# CHAPTER THREE

# 3. THEORIES, MODELS AND APPROACHES TO RURAL DEVELOPMENT

# Introduction

Rural development under the contexts of developing countries pivots upon eliminating absolute poverty and inequality within the framework of sustainable and growing economy. This in turn demands addressing situations, conditions, structures and relations which either

* Cause rural families' inability to adequately provide for themselves or
* Limit the purchasing power of rural dwellers, or
* Prevent rural dwellers from having easy access to the essential goods and services.

The primary sources of poverty-generating variables such as assets, occupation, employment, wages, demographic factors; and characteristic variables such as income, health and status, all interact to constitute the overall process of rural underdevelopment or poverty-generation.

Rural development is a complex process requiring a complex approach that considers different dimensions of rural economic and social environment. A theory is expected to perform two major functions, namely, explanation and prediction of a phenomenon. There is no universally acceptable theory of rural development which can explain the existing phenomenon of rural development and predict its future course.

There are only hypotheses and propositions that constitute higher level of generalizations in the field of development. To the extent that rural develop­ment is a subset of development, hypotheses of development apply to rural development as well. Many such hypotheses emphasize both eco­nomic and non-economic determinants of development, i.e., they are quite comprehensive. Another characteristic of some of the hypotheses propounded by development theorists is that they are not fully opera­tional in the sense that it is very difficult to test them, i.e., they are refractory.

The existing rural development perspectives are focus upon the general development perspectives. Generally, the common development perspectives may emphasize one or more of the following general lines of approach.

1. ***Reductionist approach***: reducing the development condition to one dimension, usually Economic in nature;
2. ***Residual approach***: attacking not the system, but these elements or individuals who do not benefit from development. The residual treatment rests on the assumption that the origins of the poverty or development problem lie in some pathology in the individuals or in the way individuals relate within the social environment;
3. ***Incremental approach***: Minimizing the magnitude of change undertaken and limiting the context within which it is taken. It begins with the acceptance of the basic system of distribution of assets within the society and the initiation of policy interventions, which seek to make only marginal changes within that system.
4. ***Structuralist approach:*** It starts with the examination of the process itself, and examines interrelationships of people and natural environment, and relationships of people in production process. It places the ownership and control of resources at the center of analysis, and considers the historical analysis of commoditization.
5. **Systems approach**: The approach implies a holistic analysis. It emphasizes systemic relationships of environmental, demographic, technological conditions and social responses to them within the rural/agricultural systems.

## 3.1 The Classical School

We begin with an examination of what the great thinkers of the past, particularly the classical economists, contributed to the subject. We can then, in the light of subsequent experience, determine in what respects they were right or wrong.

The economists of the late eighteenth and early nineteenth centuries were primarily concerned with the conditions of economic growth. This was the period of the 'Industrial Revolution' in Europe. The Classical economists-including Adam Smith, David Ricardo, Thomas Robert Malthus, John Stuart Mill and Karl Marx- lived through the period of take-off into sustained growth. The observations of these economists regarding the nature and causes of economic growth are, therefore, of considerable interest. We shall now present some basic ideas of the Clas­sical school of thought, which may still be relevant.

An interesting element of the arguments of the Classical economists was the concept of circularity that characterized the interrelationship between technology, investment and profit. The circularity was inherent in their assertion that the level of technology depends on the level of investment, investment depends on profits, and profits depend partly on the level of techno­logy. This circularity was not accidental or oversight: it was precisely what the Classicists wished to stress, i.e., in economic development, nothing succeeds like success, and nothing fails like failure. In the circular argu­ment, we already have a clue to the difference in the performance of developed and developing countries.

The classical economists did not focus their attention on development or rural development per se. They perhaps assumed that economic growth would naturally lead to development. It was towards the end of World War II around 1945, that development became an important field of study and attracted several scholars. Most of the initial writings on the subject dwelt on explaining the meaning of development, identifying factors affecting development, and exploring interrelationships among the factors. Two distinct schools of thought emerged in the fifties, namely, Capitalist and Marxist,

And two distinct theories corresponding to them, namely,

1. the 'Modernization Theory' of the Capitalist School, and
2. the 'Dependency Theory' of the Marxist School.

## 3.2 The Modernization Theory

This is a broad school of thought. Rural/agricultural development thinking until mid 1970s was dominated by the concept of modernization. This is an introduction of new often western technology and management practices, sometimes accompanied by changes in size and structure of landholdings, with the intention of emulating patterns of agricultural development which had evolved in developed countries. There are no single models of modernization.

