ECO-04-13

Institute of Distance and Open Learning
Gauhati University

MA/M.Sc in Economics

Fourth Semester

Paper: XIII

Development Economics- II

Contents:

Introduction:

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Reprint : July, 2017

Syllabus for MA/M.Sc Economics
Forth Semester
Paper: XIII
Development Economics- II

Unit –1: Components in the Development Process

Agriculture's Contribution to Development – Agriculture-Industry Interactions – The Role of Land Reforms and Price Policy in Agricultural Transformation- Industrialization: Export Promotion versus Import Substitution Strategies – The Choice of Techniques.

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Paper Introduction:

This paper is designed to address the various developmental issues. The paper has the following four (4) units:—

Unit 1 : Components in the Development Process

Unit 2 : Development Planning

Unit 3 : Financing of Development

Unit 4 : Environment and Development

Unit 1 discusses the components in the development process which consists of agriculture's. Contribution to development and its interaction with other industries. Further it deals with the choice of techniques and various agricultural prices. Unit 2 deals with the concept of planning and its types as well as the rational for planning. Further it deals with the project evaluation and social cost-benefit analysis and the reasons for plan failures. Unit 3 deals with the domestic as well as foreign sources of financing development. Unit 4 deals with the concept of environment and development and their interdependence. Besides the concept of sustainable development and the role of state in environmental preservation is discussed.

UNIT-1

COMPONENTS IN THE DEVELOPMENT PROCESS

Contents:

1.0 Introduction

The unit discusses in brief Agriculture's contributon to the process of development. It also focusses on the interlinkage between agriculture and industry. The unit gives an idea of the transformation of agricultural from traditional to modern system and in connection with this highlights the role of land reforms and price policies.The two techniques of export promotion and import subtitution are illustrated in the unit. And towards the and the problem of choice of technique is dealt with priasely.

1.1 Objectives

After going through this unit–

- to provide insight about agricultures contribution towads development and its interaction with other industries;
- to deal with role of Land Reforms and price policy in Agricultural Transformation; and
- to explain the export promotion versus import substitution and the importance of choice of techniques.

1.2 Agriculture's Contribution to Developments

Agriculture makes contribution to the process of economic development in four major ways. These are - (i) a product contribution, (ii) a factor contribution (iii) a market contribution, (iv) a foreign exchange contribution. These contributions are briefly discussed below.

(i) Product Contribution

The product contribution of agriculture refers to the fact that agriculture must supply food above subsistence needs in order to feed labour working in alternative occupations. If other sectors of the economy are to be developed, labour needs to be fed, and this cannot be done by imports until export activities have been developed to provide foreign exchange to pay for the imports.

The difference between total agricultural output and subsistence needs is called the marketable surplus. Economic progress in the early stages of development requires an increase in the marketable surplus, which in turn requires an increase in labour productirity. Marketable surplus is a very important concept because unless the marketable surplus rises as the demand for food increases, the price of food will tend to rise.

(ii) Foctor contribution:-

The factor contribution of agriculture consist of two parts: a labour contribution and a capital contritribution. Firstly, the labour needed for industry and other activities must come form agriculture. The existenc of surplus labour or disguised unemployment in the agricultural sector plays a major role in the development process. The lower the cost of industrial labour, the faster the rate of industrial expassion. Secondly, agriculture is a source of saving and capital accumulation for industrial development. The small saving of individual peasants can be accumulated and then invested for the development of the industrial sector.

(iii) Market Contribution :

The market contribution of agriculture refers to the fact that the agricultural sector is a major source of autonomous demand for industrial product. In

the early stages of development the agricultural sector is very much likely to provide the largest market for industrial goods. There is a complementarity between agricultural and industrial growth. In other words, a precondition for rapid industrial growth is a rapidly expanding agricultural sector.

(iv) Foreign Exchange Contribution :

Agriculture makes an important foreign exchange contribution. Foreign exchange is a resource like savings which provides access to goods that either cannot be produced domestically or can be produced at enormous cost. In the early stages of development, the only source of foreign exchange is likely to be primary commodity exports.

Thus, these are the basic contributions of agriculture to the process of development.

Stop to Consider:

Other Important Role of Agriculture in Economic Development :

1. Providing Employment : The agricultural sector provides employment to a major section of the population in an agrarian economy. With the increase in production it creates more jobs and provides employment opportunities to a growing population.
2. Improvement of Rural Welfare : The rural economy depends on agriculture and allied occupations in an agrarian economy. As such, the rising agricultural productivity tends to improve social welfare.
3. Source of income : Agriculture provides an important source of income for the majority of the people of a country.
4. Stability : A stable agricultural sector also provides for a stablity of the government.

1.3 Agriculture- Industry Interaction

The two sectors of agriculture and industry are very much interdependent. Once agriculture emerges from its stagnatory, subsistence state and starts to specialize and produce goods for export, industry begins to develop under the impact of growth in the agriculture sector. For the growth and development of the industrial sector, a neccessary pre-requisite is the development of the agricultural sector. The industrial sector creates demand for goods produced by the agricultural sector and is also very much acive in

absorbing the surplus labour of the agricultural sector which in turn may raise the productivity in agriculture. The agricultural sector, in turn provides a market for industrial goods out of rising real income and makes a factor contribution to development through the release of resource.

The transfer of resources from agriculture to industry may be capital or labour or both. In most low-income countries labour is abundant in supply and as such there is no such difficulty in releasing labour for industry. In any case, labour will tend to migrate naturally in response to seemingly better opportunities in the industrial sector and higher real incomes. Capital may be less 'mobile' than labour and if there is considered to be insufficient lending from the agricultural sector on a voluntary basis it may become necessary for a government to transfer savings compulsorily from the agricultural sector by taxation. So, in conclusion it can be said that the developing countries today, despite their access to forcign sources of capital, must also rely heavily on extracting the surplus from agriculture to finance industrialisation. However, the difficulty lies on the fact to decide the but means of extraction without impairing the incentive to produce, or damaging the growth of productivity, upon which a growing agricultural surplus depends.

From the above extraction, it is quite clear that there exist a very close relationship between the agriculture sector and the industrial sector. Both the sectors are complementary to each other and the growth and development of one sector is important for the uplift of the other sector.

1.4 The Role of Land Reforms and Prices Policy in Agricultural Transformation

The Role of Land Reforms:

The purpose of land reforms is to make more national use of the scarce land resource by affecting condition of holdings, imposing ceilings and floors on holdings so that cultivation can be done in most economical manner. It also aim in improving the terms and conditions on which land is held for cultivation by the actual tillers, with a view to ending exploitation. The system by which land is held and farmed is a serious impediment to increased productivity in many developing nations. In many countries, land holding tends to be severely concentrated. In many parts of Latin America, agriculture

is based on a combination of large estates owned by a wealthy few and small farms which are often so small that they cannot support a single fanily. In Brazil, 90 percent of the land is owned by 15 percent of landowners. When land is held and worked in the form of large estates, it is frequcently underutilised. In such circumstance there is little incentive to increase efficiency and improve productivity. Land reform, involving the subdivision of estates and security of tenure for the tenants, can contribute both to an increased efficiency and initiative on the part of the tenant. There is impressive evidence that where a change in the tenure system has permitted the producers themselves to reap the rewards of new techniques.

However, land reforms is not always successful. Land reform may be a neccessary condition for increased productivity, but it is clearly not a sufficient condition. It needs to be accompanied by other measures of agrarian reform. The transformation of agriculture largely depends on proper and effective implementation of a well worked out land reform measures.

The Role of Price Policy :

The rise of the price of agricultural products in relation to industrial products may also be required in order to induce extra supply. The traditional practice is to tax the agricultural sector by keeping prices low in order to maintain the term of trade favourable for the industrial sector. But, depressing the agricultural terms of trade has depressed agricultural output and caused problems for the feeding of a growing industrial population. As a consequence, many countries have to introduce a positive price policy to act as a stimulus to agricultural output in general and to change the composition of agricultural output according to the circumstances. In relation to this, there is considerable evidence that producers, especially those in close provimity to large markets with good transport facilities, respond positively to price changes. With the introduction of price policy in the agricultural sector, three distinct type of responses were indicated. These are-

1. A change in the composition of agricultural output to a change in the relative price of individual agricultural commodities.
2. An increase in total agricultural output to an improvement the relative price of agricultural commodities compared with industrial goods.

3. An increase in the marketed surplus in reponse to an increase in response to an increase in the price of agricultural commodities.

However, it is quite possible for the supply of any individual commodity to be quite elastic with respect to price, yet the total supply of agricultural output and th marketed surplus to be quite inelastic, or even fall in response to a rise in price.

Transformation of Traditional Agriculture :

Land reforms and price policies play an important role in the transformation of agriculture from traditional outlook to a modern agricultural sector. The proper implementation and execution of these reforms and policies can go a long way in transforming the scenario of agriculture. But, the task of transforming traditional agriculture is not simply a question of land reform or price policy. The transformation also depends on new inputs. The issue is to determine the form that the new inputs should take if agriculture is to attract an adequate share of investment resources. It is argued that the low productivity of farm labour is due to an absence of specific factor inputs such as ressarch and education than to a shortage of reproducible capital as such. In order to achieve sizeable increase in agricultural productivity, the most practical approach is to enhance the efficiency of the existing agricultural economy through improvements in the quality of inputs and application of modern technologies on broad front. In this respect, agricultural research and investment in people to improve human capabilities in agriculture have been, so far neglected.

The rapid rise of agricultural productivity in Japan and Taiwan in the late nineteenth and early twenticth centuries was due to forms of 'technical progress', for example, the use of fertilizers and selection and cultivation of high-yoelding crops. In more recent years, green-revolution was experienced by parts of Asia and Latin America which has greatly increased the production of crops such as wheat, rice and maize. Today, genetically modified technology, when used in agriculture has the potentiality to raise productivity substantially and to reduce the incidence of famine and malnutrition. With the increase of population, there arises the urgent need of the application of new technologies in the agricultural section as there will be more mouths to be fed in the coming years.

Stop to Consider:

Land Reforms and Agricultural Production :

The agrarian reforms like the land reforms has a positive impact on the production of the agricultural sector. For raising the level of agricultural production there is the need to provide incentives to the cultivators. Firstly, he should be encouraged to work hard and secondly, he should use of resources necessary for efficient agriculture.

One of the main impacts of land reforms is on the attitudes and incentives of those who are favourably affected. There exists a direct relationship between land reform and agricultural productivity and output because land reforms result in a greater incentive to operators and in a more efficient farm organisation. The abolition of intermediate layers of landlordism, tenancy reforms and redistribution of land can go a long way in providing stimulus to the peasants and tenants for raising the productivity. Land redistribution has sometimes been opposed on the ground that it will lead to reduction of productivity with the reduction of the size of the operating units. But the experience of various countries suggest that the efficient use of land has infact greatly enhanced the level of agricultural production.

Thus, it can be easily assessed that land reforms and agricultural production are directly related and the role played by land reform in the transformation of agriculture is very much significant.

1.5 Industrialization : Export Promotion Versus Import Substitution Industrialisation

The process of industrialisation has a major role to play in the economic development of the under developed countries. Industrialisation is associated with the development of mechanical knowledge, attitudes and skills of industrial work and with the experience of industrial management which are beneficial to the growth of productivity in agriculture and related sectors of the economy. As a consequence of these factors, any successful transfer of labour from agriculture to industry contributes to economic development. Industrialisation thus helps in creating capacity to absorb excess labour power and also diversifies the market necessary for economic development of an economy.

Export Promotion Versus Import Substitution :

It is very much evident that the process of industrial development is accelerated by trade which bring benefits to the trading countries. But it

does not mean that the existence of free trade among nations is the ultimate source of developing the industries. It does not gurantee that the freer the trade the better is the consequence. So, there exists, in practice two basic doctrines relating to trade. These are the export promotion or the import subsititution.

Import substitution refers to the process by which the goods that were imported from other countries are now being produced by the domestic countries. In other words, import substitution refers to the process by which imported goods are substituted by domestic production. Whereas, export promotion refers to the process which are undertaken to promote exports of those products which are demanded internationally. This is basically done through government subsidies. The import substitution is an inward-looking policy whereas the 'export promotion' is the 'out-ward looking' policy.

