
UNIT 3 MULTI-LEVEL PLANNING

Contents

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Decentralized and Multi-level Planning
- 3.3 Multi-level Structure of Planning
- 3.4 Some Issues
- 3.5 Let Us Sum Up
- 3.6 Key Words
- 3.7 Suggested Readings

3.0 OBJECTIVES

This unit aims to provide you with an understanding of multi-level planning, which is important for the development of any planning system. At the end of the unit, you should be able to:

- 1 state the strengths and weaknesses of decentralized planning;
- 1 indicate the factors to be considered in multi-level planning; and
- 1 describe the levels of planning.

3.1 INTRODUCTION

Course MRD-101 should have given you an idea of the socio-economic structure of rural India and the working of rural development administration. Course MRD-102 would have given you a comprehensive picture of the variety of development programmes that have been undertaken by the Government. In the preceding two units of this block, you studied development planning and its process in India. We made a brief mention there of the role that structures below the State level play in the overall planning system. This unit examines the planning structures at different levels.

Decentralized planning for rural development should be viewed in relation to various levels and agencies of development. The linkage between decentralized planning for rural development and the total system of planning has to be understood. This understanding will be essential for more meaningful designing of projects, managing development projects during implementation and monitoring of such projects.

3.2 DECENTRALISED AND MULTI-LEVEL PLANNING

Decentralized planning is defined as that form of planning where the task of formulating, adopting, executing and supervising the plan is dispersed, rather than entrusted to a central authority. In decentralized planning, the regional and local bodies are given greater freedom to formulate, adopt and implement the plan.

Why do we need decentralized planning? Centralization or decentralization are not

by themselves good or bad. Both these methods of planning derive their character from the political and administrative structure, political philosophy, past practice and public pressure. Centralized planning may also not be able to keep in view the socio-economic, climatic and ecological diversities in the country, as is the case in India. Decentralized planning makes the plans and programmes more suitable to local conditions. In several developing countries, following the model adopted in socialist countries, in the initial phases, a somewhat centralized planning approach was adopted. However, a mix of planning exercises through devolution of such functions at different levels is important in most situations. Planning in India is decentralized to some extent since the States have definite responsibilities. In fact, serious consideration has been given to make district planning an effective entity. Most commentators have been of the view that we need to work more and more towards decentralized planning.

The stimulus for consideration of multi-level planning arises from recognition of the need for decentralized planning. Strictly speaking, a plea for decentralization implies that some functions, which can be more efficiently performed at lower levels in the hierarchy, are currently being performed at higher levels. Logically, therefore, any plea for decentralization implies a hypothesis about the appropriate functions to be performed at different levels. The approach of multi-level planning involves capturing the logical hypothesis in the interest of optimal functioning of a system. In the context of planning for social change, such appropriateness of both levels and functions will have to be determined in the socio-political context.

The need for decentralized planning provides the justification for planning at multiple levels. The former provides the logic for the existence of the latter. Decentralization of the planning process makes planning more meaningful, more democratic and more responsive to the needs of those for whom planning is meant. However, planning at multiple levels has to be integrated. This is the primary objective and the main challenge of multi-level planning.

In brief, therefore, multi-level planning may be defined as the utilization of a number of well-defined area levels and agency levels, performing well understood functions, operating in the same territory and people inhabiting such territory.

Let us note the factors in multi-level planning. Multi-level planning implies identification of levels at which planning functions are assigned and the respective areas of responsibilities. It includes determination of criteria on the basis of which such allocation of functions are made and integrating the planning structures at different levels into the planning system. Multi-level planning, thus, leads to decentralization of planning functions.

Merits and Demerits of Decentralized Planning

- 1 Under centralized planning, decision making at the centralized level and direction from a single level is possible. However, there are high costs of obtaining information, loss of time, difficulties in applying concepts uniformly to all situations, problems of distortions in transmitting decisions for implementations etc., which reduce the effectiveness of centralized planning. In other words, from a purely cost-effective angle of decision making, it is better to have a number of agency levels in a semi-hierarchical fashion, entrusted with decision-making powers. Further, the socio-political compulsions may require that decision-making powers are distributed to more than one level for the same area. Similarly, decisions can be made at different levels by the same agency or by different agencies.

- 1 Decentralized planning gives greater freedom to the regional bodies and local enterprises, as compared to centralized planning.
- 1 Decentralized planning represents, in a way, planning from below and spreads out authority – political and economic – to lower and horizontal levels. It, thus, promotes popular participation and recognizes the value of local and sub-regional factors, and the needs of a pluralistic society.
- 1 Centralized planning is affected by bureaucratic functioning and growth of red tapism and, therefore, there is loss in the efficiency of management. Decentralized planning helps to a large extent in overcoming this problem.
- 1 Centralized planning may result in the centralization of powers. Moreover, individual initiative and enterprise may be adversely affected by such a system. Decentralized planning helps to overcome these possibilities.
- 1 In centralized planning, the formulators are often not aware of ground realities, and often standardized programmes and schemes are prepared, which may not be suitable at all places. In decentralized planning, the plans are more realistic.
- 1 Decentralized planning has its own handicaps. These are:
 - Decentralized planning, sometimes, does not reflect national priorities, which is possible in centralized planning. It is, therefore, not able to strengthen the nationalist forces or fight divisive forces.
 - In decentralized planning, the administrative and political structures at the lower levels may act as constraints to change and development. This may be through cornering the benefits of development or by covertly or overtly opposing alterations, which will empower other groups. The disadvantaged may be too weak to stake their claims.
 - Technical capabilities in planning are often limited at the lower levels. On balance, however, an optimum mix of centralized and decentralized planning seems desirable. For instance, areas of national and international importance like core sector industries, communication, etc. may need centralized planning, while areas of agriculture, rural development, water supply, etc. may benefit from decentralized planning. By and large, areas, which are widely dispersed, dissimilar in resources, and have problems, which are locality specific, need decentralized planning. Rural development is an area, which meets this description and needs a decentralized system of planning.

Decentralized Planning in India

The idea of decentralized planning and “Planning from Below” have been familiar to planners for a long time. There have been several efforts at decentralized planning in many States. Maharashtra’s experiment with District Planning Boards in 1972 has been a subject of much discussions. The states of Andhra Pradesh, Karnataka and West Bengal attempted decentralized planning in 1980s. In the initial years of planning, certain hard choices had to be made between the needs of national security, unity and growth on the one hand, and redistribution of growth on the other. Since the former took precedence over the latter, decision making functions remained centralized and vertical upto the State level. The design of political and developmental set up in the country, therefore, did not seriously consider decentralization at the sub-state level.

The Second and the Third Plans had mentioned local horizontal plans, preparation of State plans based on district, block and village plans and devolution of responsibilities to *Panchayati Raj* institutions. However, these ideas did not really take off due to the fact that the overall framework of centralized planning continued and also

because of the inadequacy of planning capabilities at such levels. In the Fourth Plan period, the need for strengthening the planning machinery at different levels was recognized. Decentralized planning came into the forefront only with the advent of the Fifth Plan when a number of Special Area Programmes were undertaken with specialized agencies for their implementation.

During the Sixth Plan, the procedures for effective functional, financial and administrative decentralization upto the district level were outlined to the States. However, decentralized planning, to be effective, would need building up capabilities assiduously, evolving of right procedures and suitable structures, and changes in technical and administrative areas including attitudinal changes. The process of encouraging assimilation of new ideas needs to be taken up through learning by doing.

During the Seventh Plan, a High Level Committee to Review the Existing Administrative Arrangements for Rural Development and Poverty Alleviation Programmes (CAARD) was set up under the Chairmanship of Shri G.V.K. Rao. The report of the CAARD Committee suggested devolution of administrative powers in a re-structured administrative set up for decentralized planning.

The fact remains that the Indian experience with decentralized planning is mixed. The Working Group Report of 1984 noted, “(There has been) a certain disconcentration of administration from the state to the district levels, with the planning and decision making functions mostly confined to the higher echelons of administration and with the local population only marginally, if at all, associated with the activities that concern their development and welfare”. In many States the District Development Boards or Councils exist, but they have little or no autonomy in local decision making, although admittedly, the extent of decentralization would vary from State to State.

The 73rd and 74th Constitutional Amendments of 1992 have made specific provisions for the preparation and implementation of plans by Panchayats and municipalities and for setting up District Planning Committees.

Check Your Progress I

Notes: a) Use the space provided below for your answers.

b) Compare your answers with the text.

1) Define decentralized planning.

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2) List three merits of decentralized planning.

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3.3 MULTI-LEVEL STRUCTURE OF PLANNING

The important feature of planning in India is that it operates in a democratic framework through a federal system, involving concurrent planning at the national and State levels.

The federal nature of India's Constitution demands planning at least at two levels, i.e., Union and States (economic and social planning) being in the Concurrent List of the Constitution. However, in view of the mixed economy resulting from a pluralistic socio-economic environment and the large size of some States, planning at sub-State and micro-levels is also required. Thus, multi-level planning in India has to be viewed in terms of activities at different area and agency levels extending well beyond the union and State framework.

A multi-level structure of planning for the country, based on the politico-administrative structure, is shown in Table 3.1 below:

Table 3.1: The Levels and Types of Planning

Planning Level	Political / Administrative Territorial Equivalent	Abstract Territorial Equivalent	Planning Concept
Macro-level (National Plan)	Nation	—	Central planning/Policy planning/Sectoral planning
Meso-level (sub-national plan or State plan)	State	State/Resource/Region/ River valley/ Metropolitan Region	State plan/sectoral budgetary planning/ Regional planning/Town & Country Planning
Micro-level (Decentralized plan)	District	Area	District planning Area Development
	Block	Sub-area/micro-region Local level	Micro-level planning/block level planning
	Village		Village plan and planning for target group.

The territorial equivalents of macro and meso-level planning are clearly defined as nation and States, respectively. However, the term micro-level planning will continue to remain vague until the actual levels of planning are clearly defined. In the Indian context, the abstract territorial equivalent of micro-level is the district. However, in the Integrated Rural Development Programme (IRDP), currently under implementation, the block, which is the lowest unit of development, administratively, has been considered as the unit of planning at the micro-level.

The macro or national plan mainly provides the broad framework of national objectives and resource allocation pattern to achieve these objectives. It includes the State plans and indicates the sectoral allocation of resources. The micro-level or district and lower level plans are mainly based on local priorities and needs. The outlays for these are found from the State plans. Thus, as we move down to the lower levels of planning, local needs and priorities draw more attention. In a country

like India, micro-level planning would, therefore, be more rural oriented.

In considering planning for rural development in the context of multi-level planning, the following important considerations have to be kept in view:

- 1 At each level, there may be a number of agencies taking decisions, which appear to be independent of each other, but are, in fact, an expression of cognizance of the inter-relationship of their respective functions. For instance, laying a railway line would be the function of the Union Government, a bus taking passengers to the railway line may be run by a State level public enterprise and the road on which the bus travels may include the national highways, State highways, or village roads under the control of *panchayats*, etc. Thus, decentralized planning or local planning will have to constantly interact with other planning agencies at higher levels, particularly in designing physical or locational aspects.
- 1 Apart from interaction among the governmental levels, there will be need for interaction with other organisations, such as cooperatives, farmer's associations, voluntary organisations and other agencies.
- 1 The decentralized planning unit will also interact with adjacent decentralized units either on its own or through a higher level. Thus, if there is an anicut on a rivulet constructed by one village, there may be no water left for the village down below. Similarly, industry in one village can cause pollution in the next village.
- 1 It is difficult to draw a rigid line between rural and non-rural areas. Even in rural areas, there are villages of different sizes. There is also the phenomenon of rural-urban continuum caused by interdependence, continuity and flow between rural and urban societies. Many villages depend on urban areas for services. Inputs are often purchased by the rural people from urban markets and output may also have to be sold to urban markets. Similarly, some educational and health facilities, repairing facilities, etc. are available only in towns. It is not possible, therefore, to plan for all facilities in all villages. Thus, decentralized planning in a rural development context cannot confine itself only to rural areas, but should be able to interact with planning in urban areas also.

