

## Lecture 14 Social issues and the environment, unsustainable to sustainable development-

### Sustainable Development

Human beings interact both with the social world and nature. Both, economic development and stable environment are required for the continual improvement of lifestyle and living standards. But until now, the development was human oriented and limited to rich nations. The development was achieved by damaging the environment and over exploitation of natural resources which were non renewable. That caused instability of environment and crossed the threshold limit of environmental damage.

Sustainable development can be defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” It is effective use of resources for economic development while preserving the environment and ecosystem so that not only the needs of presents are fulfilled but also for the future generations. Sustainable development also interlinks the development and carrying capacity of environment and ecosystem.



### Causes for Unsustainable Development.

- Some people argue that developing countries responsible for the degradation. Others hold Developing Countries are responsible for them.
- The important issues is not rate of increase of National Pollution, it is the rate of increase of Total Pollution. In this regard developed countries contribute much more than developing countries.
- Some people argue that raising population in the third world countries to be the crucial pollutant and it is essential to control it by all means.
- People should look at environment as not only reserve of man but of all living organism. So development has to sustain not only for man but also for all living organisms.

### True sustainable development

It aims at optimum use of natural resources with high degree of sustainability, minimum wastage, least generation of toxic by products and maximum productivity.

#### i. Inter generational equity

We should minimize any adverse impacts on resources and environment for future generation.

#### ii. Intra generational equity

Technological development of rich countries should support economic growth of poor countries and lead to sustainability.

- Don't use high quality energy to do a job that can be done with low quality energy.

Electricity, very high temp(>2500C), nuclear fission, fusion, high velocity wind	Very high	To run electrical devices
High temp heat (1000 – 2500C), H2 gas, coal, gasoline, food	high	To move vehicles, industrial processes
Normal sunlight, wood, crop wastes	moderate	Cooking, hot water, 100 – 1000C
Low temperature heat (below 100C)	Low	Low temperature for space heating

- Place more emphasis on pollution prevention and waste reduction.
- Recycle and reuse as many of our waste products and resources possible.
- Make more goods that last longer and easy to use, recycle and repair.
- Depend on renewable source of energy, sun wind, biomass, flowing water, geo thermal and tidal.
- Sustain Earths Biodiversity with emphasis on protecting vital habitats of the wild species.
- Use potentially renewable resources such as wastes soil, plants, animals no faster than they are renewed.
- Increase the usage of non renewable resources to minimize the resource depletion at a faster rate.
- Earth Degrading activities should be discouraged
- Reduce poverty and rate of population growth

#### **Measures for sustainable Development:**

##### **a) Using appropriate technology**

It is one which is locally adaptable, ecofriendly efficient and culturally suitable. It involves local labours, less resources and produces minimum waste.the Concept is “**Design with Nature**”.

##### **b) 3-R Approach**

Reduce,Reuse and Recycle approach.

Reduce the usage and also reduce the wastage of resource by making things that last longer and are easier to recycle, reuse and repair.

##### **c) Promoting environmental education awareness**

Environmental education will help in changing the thinking and attitude of people towards environment.

##### **d) Population stabilization**

We can achieve sustainable development by controlling population.

##### **e) Conservation of nonrenewable resources**

It should be conserved by recycling and reusing.

##### **f) Usage of renewable resources**

Usage of renewable resources should not be faster than their regeneration capacity.

Sustainable development also looks at the equity between countries and continents, races and classes, gender and ages. It includes social development and economic opportunity on one hand and the requirements of environment on the other. It is based on improving the quality of life for all, especially the poor and deprived within the carrying capacity of the supporting ecosystems. It is a process which leads to a better quality of life while reducing the impact on the environment. Its strength is that it acknowledges the interdependence of human needs and environmental ...

To ensure sustainable development, any activity that is expected to bring about economic growth must also consider its environmental impacts so that it is more consistent with long term growth and development. Many 'development projects', such as dams, mines, roads, industries and tourism development, have severe environmental consequences that must be studied before they are even begun. Thus for every project, in a strategy that looks at sustainable development, there must be a scientifically and honestly done EIA, without which the project must not be cleared. Large dams, major highways, mining, industry, etc. can seriously damage ecosystems that support the ecological health of a region.

Forests are essential for maintaining renewable resources, reducing carbon dioxide levels and maintaining oxygen levels in the earth's atmosphere. Their loss impairs future human development. Loss of forests depletes biodiversity which has to be preserved to maintain life on earth. Major heavy industries if not planned carefully lead to environmental degradation due to air and water pollution and generate enormous quantities of waste that lead to long term environmental hazards. Toxic and Nuclear wastes can become serious economic problems as getting rid of them is extremely costly.