In the early stages of production, the strategy of import substitution using tariffs is the easist way and many countries have effectively utilized it. However, there are different stages of import substitution. The first stage involves the replacement of imports of non-durable consumption goods such as leather and wood products, clothing etc by domestic production. In this stage, relatively little production is required. But, the second stage of import substitution requires a relatively high rates of production. The high rate of production may breed inefficiency. Import-substition may discourage agricultural production and also worsen unemployment by encouraging capital intensire tectniques.

But the export promotion measures or the outward looking policy may prove to be more beneficiary for the demestic country. But the subsidies provided to exporters were generally insufficient to provide an incentive to exporters in companision to import substitution and thus there has been a continued bias in favour of import substitution. There has been, thus, a continued debate over the inward looking import substitution development strategy verses outward looking export promotion strategy. But, the empirical evidence seems to support the veiw that countries that adopt trade liberalisation and outward looking policies perform better than those that follow inward looking policies.

Stop to Consider:

Role of Industrialisation in Economic Development :

Industrialisation plays an important role in the process of economic development of any nation. Its role can be understood from the following given points.

1. Income Generation : Industrial development provide a secure basis for a rapid growth of income. The empirical evidence suggest that a close relationship exist between high level of income and industrial development.
2. Employment : The rapid growth of the industrial sector tends to absorb the surplus labour and the rapidly growing population of on economy by providing employment opportunities to the people.
3. Urbanisation : Industrialisation is also very much intionately connected with the growth of urbanisation.
4. Provides Security : The process of industrial growth is very much essential from the point of view of providing security to the country.
5. Assitancé to agriculture : The development of agricultural sector is very much dependent on the development of the industrial sector. It provides the neccessary stimulus to the growth of agriculture.

1.6 The Choice of Techniques

The choice of techniques in the production process arises between the capital intensive technique and the labour intensive technique. The capital intensive technique refer to the process which manimises the use of capital in the production process and tries to mixiimise the use of labour force in the process. Whereas, the labour intensive technique of production uses those production techniques that favours the maximum use of labour force with a limited amount of capital put to use.

In developing countries, labour is more abundant and capital is scarce and so the expectation to observe the use of more labour intensive techiques of production in the industrial sector is very high. The supply of labour in a developing country is abundant and given the available supply of labour and the rate of investment, the more capital intensive the techniques, the less employment and the more unemployment there will prevaic. The production techniques of a developed country and a developing country is explained below with the help of a diagram.

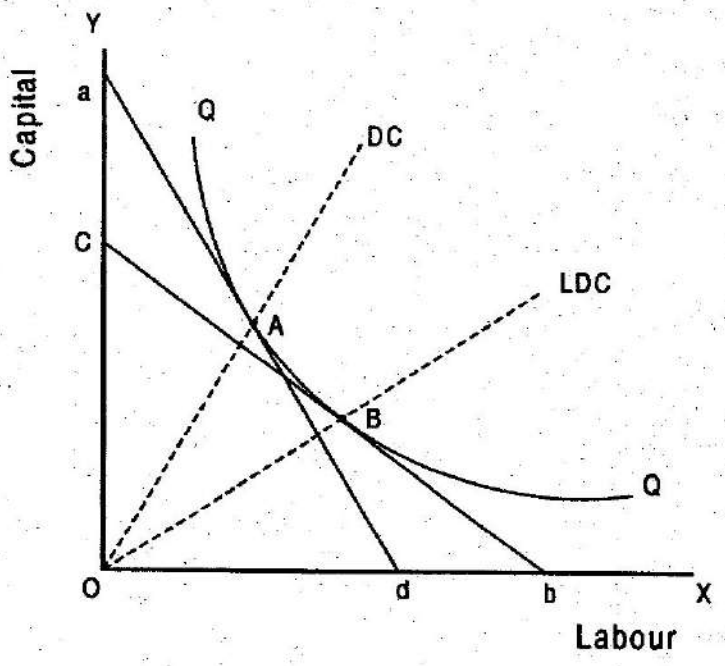

Figure- 1.1

In the above figure, DC and LDC represents developed country and less developed country respectively. The convex curve QQ represents the production function which is assumed to be the same for both the countries to show the difference in the techniques of production used in both the countries. The lines ad and cb are the price lines or the esocost corves of the two countries. It can be seen from the diagram that cb is more flat than ad representing a lower relative price of labour for less developed country than the more steep price line ad of the developed country.

In the developed country, the capital labour ratio is given by the ray from the origin, DC and the capital labour ratio in the less developed country is given by the line LDC. Both the rays pass through the point of tangency between the price lines and the production function at A and B respectively. It is seen that point A lies towards the Y-axis measuring capital and point B lies towards X-axis measuring labour. Thus, it is clear that the developed country uses a capital intensive technique and the less developed country uses a labour intermive technique to produce the same level of production.

However, the technological choice for a developing country sometimes depends upon several factors. These factors are discussed below. First, the use of labour intensive technique in a developing country may not be always profitable because the output may not be competitively saleable. Secondly, although labour may be abundant and money wage may be lower than in developed countries, it is not necessarily cheaper or less costly to imploy labour because its productivity may be lower.Thirdly, labour intersive technique requires skilled labour to perform the work which is scarce in a less developed country.

A developing country have three basic objectives- (i) to raise the level of present consumption, (ii) to raise the tevel of future consumption and (iii) to raise the level of employment. So, the choice of techniques of production should be able to address these three basic objectives.

Important Note :

* The export promotion measure is also known as "Outward looking policy" and the import nubstitution policy is known as the " inward looking policy.

Arguments in Favour of Labour-Intensive Technique :

In this process labour is paid greater importance than capital. The main arguments put in support of this technique are lined down below:

1. Employment : In an underdeveloped country where there exist a huge amount of unemployment and disguised unemployment, it is better to use labours intensive technology.
2. Anti- inflationary : This technique of production is termed as anti inflationary because the cost of labour is less than the cost of capital.
3. Use of latent resources : Use of labour force would release the scarce capital for more important uses.
4. Foreign Exchange Savings : Since production is carried out by the labour force. it saves the valueable foreign exchange because there is no need for importing sophisticated costly machineries.
5. Anti Monopoly : The labour intensive methods are confined to small scale industries. Hence there is no scope for emergence of monopolies on the concentration of economic power in the hands of a few.

Arguments for Capital Intensive Techniques

The use of capital intensive techniques is another important alternative for the countries which want to run in the pace of rapid economic growth.

1. **Fast Economic Growth :** The use of capital intensive methods tends to accelerate the pace of economic growth.
2. **Employment Oriented :** The development of industries in the long-run requires a greater labour than the small scale and cottage industries. Thus, it generates a large volume of employment opportunities ultimately.
3. **High Capital Accumulation :** Use of capital intensive techniques will lead to greater capital accumulation than the labour intensive techniques.
4. **Efficiency :** The capital intensive techniques are said to be more efficient than the labour intensive methods. It fosters the development of skill and training.
5. **Careful Planning :** There will be careful planning when the capital intensive technique of production are used. There will be careful calculation made of the investments to be made and the returns therefrom.

Important Elements Influencing the Choice of Techniques :

The decision of choice of techniques is influenced by the following elements.

1. **Availability of Resources :** The choice of technique actually depened on the fact that available resource of a country are of which quality and quantity. On the basis of available resources, it is possible to assign choice of technique for a country.
2. **Existing Technical Level :** The existing facilities of training, technical know how etc are also very much decisive while considering the choice of technique for a country.
3. **Institutional Frame :** It means the existing systems economic, social or politcal institutes in the country by which nature of the economy is determined. These institutes influnce the level of technique along with public behaviour, view point and interests.

Thus, these are the main elements influencing the choice of technique in an economy.

Stop to Consider

Arguments Relating to choice of Techniques :

The choice of techniques refers to the choice of capital intensity. In other words, we have to choose between capital- intensive and labour intensive techniques of production. Some argument are forwarded below both in favour of labour intensive technique and the capital intensive technique.

1.7 Summing Up

To conclude we have seen how agriculture contributes to the process of economic development through product, factor, market and foreign exchange. Besides the interdependence between the agricultural and industrial sectors for raw materials and other inputs shows that both are complementary to each other for sustained growth and development. Further, Land reforms and price policies play an important role in the transformation of agriculture from traditional outlook to a modern agricultural sector. Besides, the choice of techniques depends on whether the economy is capital or labour abundant.

1.8 Additional Questions

1. What is the contribution of agriculture to the process of development ?
2. Discuss the interlinkage between agriculture and industry.
3. How is the process of industrialisation dependent on the development of agriculture ?
4. Discuss the transformation of agriculture.
5. Explain the role of land reforms and price policies in the process of transformation of agriculture.
6. What is industrialisation ?
7. Distinguish between the process of export promotion and import substitution.
8. Discuss the choice of techniques in the production process.
9. Discuss the role of industrialisation in the process of economic development.

10. Explain the relation between land reforms and agricultural production.
11. Forward some arguments in support of labour intensive technique.
12. Suggest some points in favour of captal intensive technique of production.
13. Explain the elements influencing the decision of choice of techniques in an economy.
14. Write short notes on -
    a. Export promotion
    b. Import substitution.
    c. Industrialisation.
    d. The problem of choice of techniques.

1.9 Suggested Readings

1. Todaro, M.P.: *Development Economics*, Pearson
2. Thirlwall, A.P.: *Growth and Development*, Palgrave
3. Ray, D.: *Development Economics*, Oxford University Press

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UNIT- 2

DEVELOPMENT PLANNING

Contents:

2.0 Introduction

This unit deals with the process of development planning in an economy. It discusses the concept, types and the rational for planning in a developing economy. The process of planning is also highlighted in the unit along with its components. It also includes other important topics like project evaluation, plan failures and compares market with planning. In this respect, planning in Market Oriented Economy is briefly discussed. Lastly, the unit also covers plan models in India mainly the Model of 2nd plan, 5th plan and the Ongoing

plan- In the unit, some important points are highlighted in between for the the sake of better understanding.

2.1 Objectives

The basic objective of the unit is to introduce the students to the —

- concept of planning and its various types;
- the rational for planning in the developing economy and various projection techniques;
- the reasons for plan failures are highlighted; and
- the difference between market and planning are shown.

2.2 The Concept And Types of Planning

2.2.1 The Concept of Planning

The term planning, in simple terms can be defined as a consciously directed activity with predetermined goals and predetermined means to carry them out. This definition of planning signifies two main constituents of planning goals and means. In other words, an economic plan is simply a specific set of quantitative economic targets that are to be reached in a given period of time effectively using the available resources.

The process of planning do not take place in vaccum and the goals and means for attaining those goals must be worked out in the context of the country's existing framework in respect of socio-economic institution, political structure, level of development etc. The planning process is very much essential especially for the less developed countries (LDC's) because they do not have sufficient market structure to mobilize and invest resources for infrastructural development which is pre-requisite for rapid economic development.

2.2.2 The Nature of Planning

It is very much necessary to distinguish the nature of planning from certain other activities like directives, forecasting etc.

Planning and directives :

Planning consists of goals and means and mere directives issued by planning authority or government do not constitute planning. This is basically for two

reasons. First, directives do not contain specially laid down means to achieve some goals. Secondly, even the goals are not conceived as a set of coherent aims.

Planning and Forecasting :

Planning at any time is concerned with the future. However, it is not forecasting but it makes use of the technique of forecasting. Forecasting refers to the use of statistical laws and probability calculation in making some future statements in the present period of time. It regards economic activity as spontaneous activity. But planning limits the relevance of forecasting by controlling the events. With the incress in the perfection in planning, the field of forecasting will be reduced.

2.2.3 Features of Planning

The basic features of planning, in brief are institutionalized activity, quantified goals and resources, programmed action period of action over a definite area and a rational social action.

1. Institutionalized Activity :

The planning process implies the existence of appropriate institutions through which it is implemented. Planning involves atleast four basic activities- (1) Preparation of plan (2) Approval of plan (3) Implementation of plan (4) Monitoring and Control of plan.