Consistency Factors

The focus of development planning is on transforming the rural areas, keeping the social, economic, technological and cultural horizons in mind. Therefore, the primary characteristic of any plan must be consistency among the planning exercises undertaken at different levels. This means that a plan undertaken at one level should be in harmony with exercises undertaken at other levels.

The plan at lower levels should have the freedom to choose among national objectives for the following reasons:

- i) **Feasibility or Relevance:** Depending on the feasibility or relevance of the national objective to the block, a plan may or may not correspond or give the same weightage to national plan objectives. For instance, the national plan objective of self-reliance translated at the block level would imply that outflow of goods and services from the block to the rest of the country increase to a level at which these can pay for the inflow of goods and services. Since the block is a part, even if a smaller part of the national economy, self-reliance in this sense is, therefore, not feasible.
- ii) **Freedom to Fix Priorities:** Since the specific situation at the local level is quite different from the national scene, a block plan may even give different weightage to national priorities in its scheme of priorities. For example, let us consider the

case of a national programme designed to generate self-employment and income in rural areas. It is obvious that the actual priority areas chosen in the local areas will vary according to their needs and feasibility. For instance, it will not be possible to generate employment/income through poultry farming or dairy projects in all places across the country

- iii) **Target Fixing:** A block drawing upon the available resources and its own experiences should have the freedom to fix its own targets, depending upon their feasibility. Now, what is a target? It is a quantified expression derived from the objective and indicates the time frame for its achievement. When fixing a target, the quantum of resources and relevant institutional and organisational arrangements, manpower, feasibility, etc. have to be taken into consideration.

A target can be used to assess the magnitude of the task that lies ahead for achieving the stated objectives. As an illustration, consider the objective of removing poverty at the block level. Assume that 70 per cent of the population in the block is poor and the per capita consumption expenditure among this section is much below a specified minimum. Now, while assessing the efforts in fulfilling the block plan objective for removing poverty, you discover that only about 30 per cent of the poor could be effectively served by suitable employment and income earning opportunity. Such being the case, you would have to assess the magnitude of the task that lies ahead of you. Hence, effort will be needed to effectively serve the needs of the remaining 40 per cent of poor.

- iv) **Information Base:** The information base is a very crucial component and has to be developed at different levels. This has to be developed as an integrated system that the information flows help to strengthen and reinforce the inter-linkages, both horizontally and vertically. The designing of an information base requires professional expertise as well as data gathering, processing and transmission facilities.
- v) **Relationship among Plan Objectives:** There may be either a complementary or a competitive relationship between plan objectives. A complementary relation is ensured if a plan, which contributes positively to one objective, makes a positive contribution to the second as well, or at least, does not make a negative contribution. A competitive relationship, on the other hand, means that a positive contribution to one objective may (in some cases at least) lead to a negative contribution to the other.

There exists, for example, a complementary relation between employment generation and poverty removal; also between poverty removal and better distribution of income and assets. In contrast, there are, in some cases, conflicts between higher income growth and its better distribution (at least in the short run) and also between higher income growth and higher employment.

Since conflicts between objectives occur typically at the block and lower levels, the nature of the relationship among plan objectives should be identified. Then, the various instruments and institutions available – public investments, subsidies, credit facilities, levies, fees, public and cooperative forms of property ownership and other such organisations – should be used in such a way that the block plan reinforces complementarity among objectives and does not unduly sacrifice one objective in favour of another, whenever there is a conflict. For example, a programme designed to boost agricultural output may result in generating higher incomes – but not necessarily for agricultural labourers. Thus, in this case, the objective of generating higher output may conflict with the objective of achieving more equitable growth. In such a situation, special measures may have to be taken to achieve the second objective as well.

3.4 SOME ISSUES

The process of multi-level planning involves identification of the area levels, activities, and agencies. Let us briefly consider these.

Identification of Area Levels

The need for decentralization in the planning process is widely recognized. However, what the levels ought to be and how the various levels are to be integrated into a cohesive planning structure, is a matter of debate.

A major problem, widely recognized, is one that relates to the activities that should appropriately be undertaken at each area level. Over time, there has been tension between the Union and the State governments over both political, financial and economic matters. Centre-State relations have been a matter of intense debate in our country. The States are particularly incensed with the matter relating to financial powers being concentrated heavily in the hands of the Union Government. This, according to them, has severely handicapped them, particularly in the area of financial independence, to manage their own affairs. The Administrative Reforms Commission, the different Finance Commissions and the Sarkaria Commission have submitted comprehensive reports on Centre-State relations in different spheres. However, the issue raised from time to time, particularly by states that are governed by a political party different from that at the Center, has not been resolved.

In determining appropriate area levels, there is need to take into account not only planning requirements in terms of techniques and processes, but also social, political and administrative structures. At the time of Independence, there was need to integrate a large number of technically sovereign units, of varying sizes and differing structures, into one coherent entity. States were carved out within a formal federal structure. 'Districts' within the State, as basic units, were kept intact wherever viable, with occasional changes. Villages were consolidated into Community Development Blocks in the early fifties on a nation-wide basis. Formalizing and functionalising the units peacefully was a great achievement of the fifties.

There are intermediate tiers between area levels also with a view to ensure coordination. Thus, 'Zonal Council' (not quite active) was envisaged for a group of States. In some of the larger States, groups of districts are under a Division for administrative coordination. In many States, regulatory administration is carried out by a *taluk* (which has been redefined to be coterminus with a development block) and these are often grouped under a Sub-division for administrative purposes.

The units below the State are entirely within the jurisdiction of the State concerned. In the mid-eighties, Andhra Pradesh and Karnataka modified the block level and introduced mandals as units, analogous to, but smaller than a block.

Identification of Activities

A ticklish problem, however, relates to the issues or activities that should appropriately be undertaken at each area level. The division of powers and responsibilities between the Union and the States is enshrined in the Constitution. Over the period, however, as in the case of most federations, there have been tensions between the Union and States both on political and on financial – economic plane.

An important issue of discussion for long has been whether the division of powers

and functions between State and sub-State level should be nationally determined or left to individual States to decide. The need to introduce Constitutional provisions to ensure continuity and authenticity to such arrangements, particularly in regard to elections for bodies at sub-state levels, has also been under discussion. The 1992 Amendments says that “Panchayat-shall continue for five years”... (Article 243E). It also provides for State Election Commission for “the conduct ofall elections to the Panchayats”(Article 243K).

A variety of approaches have been advanced in regard to differentiation of activities based on micro and macro aspects, degree or linkages in developmental programmes, potentialities of development, and efficiency factors in execution of projects and processes.

The official committees (including the Hanumantha Rao Working Group of 1984 on district planning), however, focussed on the techniques and procedures of formulating, implementing and monitoring district plans, and replicating (and adopting) comprehensive planning process, coupled with detailed planning for projects. Realizing the intricacies involved, the Government of India had decided to attempt model district plans (in 1988).

The Ninth Plan makes it clear that “district development plans would have to be prepared – through the institution of District Planning Committee” set up by the states under the 73rd and 74th Amendments. “Gram Sabha would list out priorities and a list in the selection of beneficiaries for various programme and schemes.... village level plans... would be incorporated in the intermediate plans and finally merged into a district plan”. The Plan also suggests that the District Planning Committee should not only consolidate plans from below but should take decisions of the district within the given resource potential and identified needs and constraints.

Identification of Planning Agencies

The area levels have significance for purposes of policy with reference to the functional agencies, their powers and inter-relations, both vertical and horizontal (i.e. across the area levels and within the same area level). For convenience, these agencies could be categorized into political decision making bodies; the planning organisations; the staff agencies (ministries); the line agencies (the government executive departments); the public enterprises; and the cooperative structure. In addition, there are a number of specialized agencies, especially at district level, established under the Societies Registration Act in the form of government committees for integrated planning. A number of private bodies, such as associations of farmers, traders and industrialists may also be involved in the process.

Thus, in a given geographical area, there are various levels of government, such as Centre, state and district and several agencies at each level functioning in the same area. The relationship in each category could vary in degree from superior-subordinate, equal, to semi-independent in nature.

The way the agencies are structured at each area level in terms of representation to area-levels, and the superior-subordinate, semi-equal or equal nature of relationship in access to resources and powers of decision making, constitutes the core of multi-level planning. When the framework at sub-State level is varying and unclear, the functioning in reality can be very much at variance with formal structures (leading to accusation of hypocrisy or real centralization in the guise of decentralization).

Check Your Progress II

Notes: a) Use the space provided below for your answers.

b) Compare your answers with the text.

- 1) Name some Commissions, which have deliberated on Centre-State relations in different spheres.

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- 2) State the areas where there have been increasing friction between the Centre and States.

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3.5 LET US SUM UP

In this unit, we saw the linkage between decentralized planning for rural development and the total system of planning so essential for a meaningful designing of projects.

Multi-level planning, we stated, requires a decentralized planning system. Decentralization implies assumptions about the appropriate functions to be performed at different levels. Multi-level planning operationalises these assumptions in the interest of optimal functioning of the system. In the context of planning for social change, appropriateness of both levels and functions is determined in the socio-political context. The socio-political compulsions may require that decision making powers are distributed among more than one levels for the same area. Therefore, multi-level planning implies existence of several well defined area levels and agency levels. A ticklish problem, we saw, relates to the issues of activities that should appropriately be undertaken at each area level. We also noted the various consistency factors in multi-level planning.

3.6 KEY WORDS

Anicut : Dam on a river built for irrigation purposes.

Decentralization : Delegation of decision-making powers to different levels in a hierarchy.

Mixed economy : An economy characterized by the co-existence of government and private sector activities.

3.7 SUGGESTED READINGS

Alagh, Y.K. (1973), “District Planning for Integral Development” *Journal of the Lal Bahadur Academy of Administration*, Mussoorie.

Redd Y. Venugopal (1979), *Multi-Level Planning in India*, Vikas, New Delhi.

UNIT 4 PROJECT APPRAISAL-II (ECONOMIC FEASIBILITY)

Contents

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Economic Feasibility: What, Why and How
- 4.3 Role of Time in Economic Appraisal
- 4.4 Choice of Economic Efficiency Indicators (Decision Criteria)
- 4.5 Let Us Sum Up
- 4.6 Key Words
- 4.7 Suggested Readings

4.0 OBJECTIVES

The present unit is aimed at orienting you to the practical aspects of the economic feasibility technique. In the process, some steps, necessary to identify costs and benefits have been explained. A detailed discussion on the choice of economic efficiency indicators has also been provided.

By the end of this unit, you should be able to achieve the following objectives:

- a good understanding of the different economic measures and the differences between them;
- a proper identification of the costs and benefits stream; and
- the right use of decision criteria for appraisal.

