

Environmental Science

Lecture 30

Coastal Area Population Density

If you look at the Coastal area and the population density in the coastal area, we are talking about 3.2 billion, half of which is the plant, live and work within 125 miles from a coastline. 4 Billion (2/3) live within 250 miles from the coast. We are talking about the entire world and the coastline that's really massive but most coastlines are an important hotspot of diversity, most of them because of the sea, the ocean, the beach areas which is used for laying eggs by most reptiles and some birds use them as migratory pathways as well. The coastal area population density has to be kept under check and because of the kind of weathers such areas give us, they are very suitable for people to travel via boats for vacation and decide to settle down there as well. We have a settled and floating population to think about. The main reason we have to think about is the kind of garbage we have to leave behind these coastlines. The plastic, the kind of glass bottles, the broken glass, all of that needs to be carefully handled because when fish see these small pieces of plastic and coloured glass, they think its food and grab onto it causing their inners to tear apart and die. These are issues that we need to think about when we think of coastal area population. Estuaries and reefs along the coastline while 75% of the Earth is covered by oceans, the greatest levels of Marine diversity are found by the coast. This Neritic zone of the ocean has depth of less than 250 meters and so the abundant photosynthetic organisms create a habitat for great biodiversity. Estuaries and reefs are very rich, species are getting discovered by the day and the number of people we have studying these species are just not enough. But suddenly one day we see them and the next day they are gone, that is the importance we need to give them because we do not even realize their importance until they disappear and we directly have to face the consequences of the extinction of certain species. Human causes of coral reef depletions, pollution runoff especially from nitrates from fertilizers, point-source pollution and oil spills from tankers and ships. Exploitation over 90% of saltwater aquarium fish are taken directly from reefs. Increased water temperatures, this is because of global warming, increased El Nino effect, direct destruction, boats, fishing nets, removal of Coral for sale. All of these are ways in which humans are directly affecting the depletion of coral reefs.

Tropical Rainforests - contains more than half of the 5 to 80 billion species of plants and animals worldwide. Approximately one third of the world's bird species are found in South American Rainforests. After the coastline, the next most affected area is the tropical rainforest. The tropical rainforest even though difficult for people to move in and live there, they are highly exploited by hunters and poachers because it's very difficult to monitor these deep thick forests where even sunlight cannot penetrate through the girth of the trees and the leaves. Each year

approximately 78 million acres of rainforest are destroyed. As many as 137 species are going extinct every day, the quality of the soil is so poor with most of the nutrients existing in the trees and the plants.

Tropical rainforest and the relationship with growth of population. More than 3 billion people live in the tropics alone. More than that live in the entire world in 1950. Millions of people are destroying the rainforest simply to survive. These people, usually small farmers, have no place to grow crops or to feed their families and earn a living, so they wander into a rainforest, light a fire, clear out an entire space, cut down these trees haphazardly. When such things happen they are not only affecting the forest alone but the surrounding environment as well. We are leaching the environment from the soil, we are removing the topsoil which will eventually hamper activities like grazing, leaching of nutrients, all of these are interconnected and will cause an entire domino effect.

Rainforest and Primates - out of some 240 known primate species, 19 are critically endangered, up from 13 in 1996. Their remaining numbers range from less than a few hundred to at most a few thousand individuals. Includes 8 monkeys from Brazil's Atlantic rainforest, where 97% of the forest has been lost, 2 apes and a monkey from Indonesia, 3 monkeys from Vietnam, 1 each from Kenya and Peru and 3 lemur species from Madagascar. You can imagine how bad the situation is when the numbers we're discussing can be counted with our hands. We have to really make sure that these species are given adequate protection. Humans require a great deal of resources and space which we do not have a great record of sharing with animals. The Earth is losing biodiversity at a rate not seen since the mass extinction that killed the dinosaurs 65 million years ago. Our increasing numbers will certainly increase the rate at which animals and plants are lost. We need to ensure that it is only through being aware of this situation and when we say we, we have to encompass all the people living on the planet irrespective of whether they are educated or not cause it really doesn't affect the situation. It is only the way of life that can be changed and can be altered but it makes a huge difference if we can alter the way our education system works, especially such things have to be dealt with primary and nursery school level so that we create good human beings with good habits.