These four activities are carried out by different institutional organs that are best suited for the activity.

2. Quantified Goals and Resources :

The process of planning involves quantification of goals and resources. It implies that in the planning process some targets are set that are to be achieved with some predetermined resources.

3. Programmed Action :

The planning process is defined as a plan of action. It is shaped in terms of the goals to be fulfilled and the means by which these goals are to be achieved and alongside necessary steps are also taken for the achievement of these targets. These altogether constitute a program of action.

4. Periodicized Action over a Definite Area :

Economic plans are time bound and covers a definite area. The time can be any period- one year for annual plans, three to five, seven and in some cases ten years for medium period plans, ten, fifteen and even more for long-term plans. The time aspect of planning also denotes a specific begining and ending dates of plan. Moreover, planning is done over a definite area.

5. Rational Activity :

The process of planning involves the existence of some goals and predetermined means to achieve those goals. Consistency and efficiency are given utmost importance and these makes the process of formulating and implementing plans a rational activity.

Therefore, in conclusion it can be summed up that the planning process includes a plan and its implementation which is charactered by a programmed action which is social and rational in nature and is quantified and is acted upon through appropriate institutions.

2.2.4 Types of Planning

Varieties of planning exist in theory as well as in practice. However, the important ones are - long-term, medium-term and short-term planning with reference to the length of time period, with reference to space we have regional, nationals and international plans. In terms of implementation and measurement we have indication and imperative plans and according to different ways of making choices we have centralized and decentralised planning.

1. Long-term Plans :

This type of planning takes a long period for its time frame extending over 10, 15,20 years or even more. This planning provides a perspective of future in terms of society's objectives. This type of planning is very much significant on several counts-

(i) The long period is considered sufficient for a society to mould its future as per its objectives.

(ii) In certain areas such as health, education etc long term planning is necessary as investment in these fields take long time to mature and show results.

(iii) Most importontly, long-term planning helps in the formulation and execution of medium term and short-term plans.

However, it is very much limited by the uncertainity of the future because long period is involved.

2. Medium-term Plans :

These plans are for the periods varying from 5to 10 years. This is considered reasonable in tems of the period of business cycle which is around 7 years. It has several advantages as

(i) It acts as a link between the long period and short period plans.

(ii) It also performs an important function of maintaining and continuing the activities over time.

3. Short-term Plans :

These type of plans cover the short period of one year. These plans are linked with annual budgets for their actual operation. The significance lies in-

(i) Government gets authority from parliament to spend money on plan programs which is usually for one year.

(ii) It is during this one year period that resources are usually utilized.

4. Regional Planning :

Regional planning pertains to a region with homogeneous features such as similar natural condition like climate, soil. The similarity can also be in respect of its population having similar cultural and social features. This type of planning is usually done as a part of national planning. Its significance can be understood from the points given below-

(i) It is helpful in meeting the special requirements of a region.

(ii) Regional plans act as a platform for encouraging local initiatives.

(iii) Separate regional plans enable one to develop potentialities peculiar to the region.

5. National Planning :

The planning at national level is in accordance with the political boundaries of a nation. This area may or may not be homogenous.

Significance : This plan is significant for–

(i) Being under one political system, it becomes possible to effectively utilize the resource of a country.

(ii) National planning implies centralized direction and control.

(iii) Under national planning it is easier to seek peoples participation and co-operation.

Limitation : It is limited by-

(i) The economy becomes a closed economy.

(ii) This planning is not suitable for small countries because their resource base is very much limited.

6. International Planning :

The planning at international level includes planning at more than two countries. In other words, when an institutionalized plan is being worked out or implemented which includes more than a single nation it is called international planning. It is very much useful in addressing international issues such as poverty, unemployment etc.

7. Indicative Planning :

This type of planning is practised in capitalist as well as in a number of mixed economies. The essential function of planning in these countries is to coordinate the working of innumerable economic units which are in private hands. In these plan, given the indications, the coordination of the various elements of the economy becomes very much necessary.

8. Imperative Planning :

This type of planning involves not merely the formulation of a plan butequally importance is given on the implementation of the plan. Infact, the process of implementation is considered a matter of enforcement. This plan is prepard by a central authority. However, without taking into account the views and wishes of the general people no plan can be realistic or practically implemented with full effect.

* Important points of distinction between indicative and imperative plans.

(ii) Indicative planning is practised basically in the form of a capitalist market-economy but the imperative planning is for an economy with resources owned by the state.

(ii) In indicative planning coordination is essential among different economic units but no such coordination is needed in case of imperative planning.

(iii) Market is predominant in case of indicative planning but it is not so in case of imperative planning.

9. Centralised Planning :

This type of planning is completely governed by central authority. The central authority undertakes all the important decisions regarding planning process.

10. Decentralised Planning :

This type of planning refers to the initiation of plans' at the grass-root level. In this case, the grass root institutions are very much significant in the operation of the planning process.

2.3 The Rational for Planning in a Developing Economy

There exist several examples that supports the view that developing economics are widely accepting planning as an important tool for accelerating the process of the rational for planning is a development economy are discussed below:-

(1) Market Failure :

The market in case of less developed countris (LDCs) are charactered by the existence of structural and operational imperfections. The markets are badly organised and the presence of distorted prices in the markets causes markets to fail. Moreover, markets fail to price factors of production correctly. This market failure is put forwarded as the main reason for the implementation of planning in the economy.

(2) Resource Mobilization and Proper Allocation :

The availability of financial and skilled human reasources are very much limited in case of a developing economy. These countries cannot afford to

waste their limited resources on unproductive uses. Economic planning, in this context can be very much helpful in chosing the optimal investment projects that would help in an overall development of the economy.

(3) Psychological Impact :

Development plans can have an important attitudinal or psychological impact. Most of the LDCs are characterised by differences in caste, religion, creed etc. It is often argued that a strong central government, through its economic plan, can best provide the needed incentives to overcome the existing diversities and achieve the best economic growth possible.

(4) Foreign Aid :

In case of LDCs, the development and formulation of economic plan are very much essential for the receipt of bilateral and multilateral foreign aid. It is basically to persuade donors that their money will be used as an essential input in a well-conceived and internally consistent plan of action.

Important Points :-

(i) Planning.

(ii) Type of planning.

(iii) Points of distinction between indicative and imperative planning.

(iv) The need of planning in LDCs.

2.4 The Planning Process

Planning does not take place in vaccum, it is either micro model or macro-model. Most development plans have traditionally been based initially on some more or less formalized macroeconomic model. Such planning models can conveniently be divided into basic categories.

1. Aggregate Growth Models; involving macroeconomic estimates of planned or required changes in principal economic variables.
2. Multisector input-output and computable general equilibrium (CGE) models which ascertain the production, resource, employment and foreign exchange implications of a given set of final demand targets within an internally consistent framework of interindustry product flows.

Finally, the most important component of plan formulation is the detailed selection of specific investment projects within each sector through the technique of 'Project appraisal and social cost-benefit analysis'. These three stages of planning-aggregate, sectoral and project appraisal the main intellectual tools of the planning authority.

2.4.1 Aggregate Growth Models : Projection of Macro Variables

The aggregate growth model is the most elementary planning model used in almost every developing country. It deals with the entire economy in terms of a limited set of macroeconomic variable considered most critical to the determination of levels and growth rates of national output-savings, investment, capital stock, exports, imports, foreign assistance and so on. This type of model is very much convenient for forecasting output and even employment growth over a period of 3 to 5 years.

Almost all the plans of this model are some variation of the basic Harrod-Domar model. It states that inadequate savings is the most important constraint to economic growth. Here the domestic savings necessary to generate a specific rate of growth can be estimated on the basis of targeted growth rate and the natural capital-output ratio.

Harrod-Domar Model :

Economic growth is positive only when gross investment is greater than depreciated capital.

Net Investment = Gross Investment - Replacement Investment

This is the starting point of a growth model. It shows the positive net investment of an economy.

Using standard economic notations, we have -

Y = total income / output

C = total consumption

S = total savings

Therefore, $Y_t = C_t + S_t$ --------- (1)

Thus, national income is determined by consumption and saving while assuming that the government activities are absent and the economy is closed. On the other hand, the value of the output produced must be the sum of consumption and investment.

$$Y_t = C_t + I_t \text{ ---------- (2)}$$

Combining (1) and (2), we get

$$S_t = I_t \text{ ---------- (3)}$$

Now, invetment augments the national capital stock (k) and replaces the path and wears out. If δ is the fraction of the total capital when depreciate-

$$\therefore k_{t+1} = (1-\delta)k_t + I_t \text{ ---------- (4)}$$

This indicates how capital stock change over time.

$$\Rightarrow k_{t+1} = (1-\delta)k_t + S_t \text{ ---------- (5)}$$

Now, we introduce two important concepts- the saving rate and the capital-output ratio. The saving ratio is the ratio of the total savings to income and indicates the part of the total income that is saved. Assuming saving ratio (s) to be constant overtime, we have,

$$S = \frac{S_t}{Y_t}$$

$$\Rightarrow S_t = SY_t \text{ ---------- (6)}$$

The capital-output ratio is the amount of capital required to produce a single unit of output in the economy. It is the ratio of the total capital to total output.

$$\Re = \frac{K_t}{Y_t}$$
$$\Rightarrow \Re_t = \Re Y_t \text{ ---------- (7)}$$

Using (6) and (7) in equation (5), we get

$$\Rightarrow \Re Y_{t+1} = (1-\delta)\Re Y_t + sY_t$$

$$\Rightarrow \Re Y_{t+1} = \Re Y_t - \delta \Re Y_t + sY_t$$

$$\Rightarrow \Re Y_{t+1} - \Re Y_t = sY_t - \delta \Re Y_t$$

$$\Rightarrow \Re(Y_{t+1} - Y_t) = Y_t(s - \delta K)$$

$$\Rightarrow \frac{Y_{t+1} - Y_t}{Y_t} = \frac{s - \delta\Re}{\Re}$$

$$\Rightarrow \frac{\Delta Y_t}{Y_t} = \frac{s}{\Re} - \delta$$

$$\Rightarrow g = s/\Re - \delta$$

Here, 'g' is the overall rate of growth and it depends directly on s and inversely with k. Besides δ has negative impact on 'g'. This is the famous Harrod-Domar relation which is named after Roy Harrod and Evsey Domar.

2.4.2 Input- Output Models andSectoral Projections

At the sectoral level, planners set sectoral output targets while taking into account the inter relationship and the inter dependence among the various sectors. This is the second stage of planning, sectoral outputs are determined on the basis of the input-output table of the economy. This model indicates the planned sectoral output targets within a consistent frame-work of flow of inter-industry products and final products.

There are two stages - (1) Input-output table and (2) Input-output coefficients

Stage 1: Input-Output Table :

While formulating the input-output table a threesector economy is taken into account. The table is shown below.

	Agriculture	Industry	Services	FD	TotalOutput
Agriculture	500	600	100	800	2000
Industry	500	300	300	1200	2300
Services	160	240	100	1000	1500
Primary Input	840	1160	1000	3000	
Total Input	2000	2300	1500		5800

FD - Final Demand

The table shows the distribution of output horizontally along its rows and the composition of inputs vertically down the columns.

Stage II : Input - Output Coefficients :

The input-output coefficients is the flow of output from sector i to sector j as intermediate demand to produce one unit of output in sector j. Input coefficient of a sector provides informations on the value of inputs needed to meet a rupee worth of output. This is the second stage which is concerned with the derivation of input-output coefficients or production coefficients from the input output table.

Structural Matrix

	Agriculture	Industry	Services
Agriculture	0.25	0.26	0.07
Industry	0.25	0.18	0.20
Services	0.08	0.10	0.07
Value Added	0.42	0.51	0.66
Total Input	**1.00**	**1.00**	**1.00**

The above table shows that for agricultural output worth Rs. 1, the direct input requirements are 25 paise of agricultural inputs, 25 paise of industrial inputs, 8 paise of service inputs and 42 paise of labour (Value added). The same method can be adopted to estimate the coefficients for the second and third column. The input-output coefficient table can estimate only the direct input requirement on a given output. However, total input requirement is equal to direct input plus indirect inputs. To make a more use of Leontief Solution i.e. $X = (1-A)^{-1}$ F. This is shows below.