4.1 INTRODUCTION

During the course of our discussion in the last unit on technical feasibility analysis, the concept of economic efficiency was introduced to you. The emergence of the financial institutions (national and international) as the major suppliers of credit for financing capital expenditures in rural areas has made it imperative for appraising the project proposal for better results. The primary consideration, no matter who initiates the proposal, is to choose the most advantageous alternative or proposal for implementation. The present unit attempts to provide an understanding of the theoretical foundations of the method of economic feasibility analysis. However, a special emphasis is laid on developing insights into their use at the Block level. There is, therefore, a clear bias in this unit towards providing an answer to the question, “How to carry out an economic feasibility analysis”?

4.2 ECONOMIC FEASIBILITY: WHAT, WHY AND HOW

Economic feasibility analysis is a quantitative measurement of economic efficiency of feasible project variants. This analysis is carried out so that one

of the variants could be chosen on the strength of its superiority over the others. Economic analysis serves to quantify differences between alternatives and reduce them to a basis, which enables project comparison. The importance of the use of these methods, however, varies with the alternatives under consideration.

Thus, project economic analysis involves techniques for comparing and deciding between alternatives on the basis of monetary or economic desirability. The use of these techniques is vitally important, for there is much to be gained or lost by virtue of the particular alternative chosen. Let us, therefore, examine these concepts to develop an answer to the question: How the economic analysis should be carried out?

Economic Efficiency

You must have realized by now that the central and eventual purpose of economic analysis of project proposals is to work out efficiency measures. Obviously, the question which arises here is: what are economic efficiency measures?

Economic efficiency is derived from the primary categories of inputs and outputs of the project. A derivation becomes possible only when input and output quantities have been converted into their respective values by multiplying them with respective prices or unit values.

A necessary and indispensable condition for derivation of economic efficiency, therefore, is that the price or unit value of inputs, and outputs must be given. Being a derived value concept, an economic efficiency measure represents or stands for a relation. At this point you must ask the question: What is this relation? Or alternatively, how is this relation expressed?

Fundamentally, this relation can be expressed in two possible ways:

- a) as a difference of value sums of inputs and outputs, and
- b) as a ratio of output to input value sums.

It clearly follows from this that for any project, there could be two fundamental measures of its economic efficiency, one given by the **difference** and the other by **ratio** of the relevant value sums. While the first gives the **absolute** measure, the second gives the **relative** measure of a project's efficiency.

When there are more than one project variants to choose from, and indeed this is the general case, it is the relative measure of efficiency that ranks the project variants according to higher and lower efficiency and enables the project team to choose that variant, which ranks first in the list.

Check Your Progress I

Notes: a) Use the space provided for your answer.

b) Compare your answer with the text.

Can you think of differences in efficiency measures? If yes, explain why?

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i) **Differences in Efficiency Measures (Private and Social):** Different economic agents value the same things differently because their goals, objectives or motivations are usually different.

Take for instance a dairy project where one of the project is straw for feed. A peasant who participates in the project may have to buy a part of his straw requirement from other peasants at the prevailing market price of straw in or around his village. The value of this input for this individual peasant is the quantity of straw purchased multiplied by the price paid.

Consider now the value of the straw input to the project from the angle of all the peasants, that is, from the angle of the society as a whole. Straw is a by product of agriculture and it has hardly any other use. Therefore, for society, the value of the straw input to the project is virtually nil.

The difference in the value of straw input alone will be different in the two cases. While in the first case, the estimate will give a measure of the project's private economic efficiency, in the second case, it will give its social economic efficiency.

This type of difference occur irrespective of whether the proposed investment in the project is wholly private, public or any shade between the two. All these types of project investments occur in our country because of the mixed economy with various forms of property ownership.

ii) **Public and Social Economic Efficiency Measure:** There is also a difference between public and social economic efficiency. The public is identical with the state and with that of the agencies of the state. But the state is not identical with society; therefore, the public and social are not identical. To further clarify the difference, let us think of the proposed investment in the dairy project as wholly public and let the project be run and managed by a public agency. The goal of the public agency is to produce and supply milk at competitive prices to a city population, otherwise served by private suppliers. Straw is once again an input to the project.

The management, like the individual peasant, has to buy its straw input requirement from the nearby peasants at the prevailing market price in the area or buy it elsewhere and transport it to the animal shed in the project area. The value of this straw for the public management agency of the project, similar to that of the individual peasant, is the quantity purchased multiplied by the price paid.

But, for society, for the reason given earlier, the value of the straw input to this wholly public project remains nil. Therefore, for this difference in the value of the straw input alone, other things being the same, the public economic efficiency

measure of the project would be quite different from its social economic efficiency measure.

In conclusion, we can say that for any project, there are different measures of its economic efficiency. These relate to the economic agents or institutions involved in the project, be they private, public or any other.

The same conclusion applies if output values are considered, since different economic agents and institutions may value the same project output differently.

There are some pure public investment projects belonging generally to social infrastructural sectors and to the field of science and technology, whose output and services are provided to consumers free and whose output are very difficult, if not impossible, to measure in value terms. The relevant measure in such cases is the social efficiency for choosing among the available variants. This is indicated by the comparative social costs of the variants under the supposition that the value for services from the variants is the same and equal to one, whatever meaning may be assigned to one. On this basis, the variant with minimum social cost is the most efficient.

Costs and Benefits

The focus of the foregoing discussion is clearly on the costs and benefits of a project. Costs and benefits of a project are derived from its input and output values. Differences in input and output values, according to the agents and institutions involved, naturally lead to differences in the private, public and social costs and benefits of a project. Therefore, a proper identification of the costs and benefits stream becomes the primary task for any project formulator.

At first it might appear to you that no matter who incurs them, input values together constitute project costs. Similarly, no matter to whom these accrue, all output values together constitute project benefits. There are, however, two factors, which make a difference. First, from the social angle, a negative output value, the value of socially undesirable or harmful product constitutes a social cost of the project. A negative input value, therefore, constitutes a social benefit. Second, from the private and public angle, besides input costs, the project may involve incurring of non-input costs on the one hand and receiving of non-output benefits on the other. Input costs are traditionally described as real resource costs to the material transformation process within the scope of the project.

Let us examine the concept of non-input costs and non-output benefits for easy identification.

i) **Non-input Private or Public Costs:** The non-input private or public costs are of two types:

- a) **Taxes and Duties:** Payments for rights of the state, such as excise and customs duty, royalty, sales tax, development duty, tax on profit, land revenue and payment for private rights like rents, patent charges and brand names.
- b) **Sales Promotion Charges:** Payments for promoting sales of project outputs like advertising and commissioning of marketing agents.

There is, however, much debate about the treatment of depreciation and interest

charges on the installments of loans, all of which give the appearance of being non-input costs from the private or public angles. Therefore, a proper approach in dealing with these items must be clearly described.

Depreciation is a financial accounting mechanism employed by private and public industrial firms to show how much physical capital assets have been used during an accounting period. While management may record depreciation of an asset as a cost in its annual balance-sheet, it should never be forgotten that the cost of the asset (an input cost) was incurred at the time of acquiring it.

The inclusion of depreciation charges in the private or public cost would, therefore, mean double counting of the input cost of the asset in point. Hence, depreciation is irrelevant for assessing a project's economic cost, public or social. But depreciation is very relevant for assessing the financial viability of a project, as depreciation charges are available to management as a source of funds.

Similar is the case of repayment of loan installments. Since the cost of an asset has been incurred when acquiring it, showing repayment as costs would again mean double counting. Once again, however, repayment of installments is relevant for analyzing the financial viability of the project.

It should also be noted in this context that in the financial balance-sheet or in the cash flow statement of the project, while repayments of installments are shown as expenditure, the loan amount outstanding is shown as receipts, thus avoiding double counting. In economic accounting, the asset cost simply takes the place of the equivalent loan.

Interest is truly a non-input cost, a payment for ownership rights of investible funds. Those who save and advance loans for investment in private or public projects must be compensated for the sacrifice of consumption, while they advance funds. But one of the central concerns for making a project economic analysis from the private or public angle is primarily to check whether the project would generate sufficient returns to be able to pay interest on the capital borrowed. Precisely for this reason, interest has to be kept out of the private or public economic cost of the projects. Adopting this practice, the project evaluator should be able to show that the project's private or public rate of return is greater than the relevant rate of interest. This would simply mean that the project is worthy of being undertaken.

ii) **Non-output Private or Public Benefits:** You may, on the other hand, also find that some of the projects have non-output benefits from the private or public angles. These may be in the form of rebates and exemption from states taxes and duties of various kinds, subsidy on sales and procurement or purchase of output at a support price. Perhaps you can now visualize the group of non-output benefits accruing to a private or public agency. You must also be able to understand the effect of such concession on the project output.

Well, the effect is an increase in the net value of project output compared with the net value. This takes place only if the net output value had been assessed at the open market price inclusive of taxes and without the subsidy and support through State purchases.

In brief, the private or public total cost of the project, thus, comprises direct

input and non-input costs incurred by the private or public agency concerned. The total benefits, on the other hand, comprise direct output and non-output benefits received.

The net of total benefit over total cost from the private or public angles gives us the net revenue, income, earnings, profit, surplus, etc.

The general rule, therefore, for getting at respective costs and benefits of the project is: Whatever is to be paid by way of input and non-input expenditures would go as costs and whatever is to be received by way of output and non-output revenues would be identified as benefits. These would be applicable to the private or public agency goals.

iii) **Social Costs and Benefits:** In regard to social costs and benefits of the project, you may face a situation that is simultaneously simpler and more complicated.

Check Your Progress II

Notes: a) Use the space provided below for your answer.

b) Compare your answer with the text.

c) It is expected that you will answer without consulting the text.

Perhaps you can spend some time to reflect on the question and enlist at least one reason why the identification of social costs and benefits should be simultaneously simpler and more complicated.

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The process of identification is simpler because our attention is now confined to input and output related costs and benefits alone. There are no non-inputs costs and non-output benefits of the project from the society's angle.

The complication arises because input costs and output benefits have to be traced both directly and indirectly. It not only has to be directly incurred or generated by the project, but also indirectly, elsewhere in the economy, by other projects, as a consequences of this project's presence. These are generally described as external effects, which may be external economies or diseconomies.

The accompanying Table 1 has been designed in a format especially for the

Block level planner. The Table facilitates easy identification and accounting of social costs and benefits of project.

