scrutinized and explained. -At last chapter will be summarized and students will be sensitized to adopt sustainable management practices so that its benefits reach larger section of society.
Learning Outcomes	Students would be able to- -Understand the problems caused due to exploitation of Water resources and need to conserve them. -Realize the importance watershed management and water harvesting in conservation of water resources. -adopt environment friendly practices to save fossil fuels and for sustainable development.
Assessment	Discussion of topic and Guided Practice Continuously monitor student progress by asking oral questions in between the class. <u>Inquiry based learning</u> (Critical Thinking and Problem Solving): Students will do the following questions from NCERT book Pg 276 Q.1,2 and 3 Pg 278 Q5, 6& 7 The facilitator would take rounds and help the students in solving the questions. A short oral/written test will be taken to check proper assimilation of the topic discussed.
Self-Study, Assignments, Homework	NCERT text book back exercise-Pg 278-279 (Q3 and 4) Extra Questions: Q1. What is the importance of water harvesting? Q2. What is Narmada Bachao Andolan? Q3. Why is rain water harvesting a welcome step to conserve water? Q4. What are the advantages of water stored in the ground? Q5. List the three problems associated with large dams like Sardar Sarovar Dam on river Narmada. Q6. What is watershed management? What is its aim and what

	are the benefits? Q7. Draw one traditional system of water harvesting and explain its functioning. Q8. Although coal and petroleum are produced by degradation of bio- mass, yet we need to conserve them. Q9. Suggest a few measures for controlling carbon dioxide levels in the atmosphere. Q10. How is the increase in demand for energy affecting atmosphere? Q11. Write a short note on global warming. Q12. Mention three changes you would incorporate in your lifestyle in a move towards sustainable use of available resources.
--	---