Total input requirement = direct input + indirect input.

Suppose, we have a 'n' sector economy and the flows of total outputs of sector i for intermediate use and final consumption is X_i such that,

$$Xi = x_{i1} + x_{i2} + ... + x_{in} + F_i \quad ..... (1)$$

Thus, for n sectors the flow of sectonal output is given by a system (by a syste) of n equations-

$$\left.\begin{aligned} X_1 &= x_{11} + x_{12} + \ldots\ldots + x_{1n} + F_1 \\ X_2 &= x_{21} + x_{22} + \ldots\ldots + x_{2n} + F_2 \\ X_n &= x_{n1} + x_{n2} + \ldots\ldots + x_{nn} + F_n \end{aligned}\right\} \ldots\ldots\ldots\ldots(2)$$

here, we have

$$aij = \frac{xij}{xj} \Rightarrow xij = aijxj \qquad \ldots\ldots\ldots\ldots(3)$$

now, expressing equation (2) in matrix from as-

$$\begin{bmatrix} x_1 \\ x_2 \\ \\ x_n \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12}\ldots\ldots a_{1n} \\ a_{21} & a_{22}\ldots\ldots a_{2n} \\ \\ a_{n1} & a_{n2}\ldots . ann \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ \\ x_n \end{bmatrix} + \begin{bmatrix} F_1 \\ F_2 \\ \\ F_n \end{bmatrix}$$

$$\Rightarrow x_1 = a_{11}x_1 + a_{12}x_2 + \ldots\ldots + a_{1n}x_n + F_1$$
$$x_2 = a_{21}x_1 + a_{22}x_2 + \ldots\ldots + a_{2n}x_n + F_2$$

$$x_n = a_{n1}x_1 + a_{n2}x_2 + \ldots\ldots + a_{nn}x_n + F_n$$

Here, $X = AX + F$

where $X = \begin{bmatrix} x_1 \\ x_2 \\ \\ x_n \end{bmatrix}$, $AX = \begin{bmatrix} a_{11}x_1 + a_{12}x_2 + \ldots . + 9_{1n}x_n \\ a_{21}x_1 + a_{22}x_2 + \ldots . + 9_{2n}x_n \\ \\ a_{n1}x_1 + a_{n2}x_2 + \ldots . + 9_{nn}x_n \end{bmatrix}$

$$F = \begin{bmatrix} F_1 \\ F_2 \\ \\ F_n \end{bmatrix}$$

$$\therefore X - AX = F$$
$$\Rightarrow X(1 - A) = F$$
$$\Rightarrow X = (1 - A)^{-1}F$$

2.4.3 Project Appraisal and Social Cost Benefit Analysis

There exsit an intellectual as well as operational linkage among the three stages of the planning process - aggregate growth models, input-output analysis and the project appraisal. The macro growth models set the broad strategy, input-output analysis ensures an internally consistent set of sectoral targets and the project appraisal is designed to ensure the efficiency in planning individuals projects within each sector.

The basic idea behind project appraisal rests on the practice of social cost benefit analysis. The main point is to decide on the worth of the project involving publice xpenditure, it is very much necessary to weight the advantages and disadvantages to the society as a whole. The need for social cost benefit analysis arises from the fact that the normal yardstick of commercial profitability that guides private investors may not be an appropriate guide for public investment decisions. In case of private investors, both receipts and expenditures are valued at prevailing market price for inputs and outputs but they do not take account of external effects of their decisions. In this respect, the social cost benefit analysis take into account the true measures of social benefits and costs. The externalities that can be sizeable and pervasive are considered according to their impacts.

Social profits in any period can be defined as the difference between social benefits and social costs where these are measured both directly and indirectly.

Social Profitability = Social Benefit - Social Costs.

The mai objective of social cost benefit analysis is to maximise the social welfare of the society. In the recent times, the projects impact on income distribution has also received increased attention. In 1991, the World Bank also included an environment impact evaluation as an important criterion while considering a project.

Now, in calculating the worth of a project benefit and costs that occur over time, government needs to choose appropriate discount rates. The social rate of discount is essentially a price of time. It is the rate at which planners calculate the net present value of a time stream of project benefits and costs. The net present value (NPV) is calculated as-

$$NPV = -C_o + \frac{\beta_1 - C_1}{(1+r)} + \frac{\beta_2 - C_2}{(1+r)^2} + \frac{\beta_3 - C_3}{(1+r)^3} + \ldots\ldots\ldots\ldots + \frac{\beta_n - C_n}{(1+r)^n}$$

Where r - Social rate of discount

C_o - fixed cost. It is negative because some costs are to be incurred before the starting of the project.

$$NPV = -C_o + \sum_{t=1}^{n} \frac{B_t - C_t}{(1+r)^t}$$

If NPV is positive then social benefits exceeds social costs and the project is viable and if not it is not viable.

Now, if there are large number of projects showing social profitability, the planning authorities list all profitable projects and rank them according to their rate of projects i.e. higher the profitability higher is the rank. But if NPV is zero, it represents internal rate of return. If IRR is greater than the market rate of interest then the project is viable and if it is less then the market rate of interest it is not viable. If IRR is equal to the market rate of interest then the project may or may not be taken as demanded by the situation.

Stop to Consider :

1. The Planning Process
2. The stages of planning
3. Aggregate Growth Models : Projecting Macro Variables
4. Harrod - Domar Model
5. Input - Output models and sectoral projections
6. Project Appraisal
7. Social Cost Benefit Analysis
8. Net Present Value
9. Social Rate of Discount
10. Internal Rate of Return

2.5 Plan Failures

The need of planning process, from the point of view ofdevelopment in a less developed country can be easily understood from the fact that a large

number of LDCs have accepted it as an integral part of their economy. But, infact the result of such development planning have been generally disappointing. The display of very poor performances by the development plans has a number of practical outcomes. The most important being the adoption of a more free-market oriented economic system. This was mainly because of-

1) The gap between projected target and actually attained targets.
2) The presence of some fundamental problem like ineffective implementation, inadequate political will etc.

As a result there was planning failures in these countries which inturn opted for more free market economic system.

There are several important reasons for plan failures. These are discussed below-

1) Insufficient and Unreliable Data :

The value of a development plan depends to a great extent on the reliability and accuracy of data on which the plan is based. These data are simply unreliable, insufficient, weak and inaccurate in the LDCs. So, the plan so developed turns out to be weak.

2) Internal and External Disturbances :

The LDCs are very much open to disturbances in the economy of both internal and external forces. Due to lack of self-reliance, these countries are dependent on international trade making it open for external disturbances. And because of lack of internal stability internal problems are a regular visitor.

3) Improper Implementation :

The plans of LDCs are often over ambitious trying to achieve several goals without practically considering their executions. This often result in improper execution of the plans.

4) Institutional Weakness :

The existence of some inherent institutional weakness like failure of planners to take proper view of local problems, incompetent and unqualified civil servants, bureaucratic problems, resistance to innovation and change, lack of commitment etc renders development plans inefficient in LDCs.

5) Lack of Political Will :

The lack of commitment and political will on the part of the political leaders of the developing countries resulted in the poor performance and wide gap between plan formulation and plan implementation.

These are some of the most significant reasons for plan failures in the LDCs. However, ther are many other reasons for the problem which can be easily pointed out after the study of this unit.

2.6 Market Versus Planning

The poor performance of the planning process has advocated the increased use of the market mechanism as a key instrument for promoting greater efficiency and more rapid economic growth. The mechanism of market is quite different from the process of planning. These differences are briefly outlined below.

The planning process is basically a institutionalized activity implemented through appropriate institutions. But in a market economy, the institutional structure is totally different. In a market economy nobody prepares an advance plan for the use pattern of resources. Moreover, the result under planning have to be foreseen but in case of a market economy the results are not foreseen. Thus, it can be followed that a market economy does not require institutionalized activity.

In case of planning there are quantified goals and resources but in a market economy, the types of commodities to be produced and its quantity is not possible to decide in advance.

Planning constitute a program of action that are preconceived or foreseen in advance. In a market economy there is also a program of action but it is not preconceived. The hand that guides a market economy is invisible but it is visible in case of a planned economy.

In a market economy, activities of economic units are rational only in terms of maximization of profits. Planning, on the other hand is characterized by rationality and maximization of social welfare.

Thus, from the above points, the difference between market and planning is well established.

Important Topics :

1. Plan Failures
2. Causes of plan failures
3. Market mechanism versus planning process.

2.7 Planning in a Mixed Economy

The development plans have been mostly formulated and carried out within framework of the mixed economies of the developing world. The institutional setting of these economics are characterized by the co-existence of both the public sector and the private sector. That means, the productive resources are partly owned by the private sector and partly by the public sector. In a mixed economy, the private sector comprises the following form of individual ownership:-

1) The traditional subsistence sector consisting of small scale private firms and handicraft shops.

2) Small scale industries or family owned commercial business.

3) Medium size commercial enterprises in agriculture, industry, trade and transport etc.

4) Large jointly owned or completely foreign owned manufacturing enterprises, mining companies etc. governmental economic policies including taxation, industrial licensing, tariffs, quotas manupulation of interest and prices are used to stimulate, direct and control private economic activities so that a balance can be attained between desires of private business operators and the social objectives of the government. The aim is basically to maximise social welfare.

2.8 Market Oriental Economy

In free market economy, the resources are allocated in market in accordance with consumer demand. The market is the main framework that brings together those who demand and those who supply the product. In a completely free market, the price mechanism completely cleans the market and there are no unsatisfied buyers and sellers. The decision making process

is completely left to the market comprising of private individuals. If there is an increase in the demand of a good, the price will rise and the producers will be enduced to produce more. But if the demand falls price decreases and producers will suply less. It can be rasily understood that the market price acts as a signal to the producers to supply more or less of a commodity. There is the absence of government intervention. But, the basic problem is that there is nothing in the market mechanism that guarantees an equitable distribution of income in the society. Market failures are also a common occurence in a free-market system.

So, all these defects have led the development economists to agree for government intervention in the process through the planning mechanism.

2.9 Plan Models in India

Plan models can be defined as an optimally balanced connection of future targets representing stated objectives and certain predetermined strategy for the attainment of these objectives. In a plan model some targets are set relating to some basic objectives that are to be attained in the future and for attaining these objectives some predetermined strategies are to be used. Plan models provides the necessary framework for making an appraisal of economic plans. It also provides insight to the planners as to what could be the outcomes of the plan.

Plan Model for 1st Five Year Plan :

The 1st Five Year Plan was based on the Harrod-Domar model. This was believed due to the fact that most of the projections were based on the estimates of savings, investment and capital-output ratio.

The model assumed that -

(i) It assumed a closd economy.

(ii) There is no change in the price level.

(iii) Marginal Propensity to save is greater than the average propensity to save. As income increases MPS also increases.

The Model :

The condition stated for a steady growth in the 1st Five Year Plan was

$$\frac{\Delta I}{I} = \frac{\Delta Y}{Y}$$

Where

$$\frac{\Delta y}{y} = \alpha\beta$$

α = MPS

β = output – capital natio

$$\Rightarrow \frac{y_{t+1} - y_t}{y_t} = \alpha\beta$$

$$\Rightarrow y_{t+1} - y_t = y_t(\alpha\beta)$$

$$\Rightarrow y_{t+1} = y_t(1+\alpha\beta) \ldots\ldots\ldots\ldots (1)$$

at $t = 0,\ y_1 = y_o(1+\alpha\beta)$

at $t = 1,\ y_2 = y_1(1+\alpha\beta) = y_o(1+\alpha\beta)(1+\alpha\beta) = y_o(1+\alpha\beta)^2$

at $t = 2,\ y_3 = y_o(1+\alpha\beta)^3$

Hence, generalising, we get,

$$y_t = y_o(1+\alpha\beta)^t \ldots\ldots\ldots\ldots (2)$$

Therefore, economic plan can influence savings and investment.

Here, equation (2) implies that the income for time period '*t*' depends on the current income (y_o) and α and β amounting to 'λ' times the power.