Table 4.1: Identification and Accounting Table for a Project's Social Costs and Benefits

Item Number	Items of Costs and Benefits	Illustrative Example	Remarks
1.0	Input Costs (inputs used)		
1.1	Direct Input use		For the production of the project outputs
1.2	Indirect Input use	Pollutants and Costs of their neutralization	For prevention or neutralization of harmful outputs
1.2.1	By the project internally		
1.2.2	By other project externally		
2.0	Input Benefits (inputs saved)		
2.1	Direct Saving of input out of displaced project	Feeds used for indigenous cow, when the latter is displaced by crossbred cow	This benefit accrues to the project.
2.2	Indirect Saving of inputs by other project externally	A canal project's effect in reducing operating inputs of existing tube-wells in the command area due to rise in water tables	This benefit accrues to other projects
3.0	Output Benefits (desirable output generated)		
3.1	Direct Output of primary goods or services from the project		
3.1.1	Output of Secondary goods or services from the project	Education, health, housing facilities for workers at the project site, on job skill formation, i.e. learning by doing, use of the project road by local inhabitants, otherwise meant for carrying materials to the project site	These benefits may partly accrue internally to the project and partly externally outside the project
3.2	Indirect Increase in output or output value of other project for	Increase in precipitation or soil conservation	This benefit accrues externally to other projects

Item Number	Items of Costs and Benefits	Illustrative Example	Remarks
	the same levels of input use	resulting from an afforestation project and, in turn increasing agricultural yield in the vicinity, extension of railway line through an agricultural region	
4.0	Output Costs (undesirable outputs generated or desirable output costs)		
4.1	Direct		
4.1.1	Output of undesirable products from the project	Pollutants and effluents from industrial projects, milk and manure from indigenous cow displaced by crossbred cow, fish catch by traditional sail boats displaced by mechanized trawlers, earthen pottery by China clay pottery, etc.	The cost to prevent harmful effects may or may not be incurred either internally or by other projects. If it is actually incurred then it is accounted under item Nos. 1.2.1 and 1.2.2
4.1.2	Loss of output of displaced project		
4.2	Indirect Loss of output by other projects	Loss of agricultural output from waterlogged agricultural land as a result of canal irrigation project	
5.0	Total Social Cost:	$[(1.0+4.0) - (1.2.1+1.2.2)]$	Provided cost items 1.2.1 and 2.1.2 have been accounted under 1.0
6.0	Total Social Benefits: (2.0+3.0)		
7.0	Net Social Benefits: (6.0 – 5.0)		
8.0	Displaced Net Benefits: (4.1.2 – 2.1)		These are directly displaced by the project
9.0	External Social Costs: (1.2.2+4.2)		
10.0	External Social Benefits: (2.2+3.2)		

Item Number	Items of Costs and Benefits	Illustrative Example	Remarks
11.0	External Net Benefit: (10.0 – 9.0)		
12.0	Net Social Benefit of the project (7.0) – (3.1 – 1.1)+ (10.0 – 9.0) – (8.0)		The net social benefit is the direct net benefit of the project plus the direct net external benefit minus the net benefit displaced by the project

The Table is self-explanatory and illustrative. Some basic facts, however, need to be pointed out, these should be kept in mind, while identification is carried out for social costs and benefits.

First, the pattern of social benefits differs with the nature and type of projects. Second, the actual amount of cost or benefit shown against specific item heads for any project, especially under the indirect external costs and benefits category, may turn out to be negligible or nil. Some of these may not even be measurable or may be difficult to measure. It should not be deleted beforehand, as it is likely to cause incomplete identification and one may indeed miss the significant social costs or benefits of the project.

Third, it is in general difficult to keep within narrow limits the external social effects of a project, because, any new project is like a pebble thrown into a pond, which causes waves all around. The maximum impact is naturally felt around the point of impact. As one moves away, the waves become weaker and the impact declines, until it becomes imperceptible. Similar are the social external spread effects of project. For social cost benefit calculations, even if the circle effects are captured, this would not be a mean achievement.

Finally, the statement in the last row of the Table provides a check on the statement in row (7.0), which gives the net social benefit of the project.

4.3 ROLE OF TIME IN ECONOMIC APPRAISAL

Time is an essential feature of almost every aspect of a project. As we have seen in a preceding unit, every project has an economic life starting with the first year of construction and extending up to the year in which it is scrapped. At the time of preparing its blue-print and its appraisal, its life lies wholly in the future. This means that project inputs, outputs and also direct or indirect costs and benefits are all future dated.

The project profile is accordingly a future time sequence of inputs and outputs, of costs and benefits running over its life. There are two immediate consequences of this feature of the project profile. These consequences, therefore, must be properly assessed.

Present and Future Economic Values

This consequence pertains to costs, benefits or their components, even of same amounts, but occurring at different dates because they do not have the same present value. Let us explain this concept of present and future values with some illustrations.

i) **Present value:** The present value series are independent of time and, therefore, ordinary arithmetical operations can be performed with ease.

This being the case, the sum of the present value series of costs and benefits gives us the total present value of the project's costs and benefits. The difference between the benefit and cost sum gives us the present value of net benefits or net present value of benefits. Therefore, when we are assessing the social costs and benefits of a project in the format of Table 4.1, this table will have a time dimension column at its right, giving how many years the project's life is expected to be. When the entries in each row have been discounted at the social rate of discount, we shall have the corresponding present value series.

The sum of this series will give us the total present value under respective heads. It is easy to see that the sum of the present value series corresponding to row (7) or row (12) of Table 1 will give us the net present value of benefits of the project. Exactly similar is the case when project costs and benefits are viewed and estimated from the private or public angles. But the question remaining to be answered is, how does one obtain a present value series of costs and benefits when the project life lies in the future?

ii) **Future value:** Just as the saying goes that a bird in hand is better than two in the bush, a rupee's worth of benefit received five years hence (from now into future) has far less value than if received now. The farther away in the future a rupee of benefit lies, the lower is its present value. The position is the same with respect to cost, which is actually negative benefit. And it happens because all of us – individuals, institutions and even society as a whole – discount the future *vis a vis* the present.

In other words, we attach less and less weight (importance) to a unit of benefit or cost the farther and farther it occurs in the future, and the rate at which these weights decline is called the rate of discount. Private individuals with a limited span of life discount the future at a rate higher than that at which society or government would do. Such a difference in discounting of future gives rise to different private and social rate of discount.

The future time sequence of project costs, benefits and their components, whether private, public or social can, therefore, be converted into a corresponding present value series, provided we are given the relevant rate of discount.

Now, the most important question in the process of project appraisal revolves around the discount rate. One has, therefore, to decide as to what rate of discount should be utilized.

So far as private and public discount rates are concerned, the rates of interest at which the public project agency, private individuals, households or firms would borrow or lend investible funds, in part or whole, provide the appropriate substitutes for these rates of discount. For illustration, suppose a State government or a public sector agency borrows investment funds for a project from the National Bank for Agriculture and Rural Development (NABARD) and, in turn, relends a part of the borrowing to rural households, which show their keenness to participate in the project by agreeing to make the

complementary private investment, partly financed by their own savings and partly by loans.

Let us further suppose that the borrowing rate of interest is 5 per cent and the relending rate is 7 per cent. Therefore, it can be said that relevant rate of discount for public costs and benefits of the project is 5 per cent, whereas it is 7 per cent for the private costs and benefits.

Why is it so?

This is because the relevant discount rate is the corresponding interest rate working in reverse. For a 5 per cent rate of interest Rs. 100 (present value) will become Rs. 105 a year from now (future value). On the reverse, Rs. 105 at cost (benefit) a year from now, at 5 per cent rate of discount will be worth Rs. 100 now.

Another point worth noting is that the value of the discount factors is indeed the weight attached to a unit of future cost or benefit by the parties concerned. The larger the value of the farther in the future is the year, the smaller is the value of the discount factor or the weight attached to a unit of cost to the incurred or benefit to be valued in the future year.

When it comes to finding the present value of future social costs and benefits of the project, we require a social rate of discount. This also is national parameter, the value of which is supposed to be given by the national planning agency. In the event that the national agency fails to give a single value of this parameter, the project team should use a range of values.

Uncertainty about Estimates

The second consequence is that an area of uncertainty would exist around the estimate of almost everything of relevance to the project, be it the construction period, the economic life of the project, estimates of inputs, outputs, prices, costs, benefits or their components. Given the knowledge, experience and information available, the project team, it is assumed, would try to prepare the best estimates of the quantities and values involved.

It has been observed that the best estimates go wrong more often in respect of cost and benefit values, which, among other things, depend upon prices of inputs and outputs. The price of an input may shoot up in future due to unforeseen causes, pushing up the investment or the operating costs as the case may be. Similarly, the demand for the project output may fall and push down its price, reducing the output benefit in the process. It must be admitted that by the very nature of uncertainty problem, there is no readymade formula or completely satisfactory method to handle it. All that one can possibly do is to ask (i) how badly the present value of net benefit of the project will be affected because of the uncertainty surrounding the estimate of any one of the variable or a whole set of variables and (2) whether the project would still remain within the acceptable range.

In operational terms, this means performing a sensitivity test on present value of net benefit with respect to possible change – anticipated on the basis of objective information and one's subjective judgment – that are likely to occur

in the estimate of one or other variable as a result of uncertainty surrounding the variable. This is known as sensitivity analysis. This analysis, however, is not suited when uncertain effects of many variables have to be considered simultaneously because uncertain effects get compounded. These can be compensatory or self-cancelling. Nevertheless, uncertainty remains.

According to this test, for a relative change in the estimate of an uncertain variable, say 5, 10 or 20 per cent change upwards or downwards, as the case may be, you have to recompute, other things remaining unchanged, the present value of net benefit. Supposing a 5 per cent change in the variable's estimate makes a 20 per cent change in the present value of net benefit, the conclusion is that the project is highly sensitive to future changes in this particular variable. On the contrary, if the change in the present value of net benefit is of a minor magnitude so that it does not affect either way the viability of the project, the obvious conclusion is that it is insensitive. Where sensitivity is high, the project may require recasting or may even be abandoned if the changed present value of net benefit becomes negative.

Activity I

The importance of a sensitivity analysis can be easily understood from field experiences. You are required to list at least five estimates of different types where differences have been observed between the original and mid-point estimates. Give reasons for these observed differences.

- Notes:** a) Use the space provided to list and explain in two lines each your reasons for listing.
- b) Check your answer with the tutor-counsellors during the contact programme.

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4.4 CHOICE OF ECONOMIC EFFICIENCY INDICATORS (DECISION CRITERIA)

You may recall that there are two types of economic efficiency measures, viz., absolute and relative. Therefore, it becomes pertinent to examine the merits and demerits of different indicators. This examination will equip you with skills to choose the right indicator of economic efficiency, which would result in the

ultimate selection of your project proposal. Thus you must be fully equipped to know 'when' and 'where' to use 'which' indicator.

Present Value of Net Benefit (PVNB)

The present value of net benefit is an index of economic efficiency of investment project. As already noted earlier in the present unit, the present value series of project costs and benefits give us an absolute measure of worthiness or efficiency of the project in point. So long as our attention is confined to a single project, or two or more projects whose present value of costs (PVC) are the same, this index or criterion of choice among projects remains adequate.

But in the more general case, when there are many projects with different PVCs, this absolute measure fails to produce a correct choice among project variants.

Benefit-Cost Ratio (B/C Ratio)

In the case of more than one competing projects with different costs, a relative measure of efficiency or index of worthiness becomes necessary for making the right choice. The ratio of Present Value Benefit (PVB) to PVC, in short, the benefit-cost ratio (B/C Ratio), provides such a measure. It essentially gives the benefit per unit of cost.

The benefit cost ratio criterion states the following decision making rule:

- i) In the case of single project, choose it if its B/C ratio is one or greater than one.
- ii) In the case of many projects, rank the projects in descending order of their B/C ratio.

Internal Rate of Return (IRR)

It should be noted that the present value of net benefit, and so also the benefit-cost ratio of a project, can be estimated only if appropriate rates of discount are known or given. In a situation where the social rate of discount is not given, the only alternative left for the project team is to discount the time sequence of social costs and benefits at rates of discount upward of zero and find, at each rate, the difference between the sum of PVB and sum of PVC, or in other words, NPVB. If, at a particular rate of discount, one finds NPVB to be positive, one chooses the next higher rate of discount and finds the corresponding value of NPVB again. The process is repeated until that rate of discount is reached at which NPVB equals zero. This rate of discount is called the Internal Rate of Return (IRR) of the project.