Population Explosion in India

Population is either a boon or a bane if you look at it but in most cases especially in European countries it is considered to be a boon where they actually gives incentives to people who have children. Spain and Italy, where population is decreasing, it was on the lower percentage. Incentives are being provided to couples to have more children. This might be considered a boon but in case of countries like India, population explosion has proven to be a curse and is damaging the development of the country as well as the society in the long run. The little meaning of population is the whole number of people or inhabitants in a particular region. The

literal meaning of population explosion is 'a sudden, large increase in the size and number of population.' In simple words, it could be defined as increase in birth rates and decrease in death rates or mortality. What has happened, why is this happening suddenly? The reason this is happening is because of the gradual development of science & technology. As the living conditions are improving with respect to health care, people are living for a longer and longer period of time. At one point of time, even living till 40 was considered a great thing. Then came, 60 years, this was considered a great thing as well. All of these numbers mean nothing now, people are actually living until 85,90 in a very healthy way and their longevity has increased with the help of medicinal and pharmaceutical industry.

Population change is the calculation of Births and immigration minus the Deaths and Emigration. Migration is the number of people moving in immigration and emigration is when people move out of a country, place or locality. If you look at India here, you can see the rate at which we are completely growing. We have a huge population and this is projection we are looking at by 2040. This is where India is going to be. We are even going to exceed China because China brought about strict norms with respect to the child policy and now because the productive population has decreased, they have removed the one child norm and letting people have more than one child. You'd notice Germany and other parts of the world, the population at these places are barely going to change or alter. Europe is one of the places where population is on the decrease. India is the place where we cannot even imagine a projection like this because we do not have the resources to support such a projection.

Resources for growth in Population - the increase in birth rates due to medical improvements and illiteracy. The decrease in death rates due to better medical facilities and advancements in the field of medicine. Immigration to better developed countries due to several reasons like better job opportunities, war and natural causes like hurricanes, earthquakes and so on. Reasons for increase in population in India, if you look at birth rate, first reason is poverty, illiteracy and cultural norms. What happens with illiteracy is, poor people end up thinking is if they have one child, they are going to have two more hands to work and support the family. What they don't realize is, they are going to have one more mouth to feed as well. Advanced medical treatments are ensuring that the death rates are reducing. Migration plays an important role in population increase. In a country like ours, migration plays an important role only in population change. From one region, they just move on to another region in most cases. Effects of population explosion - already India constitutes 17.5% of the world's population. The current rate of population growth in India is 1.2% and the total fertility rate is 2.1%. These are the main things we need to be worried about and what are the effects it's causing. Air pollution, water pollution, increase in demand for food resources, deforestation, unemployment and illiteracy. Unemployment and illiteracy again causes the increase in population. We can see there

is vicious circle that's formed here. Increase in demand for food resources - resources are always limited, in a country like India there is never going to be a situation when resources are in abundance and demand is less. Resources are even more scarce as the population is exploding by thousands and lakhs. This results in the shortage of basic resources like food as well as water which is the basic right and necessity for all human beings. Unemployment and Illiteracy - unemployment or underemployment further leads to poverty. This again starts the vicious cycle of poverty and population explosion as we just discussed. Poverty then leads to an increase in population because poverty leads to people producing more children to increase the earning members of the family. You'd notice here, the literacy rate in India between 1991 - 2011, the green line we see stands to represent Male and the blue represents female. Although it is gradually increasing, it is not anywhere near where the population growth is. Our population is increasing so tremendously, so must our literacy rate but it isn't growing in the particular rate. Another very disappointing thing to notice here is, the female population is much less educated when compared to the Male counterparts.

Consequences of Rapid population growth - Economic consequences, political effects, consequences for education, Health, Welfare and child development, Environmental deterioration and Security Problem. All of these are not felt immediately but gradually as a consequence.

Family Welfare Programme

Family planning means planning by individuals or couples to have only the children they want, when they want. This is considered responsible parenthood, family welfare does not only include planning of births but the welfare of the entire family by means of total family health care. The family welfare programme has high priority in India, because its success depends upon quality of life of all its citizens especially in the rural scenario. Family planning even though it might seem like a very basic concept especially in the Urban scenario. In rural areas it doesn't seem to be like that still people are uneducated as to knowing the reason behind not having too many children, the impact it has on their health and more.

