Comprehensive Notes On

Green Skills

Class X - Employability Skills

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1 Session 1: Sustainable Development

What It Is: Sustainable development is the development that satisfies the needs of the present without compromising the capacity of future generations. It guarantees the balance between economic growth, care for the environment, and social well-being.

Why It Matters: With increasing population and income, the consumption of goods is increasing day by day. This leads to increased production and utilization of natural resources. We must change our development strategy to a new form where development will not destroy the environment.

How It Works / Analogy: For example, sustainable agriculture uses environment-friendly methods of farming that allow the production of crops or livestock without damage to human or natural systems, preventing the use of harmful chemicals.

1.1 Importance of Sustainable Development

Economic development is using up resources of the world quickly. Our future generations will face serious environmental problems. Careful utilization of scarce natural resources is necessary.

Definition by World Commission (1987)

"Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

1.2 Problems Related to Sustainable Development

There are three major problems related to sustainable development:

1. **Food:** The amount of fertile land needed to grow crops is becoming less as we use more land for other purposes. Soil nutrients are depleted, and chemicals from fertilizers spoil the soil.
2. **Water:** We use fresh water from rivers and ponds for drinking and cleaning, but we dump garbage into them. As they get polluted, we will eventually have no clean water.
3. **Fuel:** We use a lot of wood for fuel and construction. Cutting trees affects the climate, causing extreme weather like floods or extreme heat/cold.

Mega Solar Park in Gujarat: An environment-friendly way to produce power is using solar energy. A mega solar power plant of 600 MW in Charanka (Gujarat Solar Park) built on barren land reduces dependence on fossil fuels and provides a good source of income for future generations.

1.3 Sustainable Development Goals (SDGs)

The SDGs are a universal call of action to end poverty, protect the planet, and ensure peace and prosperity. They were launched at the United Nations Sustainable Development Summit in New York in September 2015, forming the **2030 Agenda for Sustainable Development**.

- There are **17 SDGs** aimed at taking care of important issues like poverty, gender equality, water use, energy, climate change, and biodiversity.
- Countries are making policies and regulations to promote sustainable systems in all economic sectors.

1.4 Sustainable Development Initiatives & Processes

- **Bio-degradable Alternatives:** When plastics were banned in Mangalore, entrepreneur Mr. Avasth Hedge made a 100% bio-degradable bag that dissolves in hot water and decomposes naturally.
- **Edible Cutlery:** Narayana Peesapaty created edible spoons and forks out of a grain. These can be eaten, and even if thrown away, they easily decompose and enrich the soil.
- **Organic Farming:** Farmers avoid chemical pesticides and fertilizers, using organic fertilizers like cow dung. This ensures better quality chemical-free crops while maintaining soil quality.
- **Other Practices:** Vermi-composting and rainwater harvesting help preserve the environment.

2 Session 2: Our Role in Sustainable Development

What It Is: Becoming responsible environment citizens who protect the environment through our own efforts. Sustainable development can only happen when each one of us works towards it.

Why It Matters: Increasing population and development increase natural resource consumption. Forests, soil nutrients, and fossil fuels get depleted. We use resources but often give back only garbage and smoke, making the environment unsafe. If we do nothing, future generations will not survive.

How It Works / Analogy: An initiative by the Ministry of Railways introduced clay pots (*Kulhads*) in Varanasi and Raibareilly to replace plastic/paper cups. This tradition-friendly move reduces tree cutting, creates jobs for potters (boosting economy), and reduces plastic waste.