Why is it known as Internal?

Internal, because it emerges peculiarly just from the cost benefit data of project, external aid not being necessary, as in the case of the first two criteria.

Why Rate of Return?

Rate of return, because it is indeed per unit yield on the investment cost of a

project. IRR, as a criterion of choice among competing projects, suffers from two shortcomings.

- i) It is biased in favour of quick yielding projects.
- ii) The choice is not always consistent with the choice made on NPVB or B/C ratio criteria.

Let us illustrate these shortcomings. Suppose there is a provision of Re. 1 of investment and there are two alternative projects A and B. A is quick-yielding and offers Rs. 3 of benefit in the third year, while B is a long-gestation project with a promise of Rs. 10 of benefit in the tenth year. The IRRs, of A and B, alongside their NPVB and B/C ratio at 15 per cent social rate of discount, is given in Table 4.2.

Table 4.2: IRR, NPVB and B/C Ratio of Alternative Projects A and B

Year	(0)	(1)	(2)	(3) ... (10)	IRR (per cent)	At 15% Social Rate of Discount	
						NPVB (Rs.)	B/C
Project A							
1) Investment cost (Rs.)	1	0	0	00	44.0	0.97	1.97
2) Benefit (Rs.)	0	0	0	30			
Project B							
1) Investment cost (Rs.)	1	0	0	00	25.5	1.47	2.47
2) Benefit (Rs.)	0	0	0	010			

According to the IRR criterion, the quick-yielding project A should be chosen, as it offers a higher IRR. This choice is, however, contradicted if the choice was made on NPVB or B/C ratio criteria as, according to these, the project B should be chosen.

Even apart from these shortcomings, IRR by itself does not provide a complete decision rule for affecting a choice. For it requires a standard of comparison, a predetermined private or social rate of interest at which the investment funds are borrowed or made available. Thus, overlooking its already discussed shortcomings, IRR is a suitable criterion of choice only among those projects, which depend upon borrowed funds at stipulated rate of interest.

Check Your Progress III

Notes: a) Use the space provided below.

b) Compare your answer with the text.

Complete the following schematic representation of the main features of the unit.

- Step 3:** Following step (1) prepare year-wise sequences of costs and benefits over the expected life of the project separately for each institution in the list. If the number of private persons and institutions to be involved is large, select a typical case or representative person and institution from each group and prepare the cost and benefit statements only for them. When both poor and non-poor private persons and institutions are involved, select one typical or representative case from each of these groups for this purpose.
- Step 4:** For any year of project life, assess the input cost and output benefits at the base year constant prices of inputs paid and outputs received. Then, add to these the expected non-input costs to be incurred and the expected non-output benefits to be received by the typical person or institution concerned.
- Step 5:** For a typical person or institution concerned, discount cost and benefit sequences at the rate of interest at which loan is to be given or funds borrowed to meet the whole or part of the investment requirement.
- Step 6:** For every typical representative person and institution involved, calculate NPVB and B/C ratio using the discounted series of corresponding benefits and costs.
- Step 7:** Prepare a year-wise sequence of social costs and benefits over the expected life of the project with the help of the format given in Table 1. Note that all inputs used or saved and all outputs generated or displaced, irrespective of the persons and institutions concerned, private or public, have to be included in assessing the social costs and benefits.
- Step 8:** For any year of project life, assess the values of social costs and benefits at the base year with constant market prices of the inputs and outputs, but these prices should be net of all commodity taxes, excise, customs duty, sales tax, etc.
- Step 9:** Discount social costs and benefits at rates of discount greater than zero. At each rate of discount, work out the social NPVB and B/C ratio. Continue the process until NPVB equals zero and B/C ratio equals one.
- Step 10:** Replace market prices of inputs and output by their respective social (accounting or shadow) prices and repeat step (7 to 9). If the ratios of social to market prices are available, the social values of the corresponding inputs and outputs are obtained by multiplying the amounts assessed at market prices by the respective ratios. Frequently, not all market prices may have to be replaced. In fact, the focus should be on material inputs, unskilled labour and foreign exchange components of inputs and outputs.
- Step 11:** If it is possible to estimate the share of savings in NPVB as computed at social prices, work out present value of aggregate consumption, provided, of course, that the shadow prices of investment have been given by the national planning agency. If these are not given, skip this step.
- Step 12:** If project investment is already earmarked for the poor, step 11 can be omitted. This is because projects for the poor will compete only

among themselves for the funds earmarked for such projects. The relative positions of the competing projects remains unchanged.

Step 13: Perform sensitivity tests on NPVB as computed through step (10) with respect to uncertain variables to make sure that, in spite of uncertainty, it will remain positive, this step should be carried out immediately after step (10).

In these 12 steps, the appraisal of economic efficiency of the project should be completed. It must, however, be noted that the estimates of socio-economic efficiency measures of the project, be it NPVB, B/C ratio or IRR, made steps 7 to 10, would have incorporated the project's contribution to the three major plan objectives: increased income, increase in employment and national self-reliance.

NPVB is an index of increased income, so also are the related indices, B/C ratio and IRR. Social prices of unskilled labour and foreign exchange take care of the contribution to employment and national self-reliance objectives respectively.

4.6 KEY WORDS

Economic Feasibility	:	A quantitative measurement of economic efficiency of feasible project variant.
Benefit-Cost Ratio	:	The ratio of present value of costs to present value of benefits.
Depreciation	:	Loss of value in an asset due to use, wear and tear, ageing, etc.
Discount Rate	:	The rate at which a reduction is made in the future value.
Internal Rate of Return	:	The rate of discount at which the NPV (Net Present Value) equals zero.
Marginal	:	Pertaining to the last additional unit, positive or negative.
Sensitivity	:	Degree of showing the effect of positive or negative change.
Shadow Prices	:	It is the price, which indicates the real resource value of inputs and/or outputs.

4.7 SUGGESTED READINGS

Mishra, S.N. (1984), *Rural Development Planning – Design & Method*, Satvahan Publications, New Delhi (essential reading, especially Chapter 4).

UNIT 7 MONITORING DEVELOPMENT PROJECTS

Contents

- 7.0 Objectives
- 7.1 Introduction
- 7.2 Meaning
- 7.3 Information System
- 7.4 Monitoring System
- 7.5 Let Us Sum Up
- 7.6 Key Words
- 7.7 Suggested Readings

7.0 OBJECTIVES

Monitoring is one of the management functions in the process of decision-making. In this unit, the primary objective is to give you a clear understanding of the meaning and steps necessary to create an effective monitoring system.

When you have completed the unit, you should be able to:

- define the concept of monitoring.
- indicate the process of developing a good monitoring information system; and
- carry out revision and updating of the monitoring time schedule.

7.1 INTRODUCTION

In a series of units preceding this, we have discussed the various phases of project planning, management techniques of appraising the investment to be made on a project, and method of formulating execution plans. Whatever be the degree of accuracy with which we formulate a project execution plan, everything rarely goes exactly according to it. There may be changes, deviations and delays in the implementation. These need to be constantly and continuously monitored, so that time and cost overruns can be minimized and appropriate decisions can be taken. In this unit, we will, first of all, understand the meaning of monitoring and then discuss the techniques used for monitoring.

7.2 MEANING

You must have come across the word monitoring on a number of occasions. What is monitoring?

Project monitoring is a device for overseeing the implementation of a project through information feedback to ascertain whether:

- the activities are proceeding in the desired direction so as to enable the objectives to be realized;

- the activities are proceeding according to the given time schedule/ahead of schedule/behind schedule;
- the target population is being reached;
- the achievement of targets and the benefits expected to be generated are being realized;
- coordination between various departments involved in the project execution is taking place; and
- participation of the community (where envisaged) is sufficiently strong to sustain the efforts made through the project.

Thus, we see that monitoring is basically an aid to managerial decision-making by providing immediate information feedback. This helps in the early detection of problems; also, corrective actions in relation to areas, which are lagging behind, can be taken on time. It, thus, provides a critical appreciation of the current status of the project.

Let us illustrate the above points with a suitable example – a poultry complex is under construction. According to the original schedule for project implementation, the survey in the village to identify the beneficiaries is to be completed within two months from the date the project has started. While monitoring the progress of implementation after three months, the Block Development Officer may come to know that the survey is not yet over and this is likely to delay the overall development project. Under such circumstances, the decision to be made by the officer could be to provide more manpower for the survey to accelerate the activity, if this is the only reason for the delay.

Similarly, the project could have allocated financial resources for providing subsidy to families who would take up poultry, piggery, dairy development and some other activities for a livelihood. After three months of project execution when the officer monitors the progress, he may come to know that many families prefer poultry farming, but there is no demand for piggery in that area. With such information, the officer may decide to reallocate the resources from piggery project to poultry farming.

The officer may come to know that many families who have gone in for dairy development activity are not able to sell milk due to inadequate facilities for collection of milk production or have suffered for want of fodder for the milch animals. Using the information provided in the monitoring report, the Block Development Officer may arrange for creation of milk collection centres and supply of feed and fodder.

Hence, a proper monitoring of the project activities and events helps in deciding whether:

- the project schedule can be retained in its original form or revisions need to be made in order to complete the project within the stipulated time;
- any resource reallocation is to be made within the project, so that the overall objectives can be achieved; and
- any additional support or infrastructure is to be created in order to sustain the efforts made.

Check Your Progress I

- Notes:** a) Use the space given below.
b) Compare your answer with the text.

List two essential features of monitoring.

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7.3 INFORMATION SYSTEM

From the above illustrative examples, it becomes clear that for any mid-course corrections or managerial decisions, the Project Manager requires information. However, mere compilation of information is not enough. For the purpose of monitoring, the information should be analysed; and the analysis should lead to conclusions on the status of the project. The conclusions, thus, arrived at should be used for decision-making. The decision has to be implemented and later followed up to examine whether the decisions improve the situation and the rate of progress. Such a system of obtaining information, reviewing information and taking corrective measures are the essence of project monitoring. This can be explained with the help of the following diagram.