**Characteristic concepts of modernization**

The world is dichotomized into modern and traditional. The rural economy in developing countries is traditional dominated by traditional or peasant farming or subsistence oriented agriculture, handicrafts and poor markets. According to modernization perspective, the traditional economy and agriculture need to be transformed into modem large-scale market-oriented agriculture employing modern technology transferred from developed countries. **Transfer** is the central concept of modernization perspective.

In this perspective, agricultural development is envisaged to pass through stages of growth as inevitable linear process emulating the historical process through which agricultural development in developed countries has passed. **The stage** principle or concept is used to organize transformation activities into institutional context. There is an underlying notion of inevitability and linearity in the transformation process.

The transformation process is facilitated by transfer of technologies, know-how and institutional models. Diffusion of improved ways of doing things through the adoption of new practices and techniques for productive and research process is part of transformation activities in the modernization framework. The essence of transfer of western technology and rationality is facilitating modernization with;out radical and revolutionary change of class structure in the development process, but only through removal of social and ideological obstacles to such transformation process.

In the process of development, traditional social and political institutions would be replaced by modern ones. Traditional feudal forms of political power will also be replaced by democratic forms of governance. Urbanization along with technological transformation of agriculture is an insight validated by the experience of the newly industrializing East Asia and Southeast Asia countries.

In the context of rural development, the modernization perspective points out the inevitability of technology for increasing production, the replacing of feudal institutions by democratic ones, and the expansion of greater scientific temper, and secular values and norms. The transfer process is conceived to take place in two contexts:

1. new and improved technology to be the heart of development and requiring more investment in the formal research process.
2. transfer of institutional forms from modernizing countries for rapid transformation or development.

The emphasis is, therefore, on transferring technologies and institutions rather than on strengthening and improving what already exists. The transfers include for example:

* + material transfer - chemical inputs, genetic materials etc.
	+ cultivation practices (e.g. rice transplanting)
	+ know-how and fixed designs (blueprints) for technology, institutions or approaches to research.
	+ technology generation capacity through institution building and technical assistance.

**Criticisms**

The criticism of the modernization approach is that the transfer is not as such located within the contexts of recipient countries. There is some ignorance that producers and farmers in developing countries are experimenting in their own way for adaptation. Understanding should be there that the transferred technologies should be compatible with the opportunities and constraints faced by the producers and farmers applying the technologies.

The perspective seems to underrate the importance of searching for type of technologies and the means of modifying them within the capacity of local formal and informal R & D systems. It undermines the existence of different interest groups within communities and research systems with competing influences on resource allocation.

This hierarchical transfer of technology model gives inadequate attention to feedbacks from farmers. The approach is centralist. The approach does not accommodate the participation of stakeholders in the development and research process. The difficulties of the approach are sharper when dealing with institution. The institution transfer is elitist and centralist and does not consider the indigenous social and institutional contexts.

The modernization theory was not able to predict or explain:

* the flattering of the post World War II boom in 1960s;
* world-wide depression in 1970s;
* shifts in international trade in favor of the developed countries; and,
* adverse environmental impacts of development.
* It does not account the effect of the absence of effective control and implementation of rules and regulations in developing countries, which is an important constraint to development of trade, investment, business and markets and other developmental efforts.

An important reflection is the need to understand the advantages of multiplicity of actors on development of technology and institutions for complex, diverse and risk-prone conditions of small-scale agriculture dominated rural economy and society.

## 3.3 The Dependency Theory

According to this school, the developed capitalist world changed the colonized nations into sources of cheap inputs to production in the capitalist nations and markets for products, hindering and distorting the development way of developing countries. The school suggests that class struggle is the engine of social change and development.

The school is against the modernization theory, which promotes agri-business and the integration of agrarian economy of the developing countries into the world capitalist system. The school argues for revolutionary way of change and not for evolutionary approach. Other arguments of the dependency theory include:

* + The developed countries could not have achieved the level of development that they have without the systematic exploitation of developing countries;
	+ That the process of development passes through a series of stages is an illusion, and developing countries could not attain development following the path adopted by developed countries, so long as the exploitative world system exits;
	+ Countries that are now poor were not so to begin with, rather they have been forced into the stage of underdevelopment by a global system of capitalist exploitation;
	+ Developing countries can develop only by snapping their links with the developed countries;
	+ Different aids offered are also claimed to serve as a vehicle to promote the interests of international capital in different forms, while food aid is used as political weapon. Some supports by developed countries are conceived by the school as means to forestall rural social unrest due to shortages of food production.
	+ Multinational corporations are considered to be the center of the world capitalist system that promote the interests of the international capital and the dependence of developing countries, through facilitating conditions for and influencing the behavior of aid agencies to serve the interests of the Multi-national Corporations (MNC), for example, tractorization, commercializing seeds, fertilizer and pesticide; growing role of MNC in vegetable and flower production.