If you look at the Family Welfare programme, it was started in the year 1951. In 1977, the govt of India redesignated the 'national family planning programme' as the 'national family welfare programme' and also changed the name of the ministry of health and family planning to ministry of health and family welfare. It is not sufficient that we just teach them about planning the family, it is important that we teach them the importance of health of all the family members, the men, the women, the old people; all of them should be encompassed. It is a reflection of the government's anxiety to promote family planning through the total welfare of the family. It is aimed at achieving a higher end to improve the quality of life of the people.

India is the first country in the world to have implemented the family welfare programme at the Government level. Health is a part of the concurrent list but center provides 100% assistance to states for this programme. Government has concentrated on this programme in various five-year plans through higher priority was accorded to it after 4th five year plan. When they realized the population was steadily increasing, we did not have the resources to match the growth of population. Due to bad effects of emergency and faulty propaganda, family planning suffered major setbacks during the year 1977 and 1979. It was decided in the National Health Policy of 1983, net reproduction rate should be 1/2000, which is not the case here. Our reproduction rate right now is 2.1%. The seventh five year plan placed more emphasis on the use of spacing methods between the births of two children. Family welfare programme has remained an important aspect of each five year plan since then.

Concept of Family Welfare Programme - The concept of welfare is basically related to the quality of life. What kind of life will the man, the woman and the children lead, the longevity of their life, their health, the way you can educate them; all of these are included in the quality of life. It includes education, nutrition, health, employment, women's welfare, their rights, shelter, safe drinking water, all the vital factors associated with the concept of welfare of a particular human being. This is a centrally sponsored programme. States receive a 100% funding from the Central government. The emphasis is on one child per family. Also the emphasis is on spacing methods along with terminal methods. The current policy is to promote family planning on the basis of voluntary and informed acceptance with full community participation. The services are taken to every doorstep in order to motivate families to accept the small norm.

It requires a lot more education in the rural scenario because they have a lot of mind blocks with respect to planning a family. They believe it's a blessing of God, there are a lot of religious connotations, social pressures, other pressures they feel from their surroundings but primarily they have to be taught that their welfare and their children's welfare is most primary. The rest are secondary.

Aims and Objectives of Family Welfare Programme - The Government of India in the ministry of Health and Family Welfare have started the operational Aims and Objectives of Family Welfare Programme as follows - To promote the adoption of small family size norm, on the basis of voluntary acceptance but there was a period when they offered certain incentives if people went ahead and did the necessary steps after they had children. Two children or three children, it really didn't matter, as long as the procedure was done. To promote the use of spacing methods. To ensure adequate supply of contraceptives to all eligible couples within easy reach. To arrange for clinical and surgical services so as to achieve the set targets. Participation of voluntary organizations/ local leaders/ local self government, in family welfare programme at various levels. This is where even now NGOs have stepped in to help achieve these targets. Using the means of mass communication and interpersonal communication to

overcome the social and cultural hindrances in adopting the programme or extensive use of public health education for family planning.

Impact of Family Welfare activities - Nearly 98% of women and 99% of men in the age group of 15 to 49 have a good knowledge about one or more methods of contraception. Adolescents seem to be well aware of the modern methods of contraception. Over 97% of women and 95% of men are knowledgeable about female sterilization, which is the most popular modern permanent method of family planning. Modern, permanent and method family planning which is considered safest and one of the best methods suggested by the government as well as the medical professionals. While only 79% of women and 80% of men have heard about male sterilization. 93% of men have awareness about the usage of condoms while only 74% of women are aware of the same. Around 80% of men and women have a fair knowledge about contraceptive pills. All of these changes have occurred because of mass communication through media, especially television and radio. It is only after 3 decades of that, have we achieved such percentages. Still not sufficient because the response level is still not the same as awareness. The year 2010 and 11 ended with 34.9 million family planning acceptors at national level comprising of 5 million sterilizations and 5.6 million IUD insertions, 16 million condom users and 8.3 million Oral Pills which was way more higher than the 35.6 million planning acceptors in 2009 and 2010. Even though the percentage has decreased numerically, the awareness has actually increased. Many of them believe they are not forthright and forthcoming with the surveys and that's one of the things the Family Welfare programme is also focussing on, making sure the survey and the feedback they get is up to date and people do not shy away from the information that needs to be discussed, so that their welfare can be ensured. Over the decades, there has been a substantial increase in contraceptive use in India. Let it be IUD insertions, condoms or sterilization practices; all of them are on a steady increase.