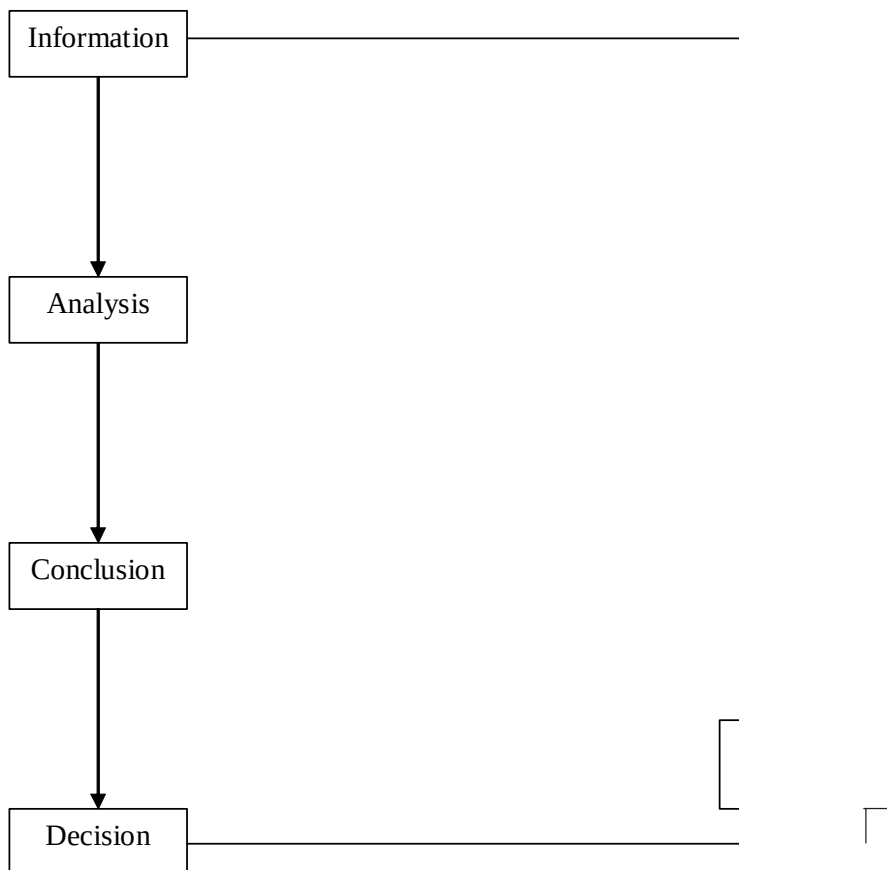


Figure 1 : A Diagrammatic Representation of Project Monitoring

The information required for project monitoring should satisfy the following criteria:

- The information should be reliable;
- It should be relevant to the particular situation in which monitoring is done;
- The information must be available on time; and
- Information should be in a tabular form/format.

The information provided for monitoring should not be seen as a tool to be used against the reporting officer for admonishing him. It is to be seen as the basis for helping the officer through appropriate support and decisions. While monitoring certain aspects of a project, all the related information must be available. For instance, in the case of monitoring the poultry complex project, the Block Development Officer should have information on the number of beneficiaries who entered the project, number of farms producing eggs, availability of marketing facilities, supply of feed for the birds, and availability of veterinary services. If all the related informations are provided the situation can be reviewed in its totality to help in taking appropriate decisions.

Timely availability of information is a prerequisite for effective monitoring. This may be every fortnight, every month or every quarter. The information should be available within a week after the reference period ends. Any delay in arrival of information may result in ineffective monitoring and, thereby, lead to delays and reduction in benefits from the project.

One of the reasons why, in the exciting monitoring system, the District Administration finds it difficult to use the information is the length of the report. If it runs into a number of pages, no one would have enough time to read and use it. Therefore, it is suggested that the information provided should be in the form of simple tabular statements accompanied by brief comments from which the manager can know what has happened in the project, why certain results have not been achieved and so on.

The analysis of the information should be simple. Percentage and ratio computed from the data provided in the report for monitoring can be effectively used for assessing the progress made in the project. The conclusions drawn should have a direct bearing on the analysis and should lead to a decision. Unless the decision is implemented, it may not be viewed as a logical culmination of the monitoring process. It is necessary to follow up the project after mid-course corrections are introduced, so that the project can be continuously controlled during its execution phase.

Monitoring Time Schedule Adherence

Let us illustrate the method of monitoring the project to see whether the activities are going according to the given time schedule. For this, we use the schedule worked out for the occurrence of events as discussed in the previous unit on implementation planning. For each event, we have worked out the earliest occurrence time (EOT) and the latest start time (LST). These are what we have planned. While monitoring progress in the execution phase, the actual dates on which the various events have occurred need to be made available. Against the planned schedule, the Block Development Officer can see whether

the various events have occurred or not. The analysis of information in this context enables updating the schedule of implementation. After updating, the manager may come to the conclusion that the project is going according to the given schedule or behind or ahead of the schedule. If the manager concludes that the events have occurred as per the schedule, there is no need for anxiety. On the other hand, if the events have occurred behind the time schedule, the apprehension would be that the project is going to be delayed. Wherever delays are seen, the decisions should be to compress the remaining portion of the project execution period and this is known as ‘crashing’ or compression.

i) **Proforma for Reporting:** The information required for monitoring the occurrence of events can be given in the proforma below:

Proforma for Reporting on the Occurrence of Events

Proforma for reporting on the Occurrence of Events

The event code numbers are provided in the first column. The second and third columns provide the planned occurrence time of events. In the next column (column 4), the cushion available for occurrence of each event is provided. This is the SLACK. In the first four columns, the planned schedule of events for occurrence is provided. The persons responsible for realizing each event in the project should report from column 5 onwards. In column 5, the actual date on which the event occurred has to be reported. At the time of reporting, certain activities may be in progress as a result of which the events would not have occurred. In such cases, the persons responsible for the events will be required to indicate when the event is expected to occur.

	Earliest Occurrence Time (EOT)	Latest Occurrence Time (LOT)	Slack (3)-(2)	Actual Occurrence Time	If in progress, Expected Occurrence Time	Reasons for Delay, if any	
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The project activities may be delayed due to various reasons, some of which might be unavoidable. These would not have been anticipated at the time of formulating the project schedule. For example, the construction of poultry sheds could have been planned during the period November to February. During this period, the labour may be in short supply, since they are engaged in agricultural operations. On account of this reason, the construction on poultry complex would get affected. Therefore, the Project Manager should know the reasons for any delay in occurrence of certain activities or events in the project. The information on the reasons for delay needs to be provided in column 7 of the proforma presented above. This information will help the Manager to take suitable steps to overcome delays.

The Project Manager should receive suggestions from the persons engaged in various activities, so that while taking decision, these could be put to use. The suggestions are to be provided in the last column of the proforma given above.

ii) **Time Schedule Updating:** The analysis of information is done by posting the data on actual occurrence time in the original schedule. If the actual occurrence time of non-critical events is less than the latest occurrence time, the project will not be delayed on account of this event. However, if the actual occurrence time exceeds the latest occurrence time of the event in the case of critical events, then the project will be delayed. By updating the schedule, the Manager may arrive at the conclusion on the likely completion of the overall project, whether it is going to be in time or behind time. The above method of monitoring progress and adherence to the time schedule is known as **network based monitoring**.

iii) **Monitoring Results or Benefit Flow:** Besides monitoring adherence to a given time schedule, the Project Manager will have to see whether or not the expected results are generated according to the planned targets. This method of monitoring is known as information based monitoring system. The information required to monitor this aspect can also be provided in tabular form. The manager can, then, quickly review and take necessary managerial decisions for mid-course corrections. Let us take, for example, the project, which aims at alleviation of poverty in the villages through IRDP. The size of population below the poverty line is known from the survey conducted prior to launching the programme. The overall objective of IRDP is to help the families to cross the poverty line. For instance, in a village where there are say, 650 families, the programme would have covered, say 250 families under IRDP assistance. The percentage of population covered to the total target is the coverage indicator, which gradually increases each year.

The Block Development Officer, while closely following the progress, is expected to have information on the number of families covered under the programme, which have crossed the poverty line. Out of the 225 families covered, in the example taken earlier, about 105 have crossed the poverty line. A ratio to the total number of families covered under the programme is an indicator of poverty alleviation. Though 105 families would have crossed the poverty line, all of them may not use the increased income for improving their socio-economic conditions. The information from the village on the number of such families who have invested their surplus income to educate their children, improve their housing, provide better clothing and improve food habits, will be

extremely useful in assessing the level of development the programme has brought about in the village.

Project Management Information System (MIS)

The information for assessing the performance of development projects can be obtained through the information system at the Block level. For designing an information system for monitoring, the following steps are to be followed:

- List the key data required to assess the performance of development projects. Let us take the example of poverty alleviation under IRDP. For this, the Block level organisation would require information on the number of beneficiaries given loan, number of families whose income generating economic activities have been grounded, number of families earning more income than what they were getting prior to entering the programme, etc.
- Specify the channel through which the information should flow. In the case of Block level monitoring, the information should be collected at the grassroots level by the Village Level Worker (VLW) and reported to the Block Development Officer.
- Decide how often the information should be reported from one level to another, i.e., determine the periodicity. Some information may be required once in a year, while some others may be needed once in a quarter or at more frequent intervals.
- Develop appropriate formats in which information should be recorded and reported. The VLW will report in a format for his village, which should be consistent with other formats being used, as for example, by the extension officer in his report to the Block Development Officer. These need to be designed in such a way that the person responsible for reporting may spend minimum time to furnish the data.
- Train the staff responsible for recording information and reporting the same to higher authorities. Unless training is imparted, the reliability of reporting, its regularity and punctuality cannot be ensured.

Check Your Progress II

Notes: a) Use the space given below for your answer.

b) Compare your answer with the text.

- 1) What criteria should be met by a sound project monitoring information system?

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- 2) What are the steps to be followed in designing an information system for monitoring?

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7.4 MONITORING SYSTEM

A monitoring system forms a vital part of the management process. The degree of monitoring would depend upon the nature of activities. For example, critical activities would need close follow-up. The change in the critical path, which might occur frequently, also needs to be monitored very closely. For instance, an equipment expected in two month's time might take six months due to a strike at the supplier's factory. The activity of installing the equipment might have been a non critical activity. But, with the fresh information, it could become a critical activity. Changes of this type underline the need for periodic reviews and updating of the project network. This forms the core of a monitoring system based on a sound Management Information System (MIS).

Review and Updating

Consider figure 2 below. It represents the network for a project.

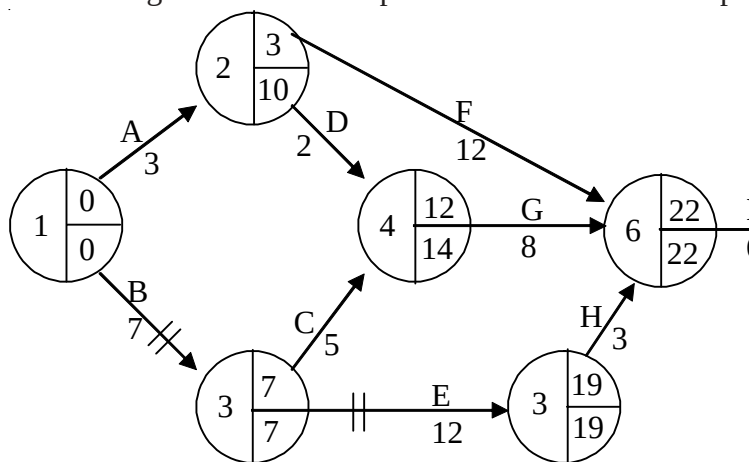


Figure 2

A review was carried out at the end of the twelfth day. The progress, which should have been made and the progress reported is given below.

Progress as per original plan

Activities A and B completed or in progress and to take maximum another two days to be completed.

E and F in progress; G, H and I yet to be started

Progress reported

A completed in 6 days, D completed by the end of 7th day ahead of schedule. B very much delayed, now expected to take another 8 days.

F is in progress and will take another 6 days. C, E, G, H and I are yet to be started.

