Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (Second Year)

Subject: Botany

Course Code: BOG 101

Course Title: Environmental Biotechnology

Unit: Sustainable Development

Module Name- Cost benefit and cost effectiveness analysis

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Notes

COST BENEFIT AND COST EFFECTIVENESS ANALYSIS

Cost-benefit analysis provides an organizational framework for identifying, quantifying, and comparing the costs and benefits (measured in dollars) of a proposed policy action.

The technique of cost benefit analysis is a practical way of assessing the environmental impacts of development projects, or any other governmental or non -governmental interventions in an economy.

It is now well established that environmental impacts are crucial to consider the full welfare implications of a project. Debate has focussed on approaches to improve the value of environmental impacts, and controversy in the discounting of future impacts to present values.

Imagine a choice between energy project options which involve investing in a coal-fired power plant or a renewable energy investment, such as in wind turbines. In choosing between these options (or deciding not to invest in either), one analytical tool that decision-makers and practitioners might use is cost-benefit analysis (CBA). This requires understanding what these options provide in terms of benefits (defined as increases in human well-being) and costs (defi ned as reductions in human well-being). Although it sounds simple enough, some way must be found to aggregate environmental and social benefits and costs across different people (within a given geographical boundary) and finding some means of monetising these, accounting for different points in time when the

impacts occur. For one of these projects to qualify on cost-benefit grounds, its social benefits must exceed its social costs.

Principles of Cost benefit analysis in Environment health.

Principle 1: A benefit-cost analysis is a useful way of organizing a comparison of the favourable and unfavourable effects of proposed policies - Benefit-cost analysis can help the decision maker better understand the implications of a decision. It should be used to inform decisionmakers. Benefit-cost analysis can provide useful estimates of the overall benefits and costs of pro- posed policies. It can also assess the impacts of proposed policies on consumers, workers, and owners of firms and can identify potential winners and losers. The estimation of benefits and costs of a proposed regulation can provide illuminating evidence for a decision, even if precision cannot be achieved because of limitations on time, resources, or the availability of information.

Principle 2: Economic analysis can be useful in designing regulatory strategies that achieve a desired goal at the lowest possible cost.
Economic analysis can highlight the extent to which cost savings can be achieved by using alternative, more flexible approaches that reward performance.

Principle 3 - For legislative proposals involving environmental regulations, the Legislative Budget Office should do a preliminary benefit-cost analysis that can inform legislative decision making.

Because laws give rise to regulations, some kind of benefit- cost analysis is likely to be useful in informing the policy process. Such a benefit-cost analysis will, of necessity, be quite rough since it is difficult to estimate the economic impact of a proposed law before the regulations based on that law are written. Although a full-blown benefit-cost analysis may not be warranted in many cases, a rough benefit- cost analysis will often be quite useful

Cost effectiveness Analysis

The Cost Effectiveness Analysis is an analytical tool that could be used to assess and compare the costs and effectiveness of alternate ways of improving the quality of environment.
It seeks to identify the least – cost alternative to achieve a given objective.
The cost effectiveness ratio is calculated by dividing the cost of an alternative by the effectiveness of that alternative which is usually expressed in non-monetary terms.
The aim of cost effectiveness analysis is to minimize the cost of securing a given level of effectiveness in accomplishing the desired outcome.

It involves the following 3 processes:

1. Identification, quantification and analysis of costs of each alternative project proposal.
2. Estimation and analysis of each alternative's effectiveness.
3. An analysis of relationship between the costs and effectiveness of each alternative, usually expressed as a ratio.

Use of cost effectiveness analysis would be appropriate in situation where the following four requirements are met.

1. There must be well -defined objectives.
2. Alternative means of achieving that objective must be identified and formulated as project proposals.
3. The alternatives identified must be comparable
4. The cost and effects of each alternative must be measured.

The results of the cost effectiveness analysis depend on the assumptions made in the estimating costs and outcomes.

Advantages

Many environmental goods and services such as clean air, natural scenic beauty, flood control and recreation are collective or public goods which are difficult to quantify and value in monetary terms. In such situations, the cost effectiveness analysis is more appropriate than cost benefit analysis.

As an analytical tool, Cost effectiveness analysis has an advantage over cost benefit analysis in that it does not require the values of benefits or effectiveness which may be difficult if not possible to achieve in many environmental projects.

For example, it is very difficult to measure the benefits of projects such as flood control, preservation of complex ecosystems, and outdoor recreational opportunities. Given the social desirability of such projects, CEA is the most suitable technique to use for the solution of least cost alternative for achieving the project objective.