2.1 Our Contribution Towards Specific SDGs

The UN has formed 17 SDGs to protect our air, water, land, and people. Here is how we can help:

Sustainable Development Goal	How We Can Contribute
Quality Education (SDG 4)	Use school facilities, take friends to school, help friends study, and stop friends from dropping out. Education makes us responsible citizens.
Clean Water and Sanitation (SDG 6)	Build toilets to stop open defecation. Keep water sources clean and spread awareness to stop industrial pollution of water.
Affordable and Clean Energy (SDG 7)	Use solar power or biogas. This reduces pollution and reliance on burning non-renewable fuels like coal.
Decent Work and Economic Growth (SDG 8)	Study to get good jobs, work hard, contribute to society, and develop skills to add value to the community.
Reduced Inequalities (SDG 10)	Be helpful and friendly to everyone. Include everyone while working or playing, regardless of their class, caste, gender, or size.
Sustainable Cities and Communities (SDG 11)	Save energy by switching off lights/fans. Use natural light, energy-efficient LED bulbs, and appliances.
Responsible Consumers and Producers (SDG 12)	Reuse paper/glass/plastic, use cloth bags for shopping, donate unused items, buy seasonal fruits, sort garbage, and repair leaking taps.
Protect Life Below Water (SDG 14)	Stop dumping tons of plastic in the seas to protect marine life and oceans.
Protect Life on Land (SDG 15)	Plant more trees to replace cut ones, preventing soil erosion and keeping land usable for cultivation.

3 Comprehensive Question Bank

3.1 Multiple Choice Questions (MCQs)

1. How many sustainable development goals are given by the United Nations?

   (a) 18
   (b) 17
   (c) 15
   (d) 20

   Answer: (b) 17.
   Explanation: The UN formed 17 SDGs in 2015 to form the 2030 Agenda for Sustainable Development.

2. Choose the option which defines sustainable development.

   (a) Taking care of future generations
   (b) Taking care of only ourselves
   (c) Taking care of ourselves and the future generations
   (d) Well-being of all

   Answer: (c) Taking care of ourselves and the future generations.
   Explanation: It satisfies present needs without compromising the capacity of future generations to meet theirs.

3. Which organisation has made the Sustainable Development Goals?

   (a) United Nations
   (b) League of Nations
   (c) UNICEF
   (d) World Health Organisation

   Answer: (a) United Nations.
   Explanation: The SDGs were launched at the UN Sustainable Development Summit in New York.

4. Which of the following sources of energy is from a renewable source?

   (a) Solar energy
   (b) Wood
   (c) Coals
   (d) Petrol

   Answer: (a) Solar energy.
   Explanation: Solar power from the sun is unlimited, whereas wood, coal, and petrol are non-renewable and deplete over time.

5. Choose the option which is not a sustainable development goal according to United Nations.

   (a) Clean Water and Sanitation
   (b) Gender Equality
   (c) Population
   (d) Reduced Inequalities

   Answer: (c) Population.
   Explanation: Population control is not explicitly named as one of the 17 SDGs, unlike the other three options.

6. What is the main benefit of organic farming?

   (a) It uses a lot of water
   (b) It avoids chemical pesticides and fertilizers
   (c) It destroys soil nutrients
   (d) It uses genetically modified seeds

Answer: (b) It avoids chemical pesticides and fertilizers.
Explanation: Organic farming relies on natural fertilizers like cow dung, preserving soil quality for future use.

7. The 600 MW mega solar power plant mentioned in the notes is located in:

   (a) Varanasi
   (b) Mangalore
   (c) Charanka, Gujarat
   (d) Raibareilly

   Answer: (c) Charanka, Gujarat.
   Explanation: Charanka Solar Park is built on barren land to provide a sustainable source of energy.

8. Replacing plastic/paper cups with 'Kulhads' at railway stations helps in:

   (a) Increasing plastic production
   (b) Reducing cutting of trees and plastic waste
   (c) Reducing jobs for potters
   (d) Polluting water bodies

   Answer: (b) Reducing cutting of trees and plastic waste.
   Explanation: It saves trees used for paper cups, prevents plastic pollution, and boosts the potter economy.

9. In what year were the Sustainable Development Goals launched?

   (a) 1987
   (b) 2000
   (c) 2015
   (d) 2030

   Answer: (c) 2015.
   Explanation: They were launched in September 2015 to form the 2030 Agenda.