According to the first evidence, activities C and H are likely to take longer time than originally planned, viz., 7 and 6 days respectively. There is no change in the estimated duration of other activities. It is now required that the course of action is updated. How does one go about it? Well! A fresh network, an updated one, needs to be prepared as per the procedure outlined below:

- Fix the earliest event time and latest event time of event (node) 1 at 12.
- For the completed activities, indicate the duration as zero.
- For the activities, which are in progress, indicate the durations equal to the time required for completion of the remaining portion of each activity.
- For the activities, which are yet to commence, indicate the durations according to the revised estimates.
- Complete the network calculations and find the critical path.

The updated network is shown in figure 3 below:

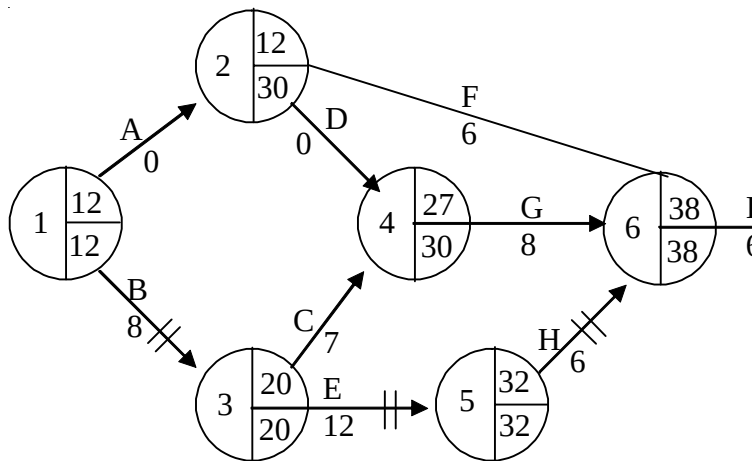


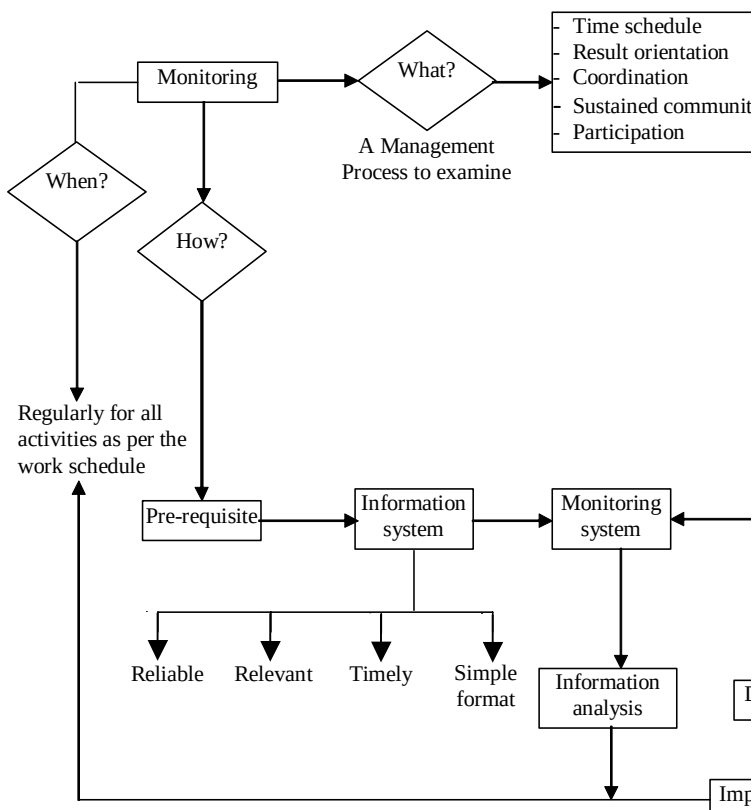
Figure 3

Thus, the revised project completion time is 44 days and there is no change in the critical path.

The periodicity of updating depends on the nature of the project. A large project generally requires less frequent updating as compared to a short duration project. Normally, with the progress of the project, the frequency of updating increased to make all possible efforts for minimizing the effects of deviations of individual activities from the original schedule.

7.5 LET US SUM UP

We saw that project monitoring is a management tool for overseeing the implementation of a project through information feedback on the direction and pace of the project, so that corrective action, as necessary, may be taken in time. The process can be shown schematically as below:



7.6 KEY WORDS

- Information System** : An integrated system consisting of collection, compilation, analysis and use of data pertaining to the project.
- Monitoring** : Management device to detect deviation from the planned action path and take corrective action.

7.7 SUGGESTED READINGS

- Casley, D.J. and D.A. Lury (1982), *Monitoring and Evaluation of Agriculture and Rural Development Projects*, Johns Hopkins, Baltimore.
- Choudhury, Sadhan (1986), *Project Scheduling and Monitoring in Practice*, South Asian Publishers, New Delhi.
- Mishra, S.N. (1984), *Rural Development Planning – Design & Method*, Satvahan Publications, New Delhi.
- Satyanarayana, M. and Lalitha Raman (1984), *Management Operations Research*, Himalaya Publishing House, Bombay.

UNIT 8 PROJECT EVALUATION

Contents

- 8.0 Objectives
- 8.1 Introduction
- 8.2 Meaning and Objectives of Evaluation
- 8.3 Dimensions
- 8.4 Techniques and Criteria
- 8.5 Let Us Sum Up
- 8.6 Key words
- 8.7 Further Readings

8.0 OBJECTIVES

This unit aims at examining the concept and techniques of evaluating a development project. After you have studied the unit, you should be able to:

- explain the concept of evaluation;
- state the objectives of evaluation;
- give its main dimensions; and
- indicate the techniques and criteria.

8.1 INTRODUCTION

Evaluation is an important function of modern management system. It tells us about the effectiveness of the programme in achieving the stated objectives. You may recall from the study of preceding units that evaluation would also necessitate assessing the time and effort involved in reaching the final objective.

It needs to be clarified here that evaluation is different from appraisal with respect to the time when it is carried out. As explained earlier, an appraisal is an *ex ante* evaluation when the project details have been estimated for the future. An evaluation is basically an *ex post* function when the project has been implemented and events/activities concerned have occurred.

8.2 MEANING AND OBJECTIVES OF EVALUATION

Since many developing nations seek to achieve growth with social justice through planning, the evaluation of development policies and programmes assumes importance in this context for the following reasons:

- The social and economic structures are so complex that the planning process must take these into consideration and formulate strategies and programmes on the basis of certain assumptions. Evaluation will enable the policy makers to know to what extent the planning process was responsive to development needs. It has been noticed, for instance, that

some of the development programmes failed owing to wrong identification of the problems, incorrect assumptions, improper formulation or inefficient administering of programmes.

- The resources at the command are limited. Evaluation will enable allocation of funds to programmes. Selection of programmes will be guided by efficiency and cost effective considerations.
- Evaluation aids decision makers to assess the various programmes in terms of their relevance (to overall development goals), efficiency, effectiveness and impact. This helps in better formulation and effective implementation of programmes in the future.

The evaluation process is expected to make recommendations on the need for modification of an existing programme, charting of a different course of action, or formulation of new programmes. Thus, evaluation, in a way, helps to assess the long-term implications of the present decisions and programme choices.

More specifically, the objectives of evaluation are:

- Measurement of the progress in both quantitative and qualitative aspects in relation to the stated objectives, targets and course of action;
- Assessment of efficiency of the process of conversion of inputs into outputs and the efficiency of the management apparatus;
- Identification of factors responsible for speeding up or slowing down of the process; in other words, identification of reasons for a project's success or failure; and
- Providing feedback to decision makers, which will enable modifications, where necessary, in the policy, strategy and objectives of the programme and the operational aspects.

Check Your Progress I

Notes: a) Write your answers in the space provided.

b) Compare your answers with the text.

- 1) What is the main difference between project monitoring and project evaluation?

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- 2) Why is evaluation considered an essential tool of development administration?

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8.3 DIMENSIONS

Evaluation is now considered to be an integral part of the overall planning system and a main ingredient of development administration. In simple terms, evaluation is a performance or achievement audit, which assesses the whole gamut of activities associated with programme formulation, implementation and impact, and compares the observed results with those anticipated. In other words, evaluation critically examines:

- Were the assumptions of the programme/project design valid?
- Were the programme objectives linked with specific schemes to achieve them?
- Were the objectives quantified in the form of targets?
- Did the implementation adhere to the prescribed design?
- Were the critical inputs delivered in time and in right quantity and quality by the agencies concerned?
- Was the manpower delivering the services trained?
- Was the scheduled path followed? If not, what were the reasons?
- Are the benefits commensurate with the costs?
- Has the intended impact occurred?
- Have the effects been beneficial or harmful?

It is obvious that answers to these questions indicate neither success nor failure of the project, but certainly point out the problems, which affect its implementation.

Concerns of Evaluation

Let us now discuss some of the concerns of evaluation.

Assessment of Outcome

Evaluation is concerned with assessment of outcome. This is after the completion of the programme. Some of the issues considered in outcome evaluation are:

- Whether the beneficiaries have realized the expected benefits.
- Whether beneficiaries are better off compared to non-beneficiaries on the relevant indicators.
- To what extent the programme/project is responsible for the observed benefits (both intended and unintended) and what have been the costs?
- What are the changes noticed in the behavioural dimensions of the target population?
- Have there been any adverse, unintended effects of the project?
- Have any forces been set in motion, the dynamics of which may have far reaching consequences?

The discussion of causation is one of the major aspects of an evaluation. The isolation of the programme effects from those of other programmes is the real

task involved in this exercise and demands a high level of expertise in the evaluation design.

Measurement of Project Efficiency

Sometimes, a major concern of evaluation is the measurement of project efficiency.

Two yardsticks used to measure project efficiency are:

- Cost efficiency expressed in terms of outcome per unit of cost; and
- Project effectiveness measured in terms of outcome per unit of effort.

For example, if two projects A and B are equally effective, but A is cost efficient, then the decision rule is to prefer A. But when A is more effective, but not cost efficient, then the criterion for project selection is whether the additional benefit is worth the additional cost. Another situation, which makes evaluation task rather difficult is when projects have several characteristics. Each one brings improvements in certain characteristics. The assignment of weight on an objective basis to the progress made becomes the main focus. Arriving at a composite measure for judging relative effectiveness and efficiency of the individual is a major problem.

Purpose Oriented Evaluation

Sometimes, evaluation is purpose oriented. In this type of evaluation, the focus is on the basic purpose for which the projects have been launched. For example, the thrust of rural development programmes is to improve the quality of life in rural areas. There may be several sub-purposes, such as provision of basic amenities to rural population. Two important types of evaluation in this category are:

- i) Formative evaluation and
- ii) Summative evaluation

Formative evaluation is basically concerned with the formulation of projects. It is service oriented and aids planners through identification of potential problem areas where project needs improvement, etc. In other words, the purpose is to improve the planning design with a view to enhance the flow of benefits from the project or to increase the efficiency of the delivery system.

Summative evaluation aims at selection of projects from a set of projects for deciding on the continuance or termination of the project. In this sense, there is a finality to summative evaluation, since the evaluation report may recommend the withdrawal of the project. In brief, it provides a summary statement about the effectiveness of the programme – incorporating the project's achievement of pronounced goals, unanticipated outcomes and comparison with alternative projects.

Prerequisites for Evaluation

For a successful evaluation study, certain basic requirements have to be met. A few are given below.