In connections with the above dependency relationships, different issues are raised, including the genetic erosion problem taking place in developing countries as a result of MNC efforts to acquire diverse resources as much as possible and cause genetic vulnerability by promoting a few internationally selected crop varieties, and granting of legal right for selecting and maintaining local genetic resources.

In the context of rural development, rural-urban linkage is being exploitative- the urban exploiting the rural. Policies are biased against rural economy and society. The school therefore focuses on relieving rural economy and society from urban elitists’ pressure.

The school was popular in 1970s, Raul Prebish being the forefront theoretician for the perspective. However, in the 1980s, the theory lost much of its initial popularity, and was criticized as being 'too deterministic' and 'too simplistic'. The basic argument of the theory that 'underdevelopment' in developing countries (the periphery) is the result of 'development' in developed countries (the core/centre), was falsified by the experience of the East Asian tigers. These tigers were initially the developing countries, (i.e., they were on the periphery), but in course of time they became highly developed and competitive, i.e., they moved from the periphery to the core.

These countries have shown a significant progress in development without snapping their relations with the international capital and developed countries. Besides, the theory did not consider the role of several inter­nal factors, such as excessive population growth, underdeveloped human resources, shortage of natural resources and c1ass struggle, in explaining the existence of 'underdevelopment’.

In the context of rural development, we could say that the theory provides a useful caveat that, while identifying the determinants of rural development, we should critically examine various intersectoral linkages (both backward and forward) and interactions, and determine whether they are beneficial to rural people or not. If not, necessary policy mea­sures should be suggested to make the linkages and interactions beneficial to rural people. A similar exercise needs to be done at the national level, to find out which international economic and political relationships are beneficial, and which are harmful to economic development in general, and rural development in particular.

## 3.4 Rosentein Rodan’s Theory of Big Push

This is a development model that falls in the framework of modernization. It argues that development that proceeds bit by bit will not add up in its effects to the sum total of a single bit, big push. A minimum quantum of investment is a necessary, though not sufficient condition of success. Rosenstein-Rodan identifies three different kinds of indivisibilities that may be considered to be the main bottlenecks to the development in developing countries. These are

1. indivisibility in the supply of social overhead capital (lumpiness of capital),
2. indivisibility of demand (complementarity’s of demand),
3. the indivisibility (kink) in the supply of savings.

He argues that a big push in terms of a high quantum of investment is required to scale the economic obstacles to development created by these three kinds of indivisibilities, and the external economies to which they give rise. This implies that the development process is a series of discontinuous 'jumps', and each jump requires a 'big push'. Besides, there may finally be a phenomenon of indivisibility in the vigor and drive required for successful development policy. Isolated and small efforts may not add up to sufficient impact on growth. An atmosphere of development may only arise after a critical minimum level of investment has been reached. Rosenstein does not offer any specific and practicable suggestions to overcome the adverse effects of the indivisibilities, but he suggests that international trade may reduce the size of the minimum push required to obviate the effects of indivisibility (complementarities) of demand.

A major criticism of this theory is that the resources required to give the 'big push' are of such a high order, that a developing country like Ethiopia cannot afford them.

## 3.5 Leibenstein’s 'Critical Minimum Effort Thesis'

The central idea of Harvey Leibenstein's thesis is that in order to attain sustained secular growth, it is essential that the initial stimulant to devel­opment be of a certain critical minimum size. According to Leibenstein, economic backwardness is characterized by a set of interrelated factors, which have a certain degree of stability at their small equilibrium val­ues. The actual values are different from the equilibrium values, because the economy is always being subjected to stimulants or shocks. The stimulants have a tendency to raise per capita incomes above the equi­librium level. But in backward economies, long-term economic devel­opment does not take place because the magnitude of stimulants is too small. In other words, efforts to escape from economic backwardness are below the critical minimum needed for sustained growth.

For small values of the stimulant, the generated income-depressing fac­tors are, in the long run, more significant than the induced income-raising forces, but the reverse is the case with high values of the stimulant. Popu­lation growth may be cited as an example of this phenomenon. A small increase in capital through raising incomes will stimulate more than an equivalent increase in population, and a proportional decline in per capita income. There is, of course, a biologically determined maximum rate of population growth between 3 and 4 per cent. As such, persistent capi­tal accumulation above a certain minimum rate would eventually permit development. The need for a minimum effort arises to:

* overcome inter­nal and external diseconomies of scale,
* to overcome income-depressing obstacles which may be generated by the stimulants to growth, and
* to generate sufficient momentum in the system, so that the factors that stim­ulate growth continue to play their part.

