Sri SAI RAM ENGINEERING COLLEGE
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Sairam INSTITUTIONS

SAIRAM DIGITAL RESOURCES

YEAR II | SEM IV

GE8291

ENVIRONMENTAL SCIENCE AND ENGINEERING

UNIT NO 4

SOCIAL ISSUES AND THE ENVIRONMENT

4.1From unsustainable to sustainable development- Urban related energy problems

SCIENCE & HUMANITIES

4 QUALITY EDUCATION

From unsustainable to sustainable Development

Definition:

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 the environment and ecosystem.

Causes for Unsustainable Development

- Some people argue that developing countries are responsible for the degradation. Others hold Developing Countries are responsible for them.
- The important issue is not the 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 the population in third world countries to be the crucial pollutant and it is essential to control it by all means.
- People should look at the environment as not only a reserve of man but of all living organisms. 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 sustainity, 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
- 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 sources of energy, sun wind, biomass, flowing water, geothermal and tidal.
- Sustain Earth's Biodiversity with emphasis on protecting vital habitats of the wild species.

- Use potentially renewable resources such as waste 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 the 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

URBAN PROBLEMS RELATED TO ENERGY

Urbanization:

Urbanization is a process whereby populations move from rural to urban areas, enabling cities and towns to grow.

It can also be termed as a progressive increase in the number of people living in towns and cities.

It is highly influenced by the notion that cities and towns have achieved better economic, political, and social mileages compared to rural areas.

Cities are the main centers of economic growth, trade, education, innovations and employment.

In developing countries too urban growth is very fast and in most of the cases it is uncontrollable and unplanned growth.

The energy requirements of urban population are much higher than that of rural ones.

This is because urban people have a higher standard of life and their life style demands more energy inputs in every sphere of life.

Urban Sprawl

Urban sprawl is basically another word for urbanization. It refers to the migration of a population from populated towns and cities to low density residential development over more and more rural land. The end result is the spreading of a city and its suburbs over more and more rural areas.

In other words, urban sprawl is defined as low density residential and commercial development on undeveloped land. Most of the time, people will move from these areas to try to find better areas to live.

Industrialization, Social factors, modernization and economic opportunity cause urbanization, or an increase in the number of people moving from rural to urban areas.

Reasons of urbanization are given below:

Migration: People migrate themselves from rural areas to the town, industrial areas because of the relatively better employment opportunities available there.

Commercialization: Commercialization and trade comes with the general perception that the towns and cities offer better commercial opportunities and returns compared to the rural area

Employment: In the rural sector people have to depend mainly on agriculture for their livelihood. But Indian agriculture is dependent on monsoon. In drought situations or natural calamities, rural people have to migrate to cities. In cities and towns, there are ample job opportunities that continually draw people from the rural areas to seek better livelihood.

Therefore, the majority of people frequently migrate into urban areas to access well-paying jobs as urban areas have countless employment opportunities in all developmental sectors such as public health, education, transport, sports and recreation, industries, and business enterprises

Industrial growth: Industrial grow this a major cause of urbanization. It has expanded the employment opportunities. Rural people have migrated to cities on account of better employment opportunities.

When urban population growth rate is 40% in India, the industrial growth rate is about 60% per annum.

Social Factor : Many social factors such as attraction of cities, better standard of living, better educational facilities, need for status also induce people to migrate to cities.

There are numerous social benefits attributed to life in the cities and towns.

Modernization: Urban areas are characterized by sophisticated technology, better infrastructure, communication, medical facilities, etc. In urban areas, people also embrace changes in the modes of living namely residential habits, attitudes, dressing, food, and beliefs.

IMPACTS OF URBANIZATION

The urban heat island has become a growing concern and is increasing over the years. The urban heat island is formed when industrial and urban areas are developed and heat becomes more abundant. Urbanization also comes with costs. Some impact or effect of urbanization is given below

- Crime is the worst impact of urbanization.
- Global warming
- Pollution
- Lack of sanitation

- Slums and its consequences of overcrowding
- Urbanization is encouraged socially and culturally through the media
- Waste is a major problem in large cities.
- Traffic congestion
- Unemployment grows, as do drug abuse, crime and homelessness towns

Some of the major urban problems related to energy are as under:

a) Electricity

Electricity from various sources is a major requirement of expanding cities, towns and villages. Housing gadgets like T.V., computer, music systems, geysers,fans, lights, A.C.s, microwave, water lifting pump, warm blowers, coolers, etc. form the essential components of a house.

It is well known that major part of electricity is lost in transmission and some part is stolen.

The remainder is simply not enough to support the majority of people in the city and that's why the problem of electricity in cities is on the rise.

Buildings are constructed at a great rate but we don't construct dams, supplying electrical units, increasing in number at the same pace.

Therefore, what majority of the cities face today is a usual cut of electricity for a minimum of 6-8 hrs.

This makes today's urban life handicapped. Rich enjoy the resource benefit from the rising generator and inverter culture but majority of the population don't.

b) Fossil fuels (petroleum, natural gas and coal) Fossil fuels have always been under a great threat from times immemorial. With rise in technology man started generating power from nuclear sources, hydroelectric power, wind power etc. But still these contribute a little. We still depend on thermal power (fuelled by coal) a lot.

i) Petrol and Diesel: Transport and communication has brought the petroleum reserves of the world under a great threat. The rise in the number of vehicles per year is immense. Every day thousands of new vehicles hit the road which causes demand for fuel and leads to price hike.

ii) Natural Gas: The common usage of natural gas is in the form of Liquid Petroleum Gas (LPG). There is a great rise in the usage of LPG driven household commodities with the expanding population. Earlier the LPG usage was only limited to kitchen for cooking. Now many vehicles are powered by LPG. The advent of technology introduced a numerous household items making its use like gas geysers, gas heaters, gas fans, gas lanterns etc. In a way it is serving as a substitute of electricity, which is another reason for increasing pressure on oil wells/reserves.

iii) Coal: The world population has extracted and used coal reserves thinking as if it is a never-ending commodity/resource. Later, its usage in the railways became the chief cause of its rapid exhaustion. Coal reserves may be over in another 150 years. It should be used judiciously and economically.

c) Fuel wood:

Fuel wood being used for the ignition of fire is chiefly responsible for the deforestation. Most of the rural people still depend on firewood as their primary fuel.

video links

https://www.youtube.com/watch?v=RE2I_7M7Pi8

https://www.youtube.com/watch?v=DrIIZeDsxuY