Plan Model for 2nd Five Year Plan :

The Four-Sector Mahalonobis Model :

The plan model for the 2nd Five Year PLan was based on a growth model by Prof. P. C. Mahalonobis. The model attempted to attain the objective of 5% growth rate with employment generation amounting to 110 lakhs jobs. The main focus of the model was to maximise investment in the capital goods sector through maximisation of the marginal rate of saving.

Prof. P. C. Mahalonobis constructed a 2 sector model in 1953 which went on to provide the basis for the 4- Sector model that was introduced in the second plan. The economy was divided into four different sectors-

(a) Capital goods sector.

(b) Consumer goods sector.

(c) Household sector (including agriculture)

(d) Service sector.

(3 prone strategy)

For each of these four sectors, a set of parameters were introduced.

(1) β 's $\rightarrow \beta_k, \beta_1, \beta_2, \beta_3$

output capital ratio (basically indicates output - capital ratio in the four sectors).

(2) θ 's $\rightarrow \theta_k, \theta_1, \theta_2, \theta_3$

capital labour ratio orn capital intensity.

(3) λ 's $\rightarrow \lambda_k, \lambda_1, \lambda_2, \lambda_3$

allocation ratio on investment allocated to each sector.

Again, A is the total investment in the entire time period.

Y is the total increase in income,

N is the total increase in employment.

On the basis of the above given informations, the following three equations are formulated.

$$Y = Y_k + Y_1 + Y_2 + Y_3 \quad \text{.....(1)}$$

$$N = N_k + N_1 + N_2 + N_3 \quad \text{.....(2)}$$

$$A = \lambda_k A + \lambda_1 A + \lambda_2 A + \lambda_3 A \quad \text{..... (3)}$$

Thus, an increase in employment in each sector will be $n_k = \frac{1}{\theta_k}\lambda_k A \left[\Theta \frac{1}{\theta_k} = \frac{L}{k}\right]$

where λ_k – total increase in capital.

$$n_k = \frac{1}{\theta_k}\lambda_k A$$

$$n_k\theta_k = \lambda_k A \quad .....4$$

Similarly,

$$n_1\theta_1 = \lambda_1 A \quad .....5$$

$$n_2\theta_2 = \lambda_2 A \quad .....6$$

$$n_3\theta_3 = \lambda_3 A \quad .....7$$

Now, substituting (4), (5), (6) and (7) in (3), we get,

$$A = A = n_k\theta_k + n_1\theta_1 + n_2\theta_2 + n_3\theta_3$$

Similarly, increase in income generated is -

$$y_k = \beta_k\lambda_k A$$
$$y_1 = \beta_1\lambda_1 A$$
$$y_2 = \beta_2\lambda_2 A$$
$$y_3 = \beta_3\lambda_3 A$$
$$\therefore y = \beta_k\lambda_k A + \beta_1\lambda_1 A + \beta_2\lambda_2 A + \beta_3\lambda_3 A$$

1) Here, A, Y and N are constant variables which are at the same time the targets to be achoeved within the plan period.

2) β, θ and λ 's are instrument variables where

   (a) β and θ 's depends on the existing technical conditios which does not allow changes during plan period.

   (b) λ is the allocation parameter which is targeted by the planning authorities to achieve the plan objectives on targets.

The 3 Prone Strategy

1) Increase investment in heavy industries.

2) Enhance expenditure in services so as to increase the purchasing power and thus create demand.

3) Maximise investment in the small and household industries so as to increase the savings of consumer goods to meet new demands. It increases the productive capacity in the economy generated by the expension in the service sector.

2.10 Summing Up

To sum up planning is a consciously directed activity with predetermined goals and means to carry the in out. However, it consists of some general features which must be fulfilled in order to achieve the desired objectives. There are various planning process and projecting techniques and depending on the nature of the economy one should choose among them.

2.11 Additional Questions

1. What is the meaning of the term planning?
2. Distinguish between-
   (a) Planning and directives
   (b) Planning and forecasting.
3. Explain briefly the features of planning.
4. Mention in brief the different types of planning.
5. Discuss the rationale for planning in a developing economy.
6. Discuss the process of planning and mention the different stages of planning.
7. Explain the aggregate growth model projecting macro variables with the help of Harrod-Domar Growth model.
8. Explain the input-output model with sectoral projections.
9. Explain project appraisal with the help of social cost benefit analysis.
10. Write short notes on-
    (a) Net Present Value.
    (b) Social Rate of Discount.
    (c) Internal Rate of Return.
11. Discuss the concept of plan failures.
12. Explain the causes of plan failures.
13. Bring out a comparison between market mechanism and planning process.
14. Discuss the plan models in India-
    (i) 1st Five Year Plan.
    (ii) 2nd Five Year Plan.
15. Write short notes on-
    (i) Long-term plan.
    (ii) Medium-term plan.

(iii) Short-term plan.

(iv) Regional planning.

(v) National planning.

(vi) International planning.

16. Distinguish between imperative planning and indicative planning.
17. Differentiate between centralized planning and decentralized planning.

2.12 Suggested Readings

1. Todaro, M.P.: *Development Economics*, Pearson
2. Thirlwall, A.P.: *Growth and Development*, Palgrave
3. Ray, D.: *Development Economics*, Oxford University Press

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UNIT- 3

FINANCING OF DEVELOPMENT

Contents:

3.0 Introduction

The unit 'Financing of Development' deals with the problem of financing the development process in the economy. It discusses the different sources available for the finance. The main domatic sources are private savings, taxation and money creation. The unit also discusses the dual gap analysis and foreign borrowing and the deft servicing problem. Towards the end of the unit it also analyses the private foreign investment.

3.1 Objectives

After going through this unit–

- various sources of domestic financing of development;
- financing of money creation and its effects;

- analyze the dual gap; and
- private foreign investment and its effects.

3.2 Domestic Sources

The main domestic sources of financing development are discussed as below–

3.2.1 Private Savings

Saving is necessary to fiend investment. The main topic of financing development from domestic sources includes saving as one of the main aspects. Measures should be taken to encourage savings in developing countries which includes the increase in the capacity to save and willingness to save.

The economy can be broadly classified into three sectors- 1) The household sector 2) The Business sector. 3) The Goverment Sector.

The household sector saves out of personal disposable income, the business sector saves out of profit and the government saves out of tax revenues. The household and business savings is sometimes referred to as private saving while the government saving is public saving. The savings are mainly distinguished into voluntary, involuntary and forced savings. These are briefly discussed below -

1. Voluntary savings - There savings arise through voluntary reduction in consumtion out of disposable income. Both the household and business sectors contribute to voluntary savings.
2. Involuntary savings - These types of savings are brought about through involuntary reductions in consumption such as by taxation etc.
3. Forced savings- The consumption may be reduced as a result of rising prices. The savings due to these condition is teamed as forced savings.

So, the domestic savings can be a very important measure for funding development process. The amount that countries save and invest as a proportion of their gross domestic product (GDP) differs enormously. This is mainly due to the differences in the ability and willingness to save and invest. Some countries save more than they invest domestically i-e. they

invest abroed while some countries invest more than they save i-e they are net importers of capital. There are basically three broad analytical approaches to the study of financing development from domestic resources. These are–

1. The prior - saving approach to the financing of development which emphasised the importance of prior savings for investment and the neid for policies to raise the level of savings.
2. The Keynesian approach which agrees that the encouragement of investment will generate its own savings either through increase in output or through income redistribution among different groups.
3. The quantity theory approach which stresses the role of government monetary expansion in accelerating the process of development through domestic sources.

Main Factor of Savings :

Savings are mainly done by the household sector and the business sector. The main factors affecting private savings are -

1. Creation of Savings:

The Creation of savings mainly depends on two factors-

a) Capacity to save - The capacity to save mainlyvarius from groups to group based on the capacity to save. A country that has a well developed economy with proper use of natural resources, is able to produce more and increse savings. But a poor country with low production level generally saves very less. The propensity to save is more in case of high income earners than the low income earners.

b) Willingness to save - The saving factor also depends on the willingness of individuals to save. It depends on several factors such as- family affection, emergency, habit, interest etc.

2. Mobilisation of Savings

B the term mobilisation of savings it mean the collection or mopping of savings by financial institution like Banks etc. The existence of such institution will facilitate savings. Savings usually leads to investment which is very much fundamental to in enchancing the rate of capital formation, which is turn is very much necessary to increase the rate of savings and accelerate the

process of development. The following measures can be taken to increase the domestic savings-

1) Motivation to save :- People should be motivated to save by displaying the positive impocts of savings on their life.

2) Establishment of financial institution :- Financial enstitutions should be established to maintion savings tendency and to derive utility from those savings.

3) Increase in savings through fiscal policy : The government should encourage and implement those fiscal policies which lead to increase in savings.

4) Reduction in consumption : Taxation policy should be imposed to curb the luxury goats production which would increase domestic savings.

Thus, savings aregments the process of economic development.

3.2.2 Taxation : *As a domestic source for financing the process of development*

There should be properly developed and well functioning fiscal policy or financial policy in developing counties to finance the process of development in the country. Therefore, the taxation policy should be developed in a way leyring in view the capacity and ability to pay taxes as their income standard is very low in these countries.

So, there is another approach to the financing of development from domestic resources ie. The use of fiscal policy and taxation. The main point is to design a tax policy to raise the marginal propensity to save of the economy as for above as possible. Fiscal policy to raise the marginal propensity to save abore the average is concerned with the implementation of taxes to reduce consumption in the private sector. The savigns brought about by taxation is envoluntary saving. The amount of taxation that a country raises as a proportion of national income depends mainly on two factors -

1) The taxable capacity of the country.

2) The tax effort made by the country in relation to its taxable capacity.

The taxable capacity of a cuntry depends on several factors such as the overall level of per capita income of the country, the distribution of income, the level of literacy and urbanisation, the size of the industrial sector, the importance of trade, the availability of mineral resources in the country and the amount of foreign inestment. In turn, the tax effort depends on the extent to which a country exploits these various tax bases and the rates of tax applied to the bases. Any measured change in tax revenue with respect to income is likely to consist of an automatic increase in tax revenue as income increases when the structure of tax imposition is progressive.

The efficient utiliasation of the tax potential of developing counties problems that differ from one country to another based on the cinrumstances faced by each country. But there are cention fundamental changes which if adopted would make it possible to increase public revenue and reduce some of the inequalities that exists in reduce some of the inequalities that exists in the economices. The tax system that is to adoped must be honestly administered and every attempt must be made to minimise the scope for avoidance and evasion of taxes. The classical canons of taxation states that a tax system should be judged by the standards of equity, efficiency and administration convenience. In most of the developing countries, the tax system is meither equitable nonefficient. Tax avoidance and evasionare very common occurance. Equity requires a comprehensire definitionof income and non-discrimination between income sources. An equitable system should discoverage luxury consumption and makes it difficult to avoid and erade taxation. Taxable capacity is measured not only by income alone but also by wealth. Therefore it requires taxation of wealth.

Efficiency requirs that the entire tax system is self checking so that the attempt to escape from one tax increases the possibility of offseting it by other taxes. Moreover, there should proper and efficient administrative control over the taxation policy. In short, taxation should be progressive taxation. So, the taxation in this manner, can be effectively used as one of the important domestic source for financing development process.

Now, if voluntary savings and induntary savigns are inadequate, force savings has to be resorted to. This is done by raising the prices of goods that forcefully cuts down the consumtion raising. This tends to be inffationary in nature.

3.3 Financing by Money Creation and Its Effects

Financing development by creation of money is an essential feature in the fiscal policy assistance cann of a developing economy. When domestic resour together with external assistance cannot adequately meet the expenditure of development, the country is forced to deficit financing. The term deficit financing implies an action on the port of the state to cover the deficit in the budget. If a recognized method of promoting economic development particularly in underdeveloped countries where incomes are low and propensity to consue high, on account of which savings are very low. The creation of money is a way of financing the deficits for enhancing development. Such a type of created money is not backed by any gold reserve, other than the promise of the Government to repay the amount. Deficit financing may also be called deficit spending.

Government generally resort to deficit financing for mainly three purposes given below-

1) To finance war-expenditure ;
2) To left the economy out of the depths of economic depression ; and
3) To promote the economic development of the country.

