

Cost Benefit Analysis:

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Environmental Impacts

Assessment involves determination of nature and magnitude of impact whereas Cost Benefit Analysis compares the cost of damage caused by developmental activity with the cost of control measures adopted and provides the optimum solution for a given environmental quality. Thus, Cost benefit analyses converts the benefits from the development, damages, and control measures into monetary values. It helps the managers and policy-makers to take decisions and plan suitable environmental management strategy economically.

The Cost of Damages and its estimation: Adverse impacts on the quality of environment result in deterioration in biotic as well as biotic components of the system. The cost of deterioration used by adverse changes in the environment which are usually slow and gradual is rather difficult to estimate as full impact of the degradation may manifest itself after a long period of time. Damages caused by various development activities can be following types:

- Damage to human health
- Damage to flora and fauna of locality
- Damages to property.

1. Damage to human health: Estimation of changes caused to human health is usually done by dose response relationship. The effects of various concentrations of pollutants on human health can be estimated on the basis of mortality, number of day the individuals are unable to put in productive activity, reduction in working efficiency as determined by total work out-put, or expenditure incurred

for medical care etc. These parameters usually cover only reversible exposures which can be taken care of with a medical help.

There are many industries which use or produce as product by product or waste materials which may cause irreversible toxic exposures or exposures with late and latent effects. Such exposures may cause the individuals to suffer permanent health damage for which available medical facilities can do nothing.

Life under stressful conditions causes the living beings to some physiological and biochemical changes have to occur within the system. The system has to do some additional work to excrete the toxic agent or carry on with it for which metabolic energy is required.

2. Damages to Flora and Fauna: Plants being stationary are subjected to drastic changes caused by developmental activities. A large area of land surface is cleared of natural vegetation. The remaining flora is subjected to adverse conditions. The susceptible species disappear and the hardy and tenacious forms come up to replace the original ones and usually built up a huge population.

3. Damage to Property: pollution enhances the deterioration metals, stone, cement concrete, fibres, paints, rubber and structures made up to these materials. The damage done is usually slow and gradual. Agricultural land may lose their productivity. Rains may turn acidic due to contaminants of the air and cause acid deposition which affects soils, water bodies and other structures.

Assessment of losses incurred due to the pollution of the environment in terms of money is usually done on the basis of money spent to repair the damage or the mitigative steps which have to be undertaken to reduce the load of pollution.

Cost of Mitigative Measures And its estimation: The controls cost or the cost of mitigative measures undertaken is the cost incurred in adopting various mitigative measures to minimize pollution to provide relief to the affected people. To reduce a little more of pollution load a much larger effort and thereby a much larger expenditure is needed.

The mitigative efforts usually include:

- (1) Sorting out, modifying or treatment so as to make the wastes harmless or less harmful.
- (2) Safe disposal of waste material - solid liquid or gases
- (3) Modifying the process so as to reduce the magnitude or toxic nature of the wastes.
- (4) Steps undertaken to provide relief or to rehabilitate the affected people to safer locality.

Expenditure involved in maintenance, wear and tear of equipments used in pollution control operations. All these costs are included in the control costs and should be added to costs of the product so that adverse impacts of developmental activities may be properly handled.