10. Narayana Peesapaty is known for innovating:

    (a) Solar panels
    (b) Bio-degradable bags
    (c) Rainwater harvesting
    (d) Edible cutlery

    Answer: (d) Edible cutlery.
    Explanation: He created spoons and forks from grain that can be eaten or naturally decomposed.

3.2 Assertion-Reasoning Questions

Options for all questions:
(a) Both A and R are true, and R is the correct explanation of A.
(b) Both A and R are true, but R is not the correct explanation of A.
(c) A is true, R is false.
(d) A is false, R is true.

1. **Assertion (A):** Sustainable development means completely stopping the use of natural resources.
   Reason (R): Future generations will need these resources to survive.
   Answer: (d) A is false, R is true.
   Explanation: Sustainable development does not mean stopping resource usage; it means using resources carefully and balancing present needs with future availability.

2. **Assertion (A):** Organic farming is a sustainable process.
Reason (R): It uses chemical fertilizers to rapidly increase crop production.
Answer: (c) A is true, R is false.
Explanation: Organic farming avoids chemical fertilizers entirely, relying on natural ones like cow dung.

3. **Assertion (A):** Using 'Kulhads' instead of plastic cups is good for the environment and the economy.
Reason (R): 'Kulhads' reduce plastic waste and create employment for local potters.
Answer: (a) Both A and R are true, and R is the correct explanation of A.
Explanation: The reasoning perfectly explains why replacing plastic with clay pots achieves economic and environmental goals.

4. **Assertion (A):** Education plays a vital role in sustainable development.
Reason (R): Education helps us become aware of our role as responsible citizens.
Answer: (a) Both A and R are true, and R is the correct explanation of A.
Explanation: Awareness from education directly empowers individuals to take action towards achieving SDGs.

5. **Assertion (A):** Cutting trees for fuel and furniture has no impact on climate.
Reason (R): Deforestation leads to extreme weather conditions like floods or extreme heat.
Answer: (d) A is false, R is true.
Explanation: Cutting trees negatively impacts the climate, making the assertion completely false.

3.3 One-Word / Brief Answer Questions

1. By which year does the United Nations aim to achieve the Sustainable Development Goals?
Answer: 2030.
Explanation: The SDGs form the 2030 Agenda for Sustainable Development.

2. Name an environment-friendly alternative to chemical fertilizers used in organic farming.
Answer: Cow dung (or compost).
Explanation: Natural fertilizers preserve soil quality for future use.

3. Which UN goal focuses on preventing girls and boys from dropping out of school?
Answer: Quality Education (SDG 4).
Explanation: SDG 4 ensures inclusive and equitable quality education.

4. What is the process of collecting rainwater for future use called?
Answer: Rainwater harvesting.
Explanation: It is a sustainable practice to preserve fresh water.

5. Which state hosts the 600 MW mega solar power plant in Charanka?
Answer: Gujarat.
Explanation: The Charanka Gujarat Solar Park is a prime example of large-scale clean energy.

6. What material is traditional 'Kulhad' made of?
Answer: Clay.
Explanation: Clay pots easily disintegrate back into the earth, preventing pollution.

7. Name the innovator who created a 100% bio-degradable bag in Mangalore.
Answer: Mr. Avasth Hedge.
Explanation: He found an eco-friendly alternative when plastic was banned.

8. What happens to edible cutlery if it is thrown away instead of eaten?
Answer: It decomposes.
Explanation: Being made of grain, it decomposes easily in the soil, enriching it.

9. Sorting garbage before disposing of it helps achieve which SDG?
   Answer: Responsible Consumers and Producers (SDG 12).
   Explanation: Sorting and recycling are core to responsible consumption.

10. Which SDG aims to protect marine life from plastic pollution?
    Answer: Protect Life Below Water (SDG 14).
    Explanation: Tons of plastic dumped into seas kill marine life.