Deficit financing is a significant tool of economic development and has been used by the Indian government to obtain the necessary resources to finance the Five Year plans. However, the real resources like equipment, materials, skill etc cannot be created by printing money.

Arguments in Favour :

The arguments inforour of deficit financing are given below.

1) Exploitation of Underutilized Resources :

With the hepl of the created money these natural resources can be exploted leading to capital formation.

2) Money Necessary in a Developing Economy :

The expansion of money supply is absolutely necessary in a developing economy to continue with the process of development otherwise prices

may fall and cause handship and create shortage and distantion in the economy.

3) Improving Living Conditions :

As the standard of living goes up the demand for money increases. Deficit financing hepls in meeting the needs of the people for more money.

4) Meet Import Surplus :

When the economy gets foreign aid in large quantities, there is likely to be import nerplus. This results in a greater demand for money and the Government can meet this increased demand for money by resonting to deficit financing.

Argements Against :

Deficit financing has been considered as an evil due to mony reasons. Some of theimportant reasons are discussed below.

1) Dificit Financing and Inflation :

The most serious disadvantage of deficit financing is that it tends to be inflationary. It results in the rise of prices,decrease in the value of money and it leads to spiralling up of prices.

2) Change in the Pattern of Incestment :

Inflation has a tendency to bring about the wrong type of investments like luxury commodity production, purchase of gold jewellery and even foreign assets.

3) Forced Saving :

Inflation results in the decline of consumption due to rising pries which leads to the occuranu of foreed savings.

4) Uncertainly in Future Expectations :

On account of the rising prices due to inflation there is an uncentainty in future returns of investments to be made. As a result, investment decisions will be adversely affected.

However, with the existing defficults in the use of deficit financing, it has been supported immensely to the process of econoic development.

Therefore, it can be concluded that a safe limit of deficit financing may not be harmful for an economy when all other sources of financing is exhausted.

Point to Cosider :

1. Domestic sources of financing development
2. The importance of private savings
3. The taxation policy.
4. Deficit Financing.
5. Factors of saving
6. Arguments for and against money creation.

3.4 The Dual Gap Analysis- Investment Gap and the Foreign Exchange Gap

The detailed anlysis of dual-gap analysis requirs a remainder of the dementary growth goods which may be either requires investment goods which may be either domestically provided or purchased fro abroad. The domestic provision requires savigns and the foreign provision requires foreign exchange. If it is assumed that some investment goods for growth can be provided only from abroad, a minimum amount of foreign exchange is always required to sustion the growth process.

Traditionally, the role of foreign borrowing has been seen as a supplement to domestic saving to tridge the investment saving gap and achive a faster rate of growth. The concept of dual pag analysis pioneered by Hollis chenery and his colleages stressed that forign to borrowing may also be viewed as a supplement to foreign exchange, if the gap between foreign exchange earning from exports and necessary imports is larger than the domestic investment saving (I-S) pag and domestic and foreign resources are not easily substitutable for one another. The historical sequence suhhested by Chenegy was that countries in the pre take off stage of development would have a dominant I-S pag followed be a dominant foreign exchange pag.

In national income accounting an excess of envestment over domestic saving is equivalent to a surplus of imports over exports. The national income equation can be written as –

Income = Consumption + Investment + Exports - Imports Since saving = Income - Consumption.

Saving = Investment + Exports - Imports

Savings - Investment = Exports - Imports

or, Investment - Savings = Imports - Exports.

A surplus of imports over exports financed by foreign borrowing allows a country to spend more than it produces or to invest more than it saves. The abore identity between the two gaps follows from the nature of the accounting procedures. However, in a planned sense these two gaps are not equal.

In the Harrod - Domar Model, We have

$$g = \frac{s}{c} \quad \text{.....(i)}$$

Where, g - growth rate,

s - savings ratio,

c - incremental capital - output ration. C is the reciprocal of the productivity of capital (p)

$$g = \frac{s}{\frac{1}{p}}$$

$$= sp$$

Again, g = im` .....(ii)

Where, i = the ratio of investment goods imports to income.

i.e. $i = \frac{M}{Y}$

m` - incremental output import ratio

i.e. $m' = \frac{\Delta Y}{\Delta M}$, ($\Delta$ - change)

If there is a lock of substitutability between domestic and foreign resources, growth will be constrained by whatever factor is the most limiting by domestic savings or foreign exchange. For example, if the growth rate permitted by domestic savings is less than the growth rate permitted by the availability of foreign exchange, then domestic savings is the most limiting factor. In contrast, suppose the growth rate permitted by domestic sevings is less than the growth rate permitted by the availability of foreign exchange, then domestic seving is the most limiting factor. In contrast, suppose the the

growth rate permitted by domestic savings is higher than the growth rate permitted by foreign exchange than the p0roportion of domestic savings will go concesed. From the above analysis, it is clear that there will be wastage of resources as long as one resource constraint is dominant. If foreign exchange is the dominant constraint, ways must be found of using unused domestic resources to earn more foreign exchange. If domestic savings is the dominant constraint ways must be found of using foreign exchange to augment domestic savings.

If we assume a targeted rate of growth (r) for a country, the required savings ratio (s*) and the required import ration (i*) to achive the targeted growth rate can be oftained as follows-

$$r = s^* p \Rightarrow s^* = \frac{r}{p}$$

Putting this in equation (2), we get

$$r = i^* m^1$$

$$i^* = \frac{r}{m^1}$$

If domestic savings is calculated to be less than the level required to achive the targeted rate of growth there is said to exist an investment savings gap equal at time (t) to -

$$I_t - S_t = s^* y_t - sy_t$$
$$= \left(\frac{r}{p}\right) y_t - sy_t$$

Simillarly, if the minimum import requirements to achive the targeted rate of growth are calculated to be greater than the maximum level of export earning available for investment purposes, there is said to exist an import export gap or foreign exchange gap equal at time (t) to-

$$M_t - x_t = i^* y_t - iy_t$$
$$= \left(\frac{r}{m^1}\right) y_t - iy_t$$

If the import-export gap is larger of the two gaps then foreign borrowing to fill it will also fill the savings - investment gap. If the investment - savings gap is larger then foreign borrowing to fill it will surely cover the foreign exchange gap.

The contribution of dual - gap analysis to the development theory is that if foreign exchange is the dominant constraint, it points to the dual role of

foreign borrowing in supplementing not only deficient domestic savings but also foreign exchange. The dual-gap theory thus performs the valuable sarvice of emphasising the role of imports and foreign exchange in the development process. It combines traditional and more modern views concerning aid, trade and development. Indeed if foreign exchange is truly the dominant constraint it can be agreed that the dual-gap analysis also presents a more relevant theory of trade for developing countries that justifies protection and import substitution. Thus, the dual-gap analysis is of great significance.

3.5 Foreign Borrowing and the Debt Servicing Problem

The development countries borrows not only from the developed countries but also from international banking systems like the world Bank etc. The borrowing leads to repayment ofligations unless the loans granted are gifts. The first condition is that the loan has to be repaid and secondly an interest also need to be paid. So, it constitutes the problem of deft service payments. There has been a massive increase in deft creating flows to developing countries in the last 30 years which started in a big way after the rise in the oil prices after 1973-74. The ability to service deft depends on whether additional foreign exchange can be earned or sared by the borrowing country. The benefits of borrowing to individual countries and to the world are very much clear. But is there any limits as to how far should the borrowing go? Is there any point that indicates that beyond the point the disadvantage of borrowing outwighs the advantages ?

Unfortunately, there are no precise answers to these questions which makes borrowing a very sensitive and important issue.

The world debt crisis came into existence in 1982 when Mexico became the first country to suspend the repayment of loans to the private banking system and sovereign leaders. Several African countries were burdened down under severe debt problem. In 1987, Brazil became the first country to suspend interest payments to foreign creditors. It was mainly because there were a set of large newly industrialising countries, mainly in Latin America which borrowed from the commercial banks at floating interest rates but their export markets became depressed. This resulted in huge debt problems. The world debt problem is a foreign exchange problem. It

represents the inability of debtors to earn enough foreign exchange through exports to service foreign debts and at the same time to sustain the growth of output. The debt crises of the early 1980's has subsided but the debt problem has not gone away.

Debt Relief :

There are no easy solutions to the problem of debt servicing. There is the need of a massive program of debt foregivenss which leaves a manageable debt that the debtors can service. Without relief, further borrowing increases the size of the debt service payments and makes matter more worse for the debtor countries. Debt relief could actually confer a global benefit by easing the deflationary forces anociated with the huge debt overhang. The debt relief measures undertaken are discused below.

The Highly Indebted Poor Country Initiative (HIPC) :

The HIPC is the most necent and publicised global scheme for debt relief measure launched by the Wor ld Bank in 1996 which was specially designed to help the worl's poorest indebted countries. But, dissatisfied with the original scheme the Group of seven (G-7) rich industrialised countries lauched a new enhanced HIPC which was later accepted by the World Bank and IMF and called it the Enhanced HIPC Debt Relief Initiative. To be eligible for this measure countries had to satisfy three conditions :

1. A country must be exceptionally poor.
2. A country must have an unseestainable debt burden.
3. A country must have good governance system with sustained growth policies and poverty reduction schemes.

Debt Rescheduling:

There was an attempt, initially being made to increase liquidity of the developing countries. This was the main idea behind the Baker Plan of 1988. The plan was followed by Brady plan of 1989 which accepted debt reduction and was more successful. The two main elements of the plan were–

a) Providing funds through the IMF and the World Bank for various forms of debt relief to those middle income debtor countries that were willing to adopt reforms, and

b) Encouraging countries to buy back debt from banks at a discount.

There were also several other initiatives developed that were mainly focused on the poorest debtor countries.

Debt Buy-Banks and Debt Swaps :

In the recent years, another solution that has gained much favour is for the countries to buy back their debt at a discount, or to exchange the debt in various ways that fully or partially releive the burden of interest and principal payments.

Debt-equity swaps are a way of eliminating debt service payments altogether. A debt-equety swap involves the debt held by the creditor being converted into an equity stake is enterprises within the debtor country. The creditor have a claim on future profits but the debtor counteries are relieved of interest payments. This reduces the burden of dibt.

Payment of Loons in Local Currency :

Various schemes were developed that permited the debtor countries to repay loans in their local currency rather than foreign currency. This could even become on instrument for trade promotion. The main idea of this scheme is that instead of developing countries repaying loans with interest to the donor countries in foreign currencies, they pay back in local currencies saving the scarce convertifle currencies. The feasibility of such a scheme would depend on the attitude of the creditor developed nations and multilateral institution like the world Bank.

In the long run, to minimise the serious debt-crises problem several important steps need to be undertaken. Such as the flow of fund should be more of grants and gifts than loans to underdeveloped nations, there is the need to develop schemes to stabilize mainly primary product prices because the criss of 1980's was mainly due to the collapse of primary product prices etc and many others including a strong international agreements on the matter.

3.6 Private Foreign Investment

The private foreign investmetns can be broodly classified into –

a) Foreign Direct Investment

b) Foreign Institutional Investment or portfolis investment.

Foreign direct investment refers to those private foreign investments which are invested directly in productive activities such as setting up of a company etc. In this type of investments there is direct control exercised by the foreign investors on the investment. They are free to decide the couse of their investments.

Foreign institutional investment or partfolio investments refers to those investments which are invested not in directly productive activities for example in shares and stock of companies. There is no full control exercised by portfolio investors over their investments.

Private foreign investments hepls in the process of economic development of a country in following ways.

1) **It Accelerates the Process of Development :** Private foreign investments speeds up the economic development process mainly by expanding the productive capacity of the economy. It helps in the setting up of basic and key industries such as iron and steel industry, heavy electricals and engineering goods industry, hydro-electric projects etc.

2) **It Provides Help to Develop Necessary Infra-Structure :** The foreign investments are very much utilized in developing machinery and capital goods industires which serves as a necessary infra-structure for the growth of other industries in the economy.

3) **It widens the Extent of the Market :** One of the most important factors that hinders economic growth of underdeveloped countries is the small size of their markets which is turn leads to low inducement to invest, low income and low savings. The private foreign investments not only widens the size of these markets but also provides with new source of raw materials that greatly helps in the development process.