Another important aspect that we need to look at are the number of births that have been prevented. This does have a negative connotation on one side because this is very closely linked to another bane in our society, Female foeticide or infanticide in some cases. Even though family planning measures have been practiced, unwanted foetus are prevented and removed as well, the reason behind it is not successful enough. This has to be balanced out well. Some other strategies involved are - integration with health services. Family welfare programme has to be integrated with one particular clinic or hospital instead of being a separate service. People will definitely go to the clinic or a hospital to get their child vaccinated or to get their health checked. Integration with maternity and child help, this is a very important thing that's been happening. Public is more motivated for post delivery sterilization, abortions and use of contraceptives. Concentration in rural areas, this is concentrated more in rural areas at the level of subentries, b towns, c towns and primary health centres. This is in addition to hospitals

at district, state and central levels. Literacy - this has a direct correlation between illiteracy and fertility. Stress and priority is given for girl's education because they hold the future of family planning in their own hands. Fertility rate among educated females are lower. It's obviously a directly proportional process. Breastfeeding is encouraged, it is estimated that 5 million births can be prevented just by encouraging breast feeding. Raising the age of marriage, under the child marriage restraint bill of 1978, the age of marriage has been raised to 21 years for males and 18 years for females. This has some impact on fertility but not sufficiently because child marriages continue to happen in many rural areas. Minimum needs programme - this was launched in the 5th five year plan with the aim to raise the economical standards. Fertility is low in higher income groups. So fertility rate can be lowered by increasing economical standards. Fertility is low in higher income groups. Fertility rate can be lowered by increasing the economical standards. Incentives, monetary incentives have been given on family planning programmes especially for poor people but these incentives have actually not proved to be too effective. The best way to work about this is making them aware and ensuring its on voluntary basis alone. Mass Media - motivation through radio, television, movies, newspapers, topic shows, folk dances, these are all important aspects of the programme.

Role of Community Health nurse in family welfare services - they are very important for survey work like we discussed, it is only once we have these survey numbers and statistics in our hand and a good control of those numbers. In the sense it should be as close to reality as possible. Then we can go about collecting certain demographic facts based on it. We can make a list of homes, finding out the housing location, collecting information about pregnant mothers, eligible couples and children below the school going age.

Management of Environment to safeguard Human Health

How do we go about this whole process, in the process of development, the issues of confronting today are achieving desired development for either economic or social reasons on one hand and at the same time, we need to safeguard the environment and maintain good quality living conditions on the other. There should be a balance that is maintained between the quality of life and the quality of the environment. While we take up the developmental activities, the assimilative capacity of the environmental components, that has to be taken into control. What do we mean by assimilative capacity? The carrying capacity in one particular area, say a thousand people, that particular water body or the river over there might be able to feed about 800 people only. Hence, it is over stretched by 200. We need to ensure that air, water, land and the ratio to various population is maintained, else it will lead to the pollution of these kinds of environmental sectors. The Developmental activities being haphazard and uncontrolled are leading to overuse, congestion, incompatible land use and poor living.

Conventionally, the environmental pollution problems are solved by introducing environmental management techniques such as control of pollution at source, providing of sewage treatment facilities, etc. However, environmental risks are not being controlled completely by such solutions. Presently, the environmental aspects are not usually considered while preparing master plans and the process is skewed towards developmental needs. There is a need for assessment of the land in terms of not only the economic aspects but also the environmental aspects. The land uses are accordingly to be allocated so that the natural environment and ecological balance is not disturbed. For example our very own city Chennai, there are many marshlands, estuaries like the Pallikaranai marshland, the one is perumbakkam where there are migratory birds that come for hatching eggs, laying nests but these are completely disrupted by having housing projects coming haphazardly all over this area.

Environmental Planning - this actually concerns the decision making processes where they are required for managing relationships that exist within and between natural systems and human systems. It endeavors to manage these processes in an effective orderly, transparent and equitable manner for the benefit of all constituents within such systems for the present and for the future. Some of the main elements of environmental planning are; Social and economic development, urban development, Regional development, Natural resource management and integrated land use, Infrastructure systems and Governance frameworks.