Leibenstein's thesis is more realistic than Rosenstein Rodan's big push theory. Giving a big push to the program of industrialization all at once is not practicable in underdeveloped countries, while the critical minimum effort can be properly timed and broken up into a series of smaller efforts to put the economy on the path of sustained develop­ment. This theory is also consistent with the concept of decentralized democratic planning, to which most developing countries like Ethiopia are wedded. Therefore, this paradigm provides good clues as to the quantum of investment that is absolutely essential to make a program take off.

## 3.6 Lewis’s Model of Economic Development with Unlimited Supply of Labour

This model also falls within the framework of modernization theory. The economic development model developed by W. Arthur Lewis (1954 is based on the fact that in many developing countries, there exist large reservoirs of labor whose marginal productivity is negligible, zero, even negative. The labor is available in unlimited quantities, at a wage equal to the subsistence level of living. Subsistence wage rate plus a margin is sufficient to overcome the friction of moving from subsistence sector to the capitalist sector. As the supply of labor is unlimited, new industries can be set up and the existing ones can be expanded without limit, at the ruling wage rate.

Since the marginal productivity of labor in the capitalist sector is higher than the ruling wage rate, there results a capitalist surplus. This surplus is used for capital formation, which makes possible employment of more people from the subsistence sector. The increase in investment by the capitalist raises the marginal productivity of labor, which induces capitalist employers to increase their labor force till the marginal productivity of labor falls to level equivalent to the ruling wage rate. This process goes on till the capital­ labor ratio rises to the point where the supply of labor becomes inelastic.

Some critics have pointed out that Lewis' optimism concerning development by absorption of disguised unemployment from agriculture is unfounded, because it is not possible to transfer a large number of workers permanently and on a full-time basis from agriculture to industry, without a drop in agricultural output, i.e. the marginal productivity of labor in agriculture is not zero.

Technical progress in the capitalist sector may also increase the share of profits in national income as long as there is surplus. The share of profits increases, both because the profit ratio within a capitalist sector of a given size may increase through innovation, and because the capitalist sector itself grows. Capital is created not only out of profits, but also out of bank credit.

According to Lewis, the process of growth cannot continue indefinitely, and must come to an end on account of a number of factors. When this happens, the process of capital formation can still be kept going by stimulating immigration or by encouraging export of capital to countries which possess abundant supplies of labor at the subsistence wage rate.

The basic premise of the Lewis model is that labor productivity in agriculture must increase substantially in order to generate surplus in the form of food to be used for development of the non-farm sector. However the relevance of the model is constrained by a number of factors including:

Labor unions may push the wage rate up as labor productivity increases, and keep the rate of profit and rate of capital formation lower than expected;

The capitalist employer may use the surplus for speculative or non-productive purposes, instead of using it back for development purposes. The capitalist industrialist may use capital-intensive technology instead of labor-intensive technology that may pool labor from rural sector;

To meet their rising expectations, rural people may consume more and save less than predicted by the model, and thereby dampen the pace of development. At times the existence of surplus is questionable, especially during times of peak season activities.

The Lewis model fails to consider the possibility of change in productivity in agriculture. Cochrane (1996, cited in Singh, 1999) reviewing the Lewis' and Ranis-Fei models concludes that the creation of investment capital needed to employ the surplus workers released from agriculture is the critical missing element in the models. He then suggests the resources to finance the expensive process of agricultural modernization can be obtained in anyone or in a combination of three basic ways:

1. by squeezing more agricultural surplus;

2. by slowing down the rate of investment in non-farm sector and in basic infrastructure; &

3.by obtaining foreign loans and grants.

Of these three sources, the foreign loans and grants are, he asserts, the least expensive. He further states that the growth rate of agricultural production in a developing country in the early stages must be raised high enough to meet its expanding food requirements. For this to happen, he argues, the pool exerted on agriculture through higher market prices will not be enough: agriculture must be 'pushed and pushed hard, by a strategy emphasizing the use of modem technology and supporting infrastructure and services. Singh (199) add to the suggestion made by Cochrane, arguing that no strategy of agricultural and national development would ever succeed in the absence of appropriate population control measures, and a congenial international economic and political environment.

