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ECOLOGY, ENVIRONMENT AND ENERGY IN ECONOMIC DEVELOPMENT

- Dr. Joe D'Souza

Although the planet earth is over 6000 millions years old, the concern for environmental ecology and pollution become relevant only in recent decades.

The fast rate of population growth presently seems to threaten the ecobalance on the planet. It is not primarily the question of numbers alone, but more so the activities evolving human growth and development.

It was the begining of industrial revolution a few centuries ago, which first ushered in, the era of industrial growth and development. The rapid industrialisation soon saw better standards of living, for the society adopting and acknowledging technology as a maans to acquiring comfort.

Through rapid industrial growth did involve damage to environment or ecology, it was considered a necessary evil (price to pay), for obtaining the comforts of industrialisation. The destruction to ecology and environment in the garb of development witnessed new heights and proportions towards the turn of the 20th century, when forests throughout the world were made to give away various hydroelectric projects, human settlements and agricultural pastures. The importance of forest covers were not except,for their use in the manufacture of timber. Similarly, indiscriminate mining activities gave away to large scale metallurgical processes. This involved extraction of metals by discharging large quantities of gases and dust into the atmosphere.

It was too late before Gandhiji's famous thought provoking message reached us, wherein he said "There is enough on the earth to satisfy man's needs but there isn't enough to fill his greed".

It was only in 1972, at the International symposium

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on environment and ecology, did all the nations realised the adversities of pollution and took the first step to reduce it. But by then Europe was already adversely affected by the disastrous acid rains, which turned the lakes sour with acids, thus killing aquatic life. The effluents from large industrial and food processing units, textile and paper mills coupled with sewage discharges from rapidly evolved cities and metropolis had already polluted rivers in many countries.

This was easily evident in India too when water sample from Jamuna which showed less than a few thousands of bacteria per millilitre before the river entered the Delhi city, and over 25 millions, specially the enteric forms, by the time it left the city.

The polluted environment did not only affect livestock and fisheries but also increased the incidents of both respiratory and enteric diseases in man.

The alarming rate of destruction of forests signaled the changes in weather patter thus affecting rainfall and forests. Inadequacies in the forest covers enhanced the prospects of soil degradation and and denudation. It is a strange paradox that we import fertilizers, and are also involved in putting up giant fertilizer plants, at the same time allowing fertilizers in the form of top soil to be degraded and washed into the sea. It is estimated each year India loses 6000 millions tonnes of top soil in form of N:P:K fertilizers, which is equivalent to about Rs. 700 crores of rupees. We do not realise that it takes 12,000 years to regenerate 1cm of top soil, needed for agriculture. In reasons for the environmental degradation to reach this catostrophic level is due to our planning which is entirely at cross purposes. While estimating profits generated through various industrial activities, man has never calculated the social costs involved through the damage to environment and ecology. It is only in

recent times the awareness for the need to add social costs to the project costs has been felt. What is social costs ? And why this is very important ?

The history of man's existence is nearly 50,000 years old. Unfortunately false indoctrination and egoism has afforded him the concept that everything on this 6000 million year old planet has been specially created for his use or rather misuse, and that he alone is the master who can do or undo, all according to his whims and fancy. Since man evolved himself as a settler from a hunter, he has tried to satisfy all his greeds by both discriminate and indiscriminate ways.

As societies evolved, so also the complexities of its desires and needs. The planet which had less than a few million human beings a few centuries ago, was about 1000 million by 1800. The number was 2 billion by 1900 and about four billion by 1930. By the turn of the century we could have about 6 billion people which would double in the next further forty years.

Although population is growing in the third world countries each year about 50,000 babies die of starvation and poverty, Infant mortality in third world is over 100 per 1000 live births, and nearly half the planet population would continue to live below the poverty line.

Although poverty has been considered as the main pollutor of human life and dignity, it is more the disparity and human greed which has been the chief architect of ecological and economic disasters.

It is time to ponder and realise that, although the Third World constitutes 85% of humanity, it consumes only 10% of the energy. Thus, clearly indicating that the 90% of the natural non renewable energy resources in coal, petroleum and mineral wealth is actually consumed and utilised by 15% human inhabitants dwelling in the Developed countries of Europe and America. Of course, leaders in the developing countries are crying

from their roof tops about equality, justice and new economic order. We know that non renewable energy in petroleum and mineral oil would be depleted in the next 40 years. But unless and until the third world countries organise and plan themselves for a balanced and sustainable growth, of both industry and environment, the developed world would continue to exploit both our resources: mineral and human, to their advantage. This is amply clear from our export figures. The best scientific talents in the third world countries including India, are helping support the developed economy.