- i) One of the foremost requirements is clear specification of the objectives of the project and its likely impact. Vagueness with respect to objectives makes

the task of evaluation difficult, as evaluation seeks to assess the extent of realization of the objectives. There may exist a hierarchy of objectives, such as immediate, intermediate, final and ultimate objectives. A project description in terms of this hierarchy not only facilitates better formulation, but also helps visualizing a programme/project as a sequence of interrelated activities. The corresponding items in the project cycle are – inputs, outputs, effects and impact.

The immediate objective may be provision of inputs of right quality in adequate quantity in time to the programme clients. The ‘inputs’ may as well include services. For example, in the agricultural extension programme, training of farmers by the extension worker is an input.

The intermediate objective could be generation of initial results (outputs) of certain order as a sequel to the utilization of inputs. Adoption of improved practices of agriculture by (contact) farmers is the immediate objective for the agricultural extension programme.

The final objective is the same as the project objective and is usually referred to as effects. The increase in yield (or incremental yield) is the effect measured in quantitative terms.

The ultimate objective relates to sustenance of the effect of the project and, thus, is concerned with the impact of the programme. For example, modernization of agriculture could be an ultimate objective of agricultural programmes.

ii) Another prerequisite for evaluation is the establishment of norms/targets for comparison of results. In this context, it is useful to have bench-mark data or base line information relating to prelaunching (programme) period. Also relevant are a set of indicators for measuring the extent of progress and, thus, determining the success or failure of the programme/project. Needless to say, the selected indicators should relate to the various objectives of the project and/or the various dimensions of these objective(s).

iii) Equally important is the selection of techniques for data collection and analysis to make the findings of the study more meaningful. You will read these in Course 5.

Check Your Progress II

Notes: a) Write your answer in the space provided.

b) Compare your answer with the text.

Why is clear specification of objectives of a project an important prerequisite for evaluation?

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8.4 TECHNIQUES AND CRITERIA

You will find a wide range of evaluation designs – from simple to very complex and sophisticated ones. The application of various techniques depends on several factors, such as time, cost, nature/type of questions the evaluation seeks to answer, and the expertise available. Use of scientific method is desirable since it involves careful observation and it also controls the subjective bias of evaluators. The validity of inferences and findings of the study is greater if techniques are scientific. These methods ensure:

- accurate and reliable data base, as the tools used for collection of data and also the data collection procedures and sampling design are efficient, and
- the analytical techniques used help to disaggregate the whole complex phenomenon, and, thus, assess the programme effects in an unbiased and objective manner.

Criteria for Evaluation

The following five criteria are usually adopted in evaluation studies:

- efforts
- performance
- adequacy
- efficiency
- process

Efforts: In a summarized view, efforts refer to the total inputs to the programme. For example, a criterion relating to the amount of effort put into the programme would include quantity and quality of programme inputs (range of services), the coverage of population, programme personnel, financial resources, etc.

Performance: This deals with the consequences of the programme inputs. The composite index of performance should consider the magnitude and quality of benefits and changes in behavioural dimensions. Thus, it refers to output generated from the system as a result of programme inputs.

Adequacy: This is a relative measure indicating the relationship of the effort and performance of the programme to the level of need for the programme. In other words, it is the extent of successful (or effective) coverage of beneficiary population in the total population. It, thus, refers to the relationship between output and the total need.

Efficiency: This measure connects the above three criteria, viz. effort, performance and adequacy and is based on the minimax principle, i.e., minimization of effort and maximization of performance. In other words, it is simple input-output ratio. Naturally, the various inputs, such as money, time and staff are being considered in evaluating the various alternatives.

Process: It is the study of the means of the programme in producing outputs (results) with a view to establishing causality.

Indicators of Impact

Indicators are simple measures reflecting a problem or changes in a situation. Indicators are used as instruments for evaluating changes resulting from the various activities/efforts of the programme. Impact indicators are designed to show the degree of achievement of programme objectives. For example, the percentage of beneficiary households crossing the poverty line once for all is one of the (impact) indicators for the success of IRDP.

i) **Characteristics of Indicators:** In order to be effective, measures for assessing impact/effect indicators should possess the following characteristics:

Validity: What is measured is the same as what is intended to be measured. For instance, marks obtained by a student is a valid measure of scholastic achievement. It is, however, not a valid measure of his behaviour in school.

Reliability: Same values should be obtained even if the evaluation/data collection is made by others under similar conditions. In other words, repeated collection of data should yield the same values.

Relevance: Indicators selected should be related to programme objectives.

Sensitivity: Indicators should be able to capture even small changes taking place in important aspects.

Objectivity: Indicators should be free from subjective judgments of the evaluator.

Simplicity: Measurement should not be a costly or time consuming affair.

From the above discussion, it is clear that indicators selected should relate to the major dimensions of the programme. For instance, in case of service-oriented programmes, the coverage (physical), range of service and quality of service(s) rendered should be reflected by the selected indicators.

In case the goals are many and are heterogenous in nature, separate indicators are to be considered. These indicators should be pivotal/key indicators and aid the programme authorities to take remedial measures wherever the programme path deviates from the planned trajectory. This also reduces the workload of officials in data collection.

ii) **Differential Impact:** Indicators of impact, which are generally based on time series data, reflect direction, speed and extent of change. The interregional and intergroup comparisons help assess the differential impact of the programme. These indicators may be direct or indirect in nature. The former are amenable to quantification and are more easily measurable. The indirect indicators are those which are neither quantifiable nor cost-effective. In such cases, proxy indicators (partial measures) are usually employed. For example, an assessment of the nutritional status of children utilizes the 'age-weight' indicator as a proxy indicator. Similarly, partial measures are considered to capture behavioural changes.

iii) **Impact Indicators of Programmes:** The comparison of indicator values—before and after programme of 'with and without' programme – will provide an estimate of the magnitude of achievement. The indicators considered in this context, for instance, are: impact of the programme on household income,

use of incremental incomes (consumption, savings and investment) and the living standards.

A few impact indicators are suggested for some programmes as an illustration.

Agricultural Programmes: Incremental yields, economic returns, employment generated.

Health and Nutrition Programmes: Morbidity rate, death rates, infant mortality rate, birth weight, weight for age, etc.

These indicators can be collected for different social groups to know the trends in the incidence and prevalence among these groups.

One of the more common evaluation methodologies for measuring impact is the 'before and after'. In this, base line data (relevant to the change being sought through the project) is collected before a project is launched. After the project has been completed (or some phase of it), the data are again collected. The difference is, then, interpreted in terms of project objectives, operations and impact.

Another commonly used evaluation methodology is the experimental group–control group design (i.e. with and without programme). Two population groups are selected and matched. In one, the project is implemented (the experimental group). In the other, no such project is under implementation (the control group). The two are, then, compared on relevant indicators, and the difference is interpreted in terms of project objectives, operations and impact.

iv) **Miscellaneous:** For any programme, the following four interrelated indices of impact are suggested:

Goal Effectiveness Index (GEI): Indicates the extent of achievement of goals/objectives, i.e., comparison of programme result with the objectives. It answers the question whether the programme accomplished its objectives or not.

$$GEI = \frac{\text{Programme Result}}{\text{Programme Task Objective}}$$

Potency Effectiveness Index (PEI): It points out the achievement as a proportion of the total need. For instance, in the case of IRDP, it refers to the number of beneficiaries who have crossed the poverty line to the number of poor who need such programme assistance.

$$PEI = \frac{\text{Programme Result}}{\text{Estimated size of the potential client needed for the :}}$$

Realised Efficiency Index (REI): It compares the result with the total effort directed towards the programme and it is similar to the output-input ratio.

$$REI = \frac{\text{Programme Result}}{\text{Total Programme Efforts}}$$

Capacity Efficiency Index (CEI): Compares programme outcome with potential capacity of the programme in rendering its services as defined by its physical, human and financial resources. How much can the programme accomplish with the resources as its command is the issue under consideration.

$$CEI = \frac{\text{Programme Result}}{\text{Established Potential Capacity of Programme}}$$

Concurrent and Terminal Evaluation

You may have come across the terms concurrent evaluation and terminal evaluation. Concurrent evaluation is an ongoing activity and is carried out when the programme is under implementation. It is usually undertaken at regular intervals or at the end of a phase, to give an objective feedback on the progress and direction of the programme. Concurrent evaluation does not provide a feedback on impact, unless it is at the end of a phase when some impact was visualized in the project design. The utility of concurrent evaluation is that it can assist decision makers in modifying the objectives (if necessary), and change the implementation strategy, so that overall objectives of the project can be achieved. Concurrent evaluation also permits examination of the relevance or validity of the assumptions sufficiently before the terminal stage.

Thus, the main purposes of concurrent evaluation are:

- to have a feedback on the need for modifying the project in relation to the changes in the project environment or in the development goals; and
- to identify the problems affecting the programme success with a view to provide corrective action.

Concurrent evaluation is an internal function of project managers who are also the users of the information provided by the evaluation. Concurrent evaluation can, thus, be viewed as a built-in 'learning dimension' of the programme/project.

Terminal evaluation is done at the end of programme implementation and focusses on the impact and other complex issues of programme performance.

Check Your Progress III

Notes: a) Write your answers in the space provided.

b) Compare your answers with the text.

1) What is the difference between validity and reliability?

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2) Is concurrent evaluation more important than terminal evaluation?

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Activity I

- 1) Prepare a list of ten indicators for evaluating the performance of IRDP. Against each indicator, comment on the different characteristics, which an indicator should ideally satisfy (i.e., validity, eligibility, etc.).

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- 2) Get hold of some evaluation studies and read about the evaluation design and the concerns.

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8.5 LET US SUM UP

In this unit, we read about the role of evaluation and saw how it was an integral part of the overall planning and implementation system. Evaluation provides a feedback to the policy makers and enables them to judge the effectiveness of strategies, thus, helping them to modify or work out alternative strategies and programmes.

Evaluation enables not only measurement of progress in qualitative and quantitative terms, but also assesses the impact and efficiency of the implementation machinery and the identification of factors, which obstruct development. We noted that evaluation has several dimensions viz., need, process, outcome, efficiency and purpose. We briefly discussed each of these.

We stated that some basic requirements have to be met for a proper evaluation of a programme. These were: clear specification of objectives, establishment of norms and targets against which to measure progress, and selection of tools on data collection. We saw that the criteria adopted in evaluation studies usually covered efforts, performance, adequacy, efficiency and process. We observed that the indicators to be used for measuring impact should meet the criteria of validity, reliability, relevance, objectivity and simplicity.

While evaluation is often terminal, in recent years stress is being laid on concurrent evaluation, which is an ongoing activity carried out during the implementation of the project. The utility of concurrent evaluation is that it enables decision makers to modify the project (if necessary), alter the implementation strategy, examine the relevance or validity of the assumptions relating to the programme, and identify the problems affecting the success of the project with a view to provide corrective action.

8.6 KEY WORDS

Concurrent	:	Ongoing, continuous.
Ex-ante	:	Before the event
Ex-post	:	After the event
Reliability	:	Repeat collection of data by the same person or another person yields the same values.
Validity	:	Actually measures what is intended to be measured.

8.7 SUGGESTED READINGS

Baum, Warren C. and Stokes M. Tolbert (1985), *Investing in Development: Lessons of World Bank Experience*, Oxford University Press, New York.

Casley, D.J. and D.A. Lury (1982), *Monitoring and Evaluation of Agriculture and Rural Development Projects*, Johns Hopkins, Baltimore.

Clayton, E.S. (1983), *Agriculture, Poverty and Freedom*, Macmillan, London.