3.4 Differentiate Between

1. **Sustainable Development vs. Short-Term Economic Development**
   Answer:

Sustainable Development	Short-Term Economic Development
Satisfies present needs without harming the future.	Satisfies immediate needs regardless of future impact.
Balances economic growth, environment, and social well-being.	Focuses heavily on profit and production.
Uses resources carefully and prefers renewable energy.	Uses up resources rapidly, leading to pollution and depletion.

   Explanation: Sustainable development is a long-term approach, whereas short-term economic development can cause irreversible damage.

2. **Organic Farming vs. High-Input Agriculture**
   Answer:

Organic Farming	High-Input Agriculture
Uses natural fertilizers like cow dung.	Uses chemical fertilizers and pesticides.
Preserves soil quality for future use.	Spoils soil nutrients and degrades the environment over time.
Produces chemical-free crops.	Focuses on growing more food through chemical means.

   Explanation: Organic farming ensures agricultural practices do not destroy biodiversity and soil health.

3. **Renewable vs. Non-Renewable Energy Sources**
   Answer:

Renewable Energy	Non-Renewable Energy
Unlimited supply (e.g., Solar, Wind).	Limited supply that will run out (e.g., Coal, Petrol).
Environmentally friendly; does not cause severe pollution.	Burning causes massive air pollution and climate change.

   Explanation: Shifting from non-renewable to renewable energy is vital for achieving SDG 7 (Affordable and Clean Energy).

3.5 Short Answer Questions

1. **What is the meaning of sustainable development?**
   Answer: Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It requires a balance between economic growth, environmental protection, and social well-being.
   Explanation: This definition originates from the World Commission on Environment and Development (1987) and is the core of green skills.

2. **List any three major problems related to sustainable development.**
   Answer: (1) **Food:** Depletion of soil nutrients due to chemical fertilizers and loss of fertile land. (2) **Water:** Dumping garbage into rivers and ponds, causing severe pollution and future clean water shortages. (3) **Fuel:** Large-scale tree cutting for wood affects the climate, and burning fossil fuels pollutes the air.
   Explanation: These three domains represent the most immediate threats to survival if unmanaged.

3. **Why do you think the United Nations has made the 17 Sustainable Development Goals?**
   Answer: The UN made the 17 SDGs as a universal call to action to end poverty, protect the planet, and ensure peace and prosperity for all people. It serves as a unified roadmap for countries to promote sustainable systems in all economic sectors.
   Explanation: The 2030 Agenda provides structured targets so that governments, businesses, and citizens work cohesively toward global preservation.

4. **List some ways in which we can use resources sensibly.**
   Answer: We can save electricity by switching off lights/fans and using LED bulbs. We can save water by repairing leaking taps. We can reduce plastic waste by using cloth bags, reusing materials, and segregating garbage.
   Explanation: Sensible resource use at an individual level contributes directly to SDGs like Responsible Consumption and Production.

5. **Explain the importance of education towards sustainable development.**
   Answer: Education helps us become aware of our role as responsible citizens. It empowers people to study, develop skills, secure jobs, and understand the consequences of their actions on the environment.
   Explanation: A well-educated populace is more likely to adopt sustainable practices and make informed decisions to protect the planet.

3.6 Long Answer Questions

1. **Describe three innovative sustainable initiatives mentioned in the text that help reduce plastic waste.**
   Answer: 1. **Bio-degradable Bags:** In Mangalore, entrepreneur Mr. Avasth Hedge created a 100% bio-degradable bag. It provides a green alternative to banned plastics because it dissolves in hot water and decomposes in a natural environment. 2. **Edible Cutlery:** Narayana Peesapaty addressed plastic spoon waste by creating edible cutlery made out of grain. Users can eat it after their meal, or if thrown away, it easily decomposes in the soil, acting as a nutrient. 3. **Clay Pots (Kulhads):** The Ministry of Railways introduced traditional clay pots at stations like Varanasi to replace plastic and paper cups. This prevents plastic pollution, stops the cutting of trees for paper, and creates employment for local potters.
   Explanation: These initiatives prove that with creativity, businesses can develop products that serve daily needs while preserving the environment.