It is our scientists and doctors who are responsible for the technological and biotechnological developments in America and Europe, without our doctors U.K. would find its medical services disrupted, without our scientists, neither NASA nor the various scientific laboratories and industries in U.S.A. would run satisfactory, and without our mineral resources, it would be difficulty to run the huge industrial units in Japan. Although, much can be said about loss in human resources by the third world countries and social costs involved I will confine myself to only the export of mineral wealth and the possible paradox of development. It is unfortunate that we continue to consider that we have inherited the earth from our ancestors rather than borrowed it from our future generation. Each year Goa alone exports about 13 million tonnes of iron ore to Japan and other countries. Goa, which is less than 0.5% of the Indian territory, controls 60% of iron ore exports of our country. Our politicians and the government in power often take great pride in declaring that we are earning foreign exchange in the process, and are generating employment too. Since 1950's to date, we have been butchering mother earth for extracting the mineral contents, only to export it. Iron ore is a non renewable resource. Most mines in Goa would be abondoned in the next 25 years, clearly indicating

that we from the later half of the 20th century are the sole benificiaries of the Goan mines. We do not cared for posterity and we do not bother even if our future generations suffer the ill effects of abandoned mines. We do not perceive that future generations could have utilised these minerals indeginously, in a much better way, rather than just transhipping it to the developed countries at a meagre rate, and receive the finished product at a cost, which is 10,000 times greater than the price we export the mineral. We fail to realise that we are creating employment in steel mills and industrial units in Japan and the developed countries by exporting raw mineral ores from our soil. We fail to realise that our traditional mining technology is increasing dust pollution, decreasing agricultural productivity, depleting our forest wealth, destroying our underground water table, and seriously affecting our marine life. Although we find shortages in our daily water supply, millions of gallons of water are discharged by the mining industry for benificiation process as well for carrying out underground mining operations, under the water table. It is unfortunate that we would soon pass to our future generations, the heritage of muddy streams and drying rivers. Muddy due to the washing and spillage of mining rejects, and drying due to the destruction of the underground water table and forest, hills the chief sources of water to our rivers.

The social cost due to shortages of water supply and destruction to fish and acquatic life never calculated social costs. Again the increase in the incidences of respiratory infections and T.B. in the mining regions, is also increasing our expenditure on health programmes, and is lowering our productivity, in terms of loss in man hours. Each year in India, 85 millions man hours productivity is lost due to respiratory and enteric diseases. These adversities and social costs

of pollution is never accounted for while planning and undertaking a mining lease or a industrial project.

In India over 50 million hectares of land is degraded and our forest cover has been reduced to less than 11% instead of the minimum 35% required for a sustainable and health growth of our society.

Our mining regions have reduced agricultural productivity. In Goa alone the non mining Salcete region gives about 3,500 Kg of grain per hectare. Whereas in Bicholim taluka we find a maximum of 800 Kg of grain per hectare. The soils in the mining region become dense, non porous and infertile due to increased mineral content and unavailability of nutrients. The production here is mainly as kerneless paddy. We fail to calculate the social costs involved perenially for the next at least 100 years, in terms of lowered agricultural output, and unemployment generated in thousands, due to destruction of agriculture by the mining industry.

In order for mining and agriculture to co-exist at a sustainable level it is also imperative to calculate the social cost in terms of lesser agricultural productivity and excess use of fertilizers in the mining regions.

The mining dust has not only covered our rivers and agricultural fields and increased health problems and expenditure but also reduced the photosynthetic ability of our plants by the deposits of dust on leaves of our forests. As much as we calculate the dollars earned through ore export it is important for the government and people of Goa to calculate all the social losses too, and arrive at the price we need to restore, reclaim and rehabitate the environment damaged by mining activity. No one would take up a mining lease unless it is profitable. Unfortunately, the mining industry profits specially in Goa is solely acquired by few individuals, at social costs which are accounted for

by the general public through government expenditure. The abandoned mines must not be left as ugly pits but converted into fish ponds and lakes as done in USA. The profits of the mining industry must be diverted from a few individuals to the society in the form of tax to cover the social costs and to carry out afforestation programmes, so that the future generations in Goa would not entirely hold us responsible for the damage, and curse us for the imminent disasters, to come in the form of drought, dried streams, water shortages and depleted fish life and agriculture not forgetting earthquakes. So long the dense iron ore has served both as a sponge to hold underground water as well as for increasing the stability of our terrian through increased density. With iron extracted, we are exposing our terrian to the disastrous internal pressure of the earth crust, which only foresight and time could tell It is imperative therefore to carry out all industrial activities judiciously to a sustainable level or else the society at large would have to pay the price due to folly of few individuals.

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