4) **It Brings Modern Technologies :** In an underdeveloped economy, there exists traditional techniques of production and low level of skill and expertise which directly hampers the production capacity of the economy.

The private foreign investments brings with it modern and up-to-date technologies that greatly enhances the productivity of the economy. In addition to this, there is continuous upgradation of skill and expartise required for the development process.

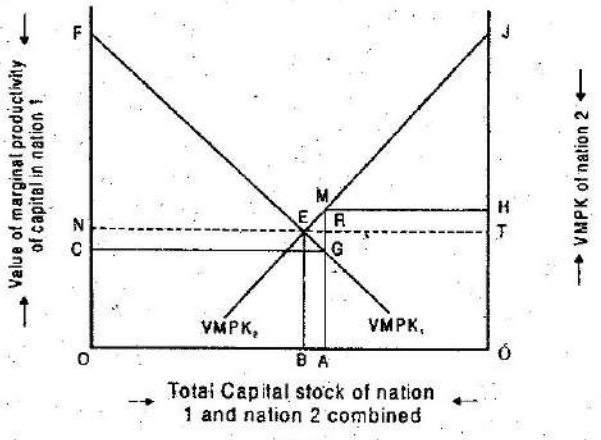
5) **Augments Production :** The private foreign investments when applied to directly productive activities greatly enhance the domestic production level. It creates the spirit of healthy competition and brings efficiency in production. There takes place an improvement in production function both upwards and onwards. The improvement in the quantity and quality of production quickers the pace of economic development in the economy.

These are some of the most important implications of private foreign investments in an economy. its effects are discussed in the heading below.

Effects of Private Foreign Investment :

Private foreign investment effects both the investing countries and the host country. The effects of private foreign investment can be explained with the help of diagram as given below. For simplicity of the analysis we have assumed a two country and two factor (labour and capital) model.

Fig.1



In the above figure 1. we assume that there are only two nations i.e. nation 1 and nation 2 with a total combine capital stock of OÓ. Of the total capital stock OÓ, OA belongs to nation 1 and the rest ÓA capital belongs to nation 2. The $VMPK_1$, and $VMPK_2$ curves denotes value of marginal productivity of capital in both nations for various levels of investment. Under competitive conditions, the MP_k represents the return on capital.

Now, from the figure it can be seen that nation 1 invests its entire capital stock OA domestically on a yeild of OC. The total productis thus measured at OFGA of which OCGA goes to the capital and the rest CFG is the share of labour. Similarly, domestically nation 2 invest its capital stock ÓA where the total product is ÓJMA of which ÓHMA is the share of capital and HJM goes to the labour. This is the case when free international capital movement is restricted.

Let us assume that there exists free international capital movements between nation 1 and nation 2. It is seen from the figure that the return of capital in nation 2 is higher than in nation 1. Therefore AB amount of capital flows from nation 1 to nation 2 so as to equalize at BE i.e.- BE=ON=O T. The total domestic product in nation 1 is OFEB to which the area ABER must be added which is the return on foreign investment giving the total national income at OFERA. As a result of free flow of capital from nation 1 to nation 2, the total return of capital in nation 1 increases from OCGA to ONRA and that of labour decreases to NFE. This is the effect on the investing country.

The enflow of foreign capital (AB) into nation 2 lowers the rate of return of capital from ÓH to ÓT. The total domestic product increases from O JMA to O JEB, the increase in the product is given by ABEM where ABER is the share of foreign investors and ERM remain the net gain in total product of nation 2. The total return to capital in the home country decreases from ÓHMA to ÓTRA while the total return to labour rises HJM to TJE. This is the effect of private foreign investment in the host country.

International capital transfers also affect the BOP of the investing and host countries. In the year in which foreign investment takes place, the earnings of foreign investor increases and causes Balance of Payment deficit. These type of transfers also affects the tax system of the host country. Moreover, the terms of trade are also very much likely to be affected.

3.7 Summing Up

Thus, in this unit we have seen how private savings and taxation forms of the domestic source of financing development. Besides we saw how creation of money can form a feature in the fiscal policy assistance of financing development. Further, the deal gap analysis requires a reminder of the elementary growth theory. At the end we classified foreign private investment in FDI and FII and distinguished between them.

3.8 Additional Questions

1. What are the different domestic sources for financing development?
2. Discuss private savings as a source of financing development.
3. Explain the role of taxation in financing development process.
4. Discuss the process of financing development by money creation and its effects.
5. Discuss the dual gap analysis.
6. Explain foreign borrowing and the debt servicing problem.
7. Discuss the effect of private foreign investment on the host and the investing country.
8. Write short notes on -
   (1) FDI
   (2) FII
   (3) Role of private foreign investment.

3.9 Suggested Readings

1. N. T. Somashekar: *Development Economics (Including Environment Concepts*
2. A. P. Thinwall - *Growth and Development*- With Special Reference to Developing Economics

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UNIT- 4

ENVIRONMENT AND DEVELOPMENT

Contents:

4.0 Introduction

This unit deals with the interlinkage between environment and development. It studies the interdependence between the environment and the economy. It discusses the concept of poverty as a causes of environmental degradation. The concept of sustainable development is also discussed. The unit further discusses topics like- micro planning for environmental and eco-preservation, watersheds and joint forest management. Towards the end of the unit the role of state in environmental preservation is highlighted.

4.1 Objectives

After going through this unit–

- environment and economy interdependence;
- how poverty leads to environmental degradation;
- the concept of sustainable development;
- various planning for environmental and eco-preservation; and
- how the state can help in environmental preservation.

4.2 Environment and Economy Interdependence

There exists a very strong interlinkage and interdependence between environment and economy. The economic system is very much dependant on the environmental system for its growth and development and vice versa. The economy operates from within the environment system. The economy includes all the firms that make up industry, households performing the double role of consumers and suppliers of labours, the government and the institutions that intermediates between all these groups such as the markets, the state of technology, stock of capital etc. By environment we mean all natural resources including land, ecosystems, resource deposits under the land surface, ocean's and atmosphere and natural climate etc.

There are basically four functions performed by environment in supporting economic activity. These are -

(1) Provides the economic system with basic life support services.

(2) Provides raw materials and energy for economic production and household activity.

(3) It functions as a waste sink.

(4) Provides household with direct source of amenity.

These functions are briefly discussed below.

(1) Environment provides the economic system with basic life support services : The environment provides life supporting services like climate regulation, the operation of water cycle, the regulation of atmospheric composition and nutrient cycling. In other words, the

environment provides a biological, chemical and physical systems that allows human life to exist.

(2) **Environment provides raw materials and energy for economic production and household activity :** The environment provides raw materials which includes renewable natural resources like forest and fisheries, non-renewable natural resources like minerals. However, there should be careful exploitation and utilisation of the natural resources.

(3) **Environment is used as a waste sink :** The environment plays a very important role in absorbing the waste products of economic and household activities. But there are certain waste that are difficult for the environment to dispose off safely such as radio active waste etc. So, the environment system have no infinite ability to absorb waste.

(4) **Environment provides households with direct source of amenity:** The environment system also allows people to derive utility from the scenic beauty and wildlife views of the environment.

An important point to consider is that parts of the environment serves more than one function. For example- water bodies like oceans supports life in water as well as are sources of many minerals and resources. However, as increase in the demand of a particular function of environment by the economy reduces the ability of the environment to provide other services. For example-excessive cutting down of trees from forest would reduce the ability to provide fresh air.

An important feature of the interdependant economic-environment system is "Co-evolution". This means that the way in which the economic sub-system evolved over time depends on the changing condition of the environmental sub-system and vice versa. The environmental system may change for reasons endogenous to economic system as well as exogenous to economic system.

Important Points to Consider :

1. The basic functions performed by environment in supporting economic activities.

2. The demand of a particular function of environment reduces its ability to supply other services.
3. Co-evolution of the economic-environment subsystem.

4.3 Poverty and Environmental Degradation

A major cause for increasing environmental degradation especially in developing countries is the increasing case of poverty in these countries. In underdeveloped countries a majority of the population lives below poverty line. They survive from cultivations from small plots of lands that may be too dry or sandy to sustain permanent cultivation. With every use of the cultivable land, the fertility of the land decreases. However, the poor people generally do not have the means to increase the productivity of land. With the increasing use of land for production, the rate at which the land degrades also increases.

Another factor in the cycle of rural poverty and environment degradation is deforestation. The poor people are mainly engazed in the collection of woods from the forest areas and even resort to cutting down of trees for fuels. The cutting down of trees for use as fuel for cooking reduces the forest cover. It affects the amount of rainfull with consequent impact on the agricultural production. Environmental degradation that begins on a local scale can easily change into a regional problem. The degradation pollutes drinking water sources, contaminates ground water which results in the loss of vegetation. The environmental degradation along with natural disasters including floods, droughts and mudslides can have a devasting impact on both the local and the regional agricultural economy.

In order to prevent such environmental degradation due to rural poverty, government regulation is necessary. However, the capacity of the government to prevent such degradation of environment in developing countries is usually very weak. The short-run measures like proper implementation of public distributionsystem, providing adequate services like water and medical help to the poor can help in reducing environmental degradation. However, the main solution lies in improving the agricultural production of the lands that are already in use. This would require the introduction of modern means of production in agriculture as symbolised in the green revolution.

But there have been many criticisms of green revolution mainly due to environmental reasons. It has been rightly pointed out that irrigation without proper drainage system tends to result in degradation of soil. So, modern cultivation techniques should be adopted with proper precautions to have less environmental impact.

4.4 The Concept of Sustainable Development

The report called "Our Common Future" brought out by the World Commission on Environment and Development made the common use of the term 'sustainable development'. In the present day world, the term sustainable development has attained world wide acceptance yet no single definition of sustainable development is available that is accepted by all. According to the World Commission on Environment and Development or the Brundtland Commission, sustainable development is the development that meets the needs of the present generation without compromising the ability of the future generations to meet their own needs. It is a process of change in which the exploitation of resources, direction of investments, technological development etc are all in harmony and enhance both current and future potential to meet human needs.

Human Welfare requires the production and distribution of goods and services which in turn depends upon the availability of four main factors. These are- human capital, man-made capital, renewable natural resources and non-renewable natural resources. There has been a gradual shift in the development pattern towards sustainable development in the recent years. The concept ofgrowth gave importance to efficiency and when the process of development begun it put equal emphasis on efficiency as well as equity.

And then came the idea of social development which took into account the proper valuation of all resources along with the earlier two concept of efficiency and equity. And when the team sustainable development was used it included all the earlier topics in addition to resource stock recognisation and resilience.

Components of Sustainability :

There are three basic components of sustainable development:-

(1) Economic Component

(2) Social Component

(3) Environment Component

The economic componentof sustainability requires that societies pursue growth paths that generate optimal flow of income while maintaining the basic stock of man made capital, human capital and natural capital.

The social demension of sustainable development is built on the twin principles of justice and equity. For a development path to be sustainable over long period of time, wealth, resources and opportunity should be equitably shared.

The environment component requires sustainable resource use, efficient sink function and the maintenance of stock of natural capital.

The three components are very much interdependent. The objective of sustainable development is to maximise the goals in the three systems balancing the trade offs and setting priorities among various goals.

In broad context, capital may be distinguished into three types-namely-human capital k_h, man-made capital k_m and natural capital k_n. k_m includes the machinery, roads, bridges etc. The depreciation of man-made capital over time is offset by new investments. The depreciation of k_h can be, to some extent offsetted by providing proper training facilities and educational opportunities. The natural capital k_n includes renewable and non-renewable energy and material resources, clean air, water, biodiversity etc.

On the basis of these capital forms, two definitions of sustainability can be considered. The first definition is termed as "weak sustainability". It implies that the total capital should not decline. It clearly assumes that we can aggregate k_h, k_m and k_n in some units and they are substitutes for each other. The next definition is of "strong sustainability". It maintain that sustainable development requires to keep the stock of natural capital k_n intact. That is, k_n is not substitutable by the other forms of capitals. For example, any decrease in k_n can't be substituted by an increase in k_h and k_m

Stop to Consider :

1. The relation between poverty and environment degradation.
2. The definition of sustainable development.
3. The different forms of capital.
4. The components of sustainable development,
5. Weak sustainability.
6. Strong sustainability.

