

Lesson Number	Title of the Lesson	Skills	Activity
14	Energy Conservation	Creative thinking Decision Making	Use energy saving techniques at home for a month. Compare the electricity bill with previous two months. Record the difference
		Problem solving Critical Thinking	

## Summary:

The capacity to do work is termed as energy. It is obtained from various sources. It can neither be created or destroyed. It just converts from one form to another. Sun is the primary source of energy in this world. The Renewable sources of energy are endless and do not get depleted. On the other hand, non-Renewable resources are limited and can get depleted. There is an increasing demand for energy due to increasing population, unplanned industrialization, increasing traffic on the roads and automation at home, offices and farms. By conserving and wisely using energy available to us we can close the gap between demand and supply of energy. We also must discover alternate sources of energy which are renewable to stretch our non-renewable sources of energy. Stress must be laid on using non-conventional sources of energy as they have a never-ending supply

## Principal Points

### Sources of Energy

- Sun
- Wind (windmill)
- Moving water (Hydroelectric Projects)
- Fuels (wood, coal, oil, natural gas)
- Nuclear Fuels
- Electricity
- Geothermal energy

## Build your understanding

### 1. Classification of Sources of Energy

Renewable	Non - Renewable
<ul style="list-style-type: none"> <li>• Sun</li> <li>• Wind</li> <li>• Water</li> <li>• Geo-thermal</li> </ul>	<ul style="list-style-type: none"> <li>• Fossil fuels</li> <li>• Wood</li> <li>• Nuclear fuels</li> <li>• Electricity</li> </ul>

### 2. Important Facts About Non-Renewable Sources of Energy

#### Fossil Fuels (Coal, Oil, Natural gas)

- Rate of use is faster than rate of formation
- Likely to be depleted by: Natural gas-2035, oil-2055, coal-2285
- Electricity: Produced by using fuel / energy of running water

- Great load on electricity consumption due to Industrialization, growing population,urbanization
- Nuclear Fuels: Limited in stock
- Unwise use can lead to depletion
- Great care needed in handling to prevent leakages

## **What is Important to Know**

### **Ways of Energy Conservation**

#### **At Home**

##### **1. Power**

- Switch off lights and fans when not in use
- Change over to energy efficient tubelights
- Replace traditional chokes with electronic chokes
- Keep lights and fixtures clean
- Use dimmer switches
- Use light colors on walls
- Refrigerator size according to the family needs
- Avoid opening the refrigerator door frequently
- Defrost the refrigerator regularly
- Use washing machine at proper loads
- Use bucket of warm water for bathing rather than geyser shower
- Use AC only when required
- Collect all the clothes at one place before switching on the iron
- Use oven, hair dryer, vacuum cleaner sparingly
- Avoid non-ISI marked appliances

##### **2. Fuels**

- Use ISI marked stoves
- Replace traditional wood stoves with UnnatChullhas
- Use solar cookers
- Avoid cooking in open pans, use pressure cookers
- Cook two things together in a pressure cooker by using separators
- Switch gas on after putting the pan on the stove, put it off before removing the pan after cooking
- Keep burner holes clean
- Small burner to be used for small vessels
- Switch off the regulator switch at night
- Avoid repeated reheating of food to save fuel

#### **In a Farm**

- Maintain tractors well and drive on appropriate gear
- Prevent leakage of diesel
- Switch off the engine when not in use

- Replace old tires
- Keep the air filter clean
- Dig length wise as it saves diesel

### **At Workplace**

- Switch on the fans and lights after arrival and switch them off before departure
- Minimize the use of air conditioners
- Switch off computers when not in use
- Use stairs instead of lift
- Avoid unnecessary photocopying

### **On the Road**

- Use carpooling
- Drive at constant speed
- Minimize the use of clutch brake
- Maintain proper air pressure in tires
- Prevent leakages of fuel
- Keep the engine well-tuned
- Install solar panels for streetlights
- Discourage use of Neon Lights for advertising

## **Did you know**

### **Energy Options for the Future**

Bio Gas	Solar Energy	Hydel Energy	Wind Energy
<ul style="list-style-type: none"> <li>• Product of decomposition of animal &amp; plant waste</li> <li>• Special Bio-Gas plants to convert the waste into gas</li> </ul>	<ul style="list-style-type: none"> <li>• Available free of cost</li> <li>• Non polluting</li> <li>• Used in solar cookers, solar panels, solar heating</li> </ul>	<ul style="list-style-type: none"> <li>• Available from water falling from a height</li> <li>• Hydro electric projects on rivers help to generate electricity</li> </ul>	<ul style="list-style-type: none"> <li>• Available from wind through wind machines</li> <li>• Non polluting</li> <li>• Wind machines set up in open areas help to generate electricity</li> </ul>

## **Extend your Horizon**

### **Advantages of Non-Conventional Sources of Energy**

- Never ending supply
- Easily available
- Pollution free
- Locally produced
- No heavy investment in setup
- Job opportunities for local people

## **Evaluate yourself**

- **Justify the statement: “Energy saved is energy generated”**
- **Give two advantages of using Biogas**

**Maximize your marks:**

- **Attempt all the exercises given in the lesson**
- **Mention six ways by which we can save wastage of energy**