In order to safeguard the existence of life and future of humanity, we have to change our approach from unsustainable to sustainable development. A judicious balance between developmental activities and environmental protection should be assured. It is possible only through sustainable development.

### **Social issues and Environment.**

- **Urban problems related to energy**
- **Water conservation -**
  - Rain water harvesting and water shed management,
  - Recycling of industrial wastes,
  - Construction of Storage reservoirs
  - Better Agricultural Practices.

### **Rain water harvesting**

The activity of collecting rain water directly recharging it into the ground to improve the ground water storage in the aquifer is called Rain Water harvesting. This may increase the level of ground water, reduce the ground water table depletion and arrest the sea water intrusion

- 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

## **Water shed management**

### **Principles factors influencing watershed operations**

- a. Physiography,
- b. Soil and Geology,
- c. Land Use,
- d. Climitological and meteorological information,
- e. Design peak runoff rate,
- f. Socio-economic factors.

### **Restoration and rehabilitation Techniques**

The survival of human has now become an important issue to be concentrated, as human faces many threats for his survival too. He is disturbed to a maximum and at times, he needs resettlement too. Based on the causes, resettlement activities can be broadly grouped into 2 categories.

1. *Voluntary Rehabilitation:* Due to natural calamities such as Political, racial, religious disturbance, floods, cyclones, famines, earthquakes etc.,
2. *Involuntary Rehabilitation:* Due to construction of various types of developmental projects.

### **Environmental ethics**

'If there is to be a war, let it be against environmental contamination, nuclear contamination, chemical contamination of soil and water systems'. The four basic tents of biocentrism are:

- Humans are members of Earth's living community in the same way and on the same terms as all other living things,
- Humans and other species are inter-dependent,
- Each organism is a unique individual pursuing its own way, and
- Humans beings are not inherently superior to other living things.

**Three principles** of ethical conduct are:

- We should not harm any natural entity that has an intrinsic worth.
- We should not try to manipulate, control, modify, manage or interfere with the normal functioning of natural ecosystems, biotic communities or individual wild organisms, and
- We should not try to deceive or mislead any animal capable of being deceived or misled.

**Some issues of concern:**

- Waste land reclamation
- Greenhouse effect
- Acid rain
- El Nino
- Ozone depletion – Ozone friendly chemicals are HFC 1349 and HCFC 22
- Other than these issues, biodiversity loss, over all pollution of water , air, noise are all typical examples for over ruling the environmental ethics.

**How to achieve sustainable development?**

The following four rules can be defined as the key mantras of sustainability. These four rules are

- Reduce our dependency on heavy metals and fossil fuels such as coal, oil and natural gas.
- Reduce our dependency on synthetic chemicals.
- Reduce our destruction of nature which includes clearing of forest and natural habitats for human needs.
- The fourth principal is to ensure that we don't stop people from meeting their needs in order to achieve environmental sustainability. We must maintain a balance between environmental and economic sustainability.

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1	The design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances	
	a)Chemistry	b) Green chemistry
	<b>c) Ecofriendly chemicals</b>	d) Biocides
2	Second Law of thermodynamic is applicable to food chain also, True or False <b>(True)</b>	
3.	_____ colour has become established as a sign of conservation of environment <b>(Green)</b>	
4	Sustainable development is the effective use of resources for ----- <b>( economic development)</b>	
5.	Sustainable development interlinks the ----- and ----- <b>( development, carrying capacity of environment)</b>	
6.	Electricity generated from nuclear fission ,fusion is -----	
	a) <b>High quality energy</b>	b)Low quality energy
	c)Medium quality energy	d)None of the above
7.	Usage of renewable resources should not be faster than their ----- <b>(regeneration capacity).</b>	
8.	Minimizing any adverse impacts on resources and environment for future generation is called --- -----	
	a) <b>Inter generational equity</b>	b)Intra generational equity
	c)Sustainable development	d)unsustainable development
9.	Technological development of rich countries should support economic growth of poor countries and lead to sustainability.	
	a)Inter generational equity	<b>b)Intra generational equity</b>
	c)Sustainable development	d)unsustainable development
10.	----- is the concept that Measure for sustainable Development which is locally adaptable, ecofriendly efficient and culturally suitable <b>(Design with Nature)</b>	
11	<b>The 3-R Approach</b>	
	<b>a)Reduce, Reuse and Recycle approach</b>	b)Reduce, Refuse and Recycle approach.
	c)Refuse, Reuse and Recycle approach.	d)Reduce, Reuse and Refuse approach.
12	Involuntary rehabilitation is due to --- <b>(construction of various types of developmental projects)</b>	