2. **Explain in detail how a student can actively participate in achieving at least four different Sustainable Development Goals (SDGs).**

Answer: A student can be a responsible environment citizen by practicing the following:

- **SDG 4 (Quality Education):** Going to school regularly, utilizing the facilities, helping peers study, and preventing friends from dropping out.
- **SDG 11 (Sustainable Cities and Communities):** Switching off lights and fans when leaving a classroom, using natural sunlight, and avoiding wasting school resources.
- **SDG 12 (Responsible Consumers and Producers):** Using a cloth bag instead of plastic, avoiding food wastage, and sorting trash into proper recycling bins.
- **SDG 15 (Life on Land):** Participating in school gardening activities, planting trees, and caring for green grassy patches in the community.

Explanation: True sustainable development relies on individual daily habits that align with broader global goals.

3.7 Case-Study / Competency-Based Questions

Case Study 1: The Charanka Success

The state of Gujarat has vast barren lands with wild vegetation. Recently, a 600 MW mega solar power plant was established in Charanka. This has significantly reduced the region's dependence on non-renewable fossil fuels. Locals have benefited from a good source of income. This project is expected to support future generations for the next 40-50 years without polluting the air.

1. **Which Sustainable Development Goal is primarily being addressed by the Charanka Solar Park?**
   Answer: Affordable and Clean Energy (SDG 7).
   Explanation: The park generates massive amounts of power without burning fossil fuels.

2. **How does this project impact the local community's economy?**
   Answer: It provides a good source of income and job opportunities for the local people.
   Explanation: The project aligns with SDG 8 (Decent Work and Economic Growth) by improving local livelihoods.

3. **Why is solar energy considered a "renewable" resource?**
   Answer: Because energy from the sun is unlimited and will not run out, unlike coal or petrol.
   Explanation: Using infinite resources prevents depletion and ensures energy security for the future.

4. **Mention one environmental benefit of setting up this plant on "barren land".**
   Answer: It utilizes land that is not fit for agriculture, thereby preserving fertile land for food production.
   Explanation: This prevents the conflict between using land for energy vs. using land for growing crops (SDG 2: Zero Hunger).

Case Study 2: Re-imagining Farming

Ramesh is a farmer who noticed his soil was losing its fertility over the years due to the constant use of chemical fertilizers. His crop yield was dropping, and the nearby pond where runoff water flowed was highly polluted. He decided to switch to organic farming. He started using cow dung, vermi-composting, and rainwater harvesting. After a few seasons, his crops became healthier, and the pond water started clearing up.

1. **What was the main cause of Ramesh's soil losing its fertility?**
   Answer: The constant use of chemical fertilizers.
   Explanation: Chemicals can boost short-term yield but eventually destroy the soil's natural nutrient balance.

2. **Identify two sustainable practices Ramesh adopted to recover his farm.**
   Answer: He adopted organic farming (using cow dung/vermi-composting) and rainwater harvesting.
   Explanation: These practices avoid chemicals and conserve freshwater resources.

3. **How did Ramesh's switch to organic farming help the nearby pond?**
   Answer: By stopping the use of chemical pesticides and fertilizers, the toxic runoff into the pond stopped, allowing the water to clear up.
   Explanation: Agricultural runoff is a major cause of water pollution. Removing chemicals addresses SDG 6 (Clean Water).

4. **Why is vermi-composting considered an eco-friendly practice?**
   Answer: It uses earthworms to naturally convert waste into nutrient-rich compost without requiring industrial processing or chemicals.
   Explanation: It turns waste into wealth, adhering to responsible production and protecting soil health.