4.5 Micro Planning for Environmental and Ecopreservation

The planning policies that are usually undertaken can be classified briefly into micro-level policy planning and macro policy planning. These are discussed below-

Micro-level Policies :

The micro-level policies are mainly the market based policies that are used for environmental preservation. The policies are-

1) Price based instruments.
2) Quality instruments.
3) Hybrid or mixed instruments.

These are the micro-level policies for environmental and ecopreservation.

Macro-level Policies:

Macro-economic policies includes both stabilisation and structural adjustment policies that can be used by the government. The stabilisation policies includes fiscal policies, exchange rate policy and monetary policy. The structural adjustment policies are such as trade liberalisation and domestic price policies etc. These policies targeted towards poverty alleviation and population control have a positive effect on the environment. Here, the need is to develop a proper co-ordination between the micro and macro level policies so that the safety of the environment can be well ensured.

4.6 Watershed Management

Watershed describes an area of land that drains downslope to the lowest point. The water moves through a network of drainage pathways, both underground and on the surface generally, these pathways converge into streams and rivers which become progressively larger as the water moves on down and eventually reaches larger water bodies like oceans. Every stream, tributary or river has an associated watershed and these small watershed joins to become larger watersheds. Thus, the proper management of these watersheds is typically termed as watershed management.

Watershed Management is a process of integrated decision making regarding uses and modifications of land and water within a watershed. Watershed management provides a frame work for integrated decision making where we strive to-

1) assess the nature and status of watershed eco-system.
2) define short-term and long-term goals for the system.

3) determine objectives needed to achieve selection goals.

4) assess both benefits and costs of the actions.

5) implement the desired actions.

6) evaluate the effects of different actions and progress towards the goals.

7) re-evaluate goals and objectives as part of an iterative process.

Watershed management encompasses from up land to flood plains and river channels. It focuses on the possessing of energy and nutrients which are carried downslope through the system. Hence, the concept of watershed management requires the use of social, ecological and economic sciences. In other words, the management of all the things that constitutes a watershed area can be termed as watershed management.

4.6.1 Watershed Management in India

In India, watershed management has received the needed importance and governmental backup for proper development of watershed areas. It has been properly described as the engine of growth and sustainable development specially in the rainfed and drought prone areas. It has received good policy support both at the centre and at the state level together with the focus being on improving food security, eliminating poverty and sustaining the quality of natural resource base. In India, the various important policies and programmes having an important bearing on the watershed development project are-

1) National Agricultural Policy
2) Water Policy
3) Land Policy
4) Forest Policy etc.

Till 1997, in India, watershed development projects have been taken up under different programmes. These programmes are mainly-

1) Drought Prone Area Program (DPAP),

2) Desert Development Program (DDP),

3) National Watershed Development Program in Rainfed Areas (NWDPRA).

All these development programs were initiated by the Ministry of Rural Development and Ministry of Agriculure. But it was soon realised that though the main focus of all these programs varied, these programs had the common

objective of land and water management for sustainable production. This resulted in developing common guidelines for all the programs. The common guidelines were used by the centrally sponsored scheme for watershed development in India. The common guidelines provided special emphasis to improve the economic and social condition of the poor and the disadvantaged sections of the watershed community. These watershed development schemes laid much importance on equitable distribution of the benefits of land and water resources of the areas. The common guidelines were in operation for about 5 years. Subsequently, the Ministries of Agriculture and Rural Development jointly developed the Common Principles for Watershed Development in 2000. The new guidelines gave more flexibility to all watershed development projects. It laid more emphasis on local capacity building through raining activities and also by empowering community organisations.

4.7 Joint Forest Management

Forest Management refers to the proper management of the forest areas regarding the use of forest resources and its proper allocation. Recently, there has been a major shift towards a more decentralised and people oriented forestry. It is now being increasingly recognised that local people need to be involved in establishing sustainable forest management system. There is a great emphasis on the process of decentralisation of the authority and responsibility for the preservation of scarce forest resources. The greater access to and control of forest resources by the local people have resulted in an improvement in forest protection and management which has benefited the forest system immensely.

4.7.1 Forest Management in India

In India Joint Forest Management seeks to develop partnerships between local community organisations and state forest departments for sustainable management of the forest as well as joint benefit sharing of forest lands. The Joint Forest Management in India was introduced in the National Forest Policy of 1988 which envisaged people's involvement, particularly of the women in meeting their basic forest related needs and in managing the local resources. In 1990, the Ministry of Environment and Forest issued a circular whereby guidelines were provided for involvement of village communities and voluntary agencies in the regeneration of the degraded forests. The approach of forests by the state government and the local people who would share the responsibility for managing the forest resource and also the benefits from the forest resource. The scheme had mainly three units-

1) Village communities which included mainly the indegenous people.

2) Voluntary organisations or agencies.

3) The state government.

The joint management by these three units can effectively serve the purpose of proper forest management.

The important provisions of the scheme are given below.

1. The Joint Forest Management scheme is to be implemented under an arrangement between the voluntary agencies, the village community and the state forest department.
2. The beneficiaries or the voluntary agency would not be given any ownership or lease rights over the forest land.
3. The selected site is prepared in accordance with the working scheme duly approved by the state government in consultation with the beneficiaries.
4. The beneficiaries are to be paid by the forest department.
5. Grazing should not be permitted in the forest land protected by the village community.
6. The benefit of people's participation should go to the village communities and not to any other commercial ventures.

In accordance with this schemes, many parts of rural India have organised themselves into formal and informal groups for the protection and management of forest in their areas. In this respect, mention can be made of states like Gujarat, Karnataka, Rajasthan, Orissa, Haryana and Punjab where a marked improvement can be noticed in the quality and area of forest in these states as a result of involvement of the local communities in the venture of joint forest management.

Stop to Consider:

1. Watershed Management
2. Watershed Management in India
3. Joint Forest Management
4. Joint Forest Management in India

4.8 Role of State in Environmental Preservation

Underlining the importance of sustainable development, the relation between

economy and environment and the poverty as an important element of environmental degradation, the role of state has been ever increasing in environmental preservation. With new concept like watershed and forest management upcoming more recently the state has been entrusted with more and more responsibility for preserving the environment. Historical experience shows that environmental resources suffer massive degradation as a result of free market exploitation. As a result environmental management has become one of the most important avenues for increasing role of the government.

Now, for the management of environment the institutional alternatives available are-

1) Market

2) Government

3) Community or association of people.

The government can use non-market policy instruments or market based instruments or economic instruments or a combination of the two instruments. The non-market policy instruments includes the command and control technique are in the form of fines, penalties and threats of legal actions. These type of techniques are mainly used either for facilitating the use of specific technologies for management of environment or for realisation of specific environmental standards. But from practical experiences it has been clearly estimatd that the costs incurred in case of the command and control techniques are generally higher than the use of economic instruments.

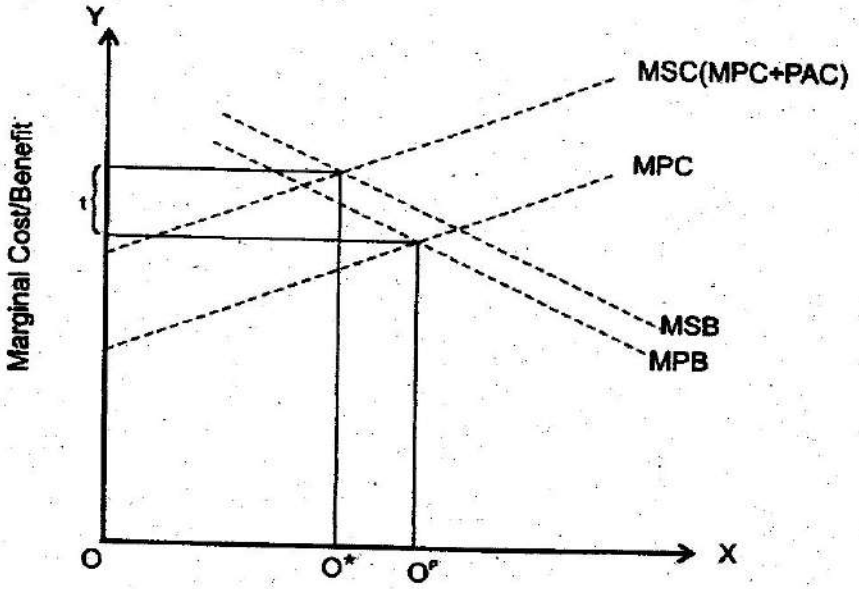
Economic Instruments:

Economic instruments or market based instruments are basically those instruments which make use of market equipments like tax, permits etc. in controlling environmental degradation. It can be divided into three categories-

1) Price-based instruments.
2) Quantity based instruments.
3) Hybrid instruments.

These instruments are briefly discussed below.

1) Price-based Instruments: This wasfirst suggested by Pigoce in the form of taxes or subsidies. The pollution tax or the Pigovian tax can be termed as a corrective instrument to realise th socially optimal level of economic activity generating pollution. It is the tax which is imposed to neutralize the effect of environmental pollution. It is illustrated below with the help of a diagram.



In the above figure, the abbreviations stand for

MSC - Marginal Social Cost

MPC - Marginal Private Cost

PAC - Pollution Abatement Cost

MSB - Marginal Social Benefit

MPB - Marginal Private Benefit.

Here, O* represents the optimal level of output and O^p represents the free market level of output. The value *f* stands for the optimum tax which is imposed and is equivalent to the difference between MSC and MPC at the optimum level of output. O^* is the result of intersection between MSC and MSB curves and O^p is the result of intersection between MPC and MPB curves.

2) Quantity based instruments : Dabs (1968) suggested an alternative to the pollution tax in the form of a system of tradable pollution rights for the management of environment. He proposed that property rights be assigned and offered for sale to the highest bider. This system like pollution tax can achieve the specified environmental target at minimum cost. In an alternative system known as the environmental permit system (EPS), the permits are issued by the environmental authority in terms of emissions from the different sources. The air shed/space is divided into zones and within each zone trading is done where pollution permits are traded on a one-to-one basis. This is the quantity based instruments used for environmental preservation.

3) Mixed/Hybrid Instruments : However, in practice a mixture of both command and control technique and economic instruments have been suggested. The market instruments alone may not be feasible because the

cost incurred in applying these instruments might be very high. Besides, the estimation of damage caused to the environment is very difficult to assess. The exact amount of pollution tax imposed or the determination of the optimal level of pollution permit tradeds very difficult to determine. Besides, the criteria for the fixation of environmental standards raises a lot of debate in this respect. This is, the need is a mixture of both non-market policy instruments and the market policy instruments.

4.9 Summing Up

To summarize in this unit we have seen how the environment and economy are linked up and how they are mutually dependent an each other. Besides the increasing economic activities leads to environmental degradation. Further poverty leads to environmental degradation in a vicious circle and this is an unending process. Sustainable Development stresses on the fact that we along with our future generations have equal right to enjoy the same amount of natural resources and the same kind of environment. At the end the pole of the state is highlighted in the conservation and preservation of environment.

4.10 Additional Questions

1. Explain the interdependence between environment and economy.
2. Discuss poverty as a cause of environmental degradation.
3. Discuss the concept of sustainable development.
4. What are the main components of sustainability?
5. Write short notes on-
   (i) Strong sustainability
   (ii) Weak sustainability
6. Discuss the concept of watershed management. Also discuss the watershed management process and policies in India.
7. Explain the concept of joint forest management with special reference to India.
8. Discuss the role of state in environmental preservation.
9. Write short notes on-
   (i) Price-based instruments
   (ii) Quantity based instruments
   (iii) Mixed instruments

4.11 Suggested Reading

1. Kolstad, Charles, D.: *Environmental Economics*, OUP
2. Hanley, Shogren & White: *Environmental Economics*, MacMillan
3. Shanter, U: *Environmental Economic*, OUP
4. Bhattacharjya, R.: *Environmental Economics*, OUP

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