## 3.7 The Human Capital Model of Development

The model stresses the importance of investment in human capital in the process of economic and social development. By human capital we mean acquired mental and physical ability through education training, health care, and pursuit of some spiritual methods. The acquisition of human capital is largely through the investment of human effort and money. For example schooling model relates economic development to schooling. The classical and neoclassical economists did not explicitly include the quality of human resources in their theoretical framework; labor was taken to include both physical and mental effort (Alex, 1983 cited in Singh, 1999)

It was Theodore Schultz (1964) who elaborated the concept of human capital, and explicitly considered the investment in human capital as important determinant of economic development. The model considers the totality of human potential, and emphasizes the need to harness it for the good of the people. It respects people's culture and religion, and social values and structures. The human capital approach to rural development is based on the following two assumptions, which have been ignored in the classical theory of development;

1. Human physical and mental capabilities are partly inherited and partly acquired, and they vary from individual to individual, i.e., the classical assumption of homogenous labor force does not hold.
2. Human capital directly contributes to development through its positive effect on productivity, and through reduction in resistance to the diffusion of new technologies in the economy, especially in the rural sector.

This model thus shifts the emphasis from physical capital formation to human capital formation and from industrial development to rural development, as a basis for overall development. This model seems appropriate for developing countries where a lot of under developed human resources with potential for development exists. Besides, human resources are renewable, and hence inexhaustible.

Therefore, human capital can be substituted for exhaustible non-renewable physical capital in the process of development, and hence relax the constraint on development imposed by inadequacy of physical capital to a large extent. In fact strategies for development of the tertiary (services) sector, which is the fastest growing sector all over the world requires skilled, experienced and innovative human resources for their success. Human resource development through nutrition, health care, appropriate education, training and empowerment deserves the highest priority now also under Ethiopian conditions.

## 3.8 Unimodal and Bimodal Approaches to Rural Development

Unimodal and bimodal rural development approaches are defined in terms of the path selected for development of agriculture, for agriculture is the primary and core sector predominantly determining the economic and social development of the rural sector (rural development) in many developing countries today. The central axes of the debate by the two approaches are

* the argument for the necessity of the development of large-scale units of farm production (bimodal or capitalist approach to agricultural development) and
* the argument for agricultural transformation on the basis of small-scale peasant farms (unimodal or neo-populist approach).

**Unimodal approach** is based on conceptual perspective of specific peasant economy. It argues that small producers who are not separated form their means of production and who survives in the sense of household producers retain a degree of control over land and family labor in spite of secular differentiation that may take place in the economy due to commoditization and commercialization. The strategy aims at the progressive modernization of the entire agriculture sector (e.g. Japan and Taiwan).

The approach's major strategy is maximum mobilization of labor and land resources of the developing countries. The approach, cognizant of the fact that agriculture is subject to demand constraints in relation to non-agricultural sectors and the resulting purchasing power constraint to use of purchased inputs produced dom;2estically or imported, underscores the importance of rapid technical change, particularly divisible innovations that leads to the wide spread increase in the productivity of land and labor.

The success of individual farm units in allocating resources so as to minimize costs is an essential ingredient of efficient agricultural strategy. It is however the nature of technical innovations and their diffusion among farmers that is decisive in minimizing the cost of the sector-wide expansion of farm output and in determining the pattern of development.

**Bimodal approach** is a crash modernization strategy that concentrates resources in highly commercialized sub-sector, with the resulting development pattern based on a dualistic size structure of farm units (e.g. Mexico, Colombia). The approach is based on differentiation theoretical perspective which asserts that commoditization and commercialization process inevitably generate differentiation in agrarian societies whereby rural producers are set apart into distinct classes (agricultural capitalist, small farmer, land less agricultural employee) and producing a dual size structure of farm units (Harriss, 1982).

These two agricultural development paths are different in their contribution to achieve the three major objectives of an agricultural development strategy. The objectives are:

* 1. expansion of farm output and income
	2. advancing structural transformation, (raising the welfare of the farm population and
	3. fostering changes in rural attitudes and behavior that will have beneficial effects on the process of rural development and modernization.

The embraced path of agricultural development needs to facilitate the fulfillment of the objectives and policies and components of the agricultural strategy chosen. Any agricultural strategy would comprise

* programs of institution-building related to such activities as agricultural research, rural education and farmer training,
* programs of investment in infrastructure, including irrigation and drainage facilities and rural roads,
* programs to improve product marketing and the distribution of inputs and
* policies related to prices, taxation, and land tenure.

A strategy's emphasis need to be on action to change the production possibilities available to farmers by modifying their institutional, technical, and economic environment. An underlying premise is that decentralized decision making by individual producers in agriculture, and a price mechanism performs a critical function in harmonizing decentralized decision and in harnessing the powerful motive of profit. In this connection, government may need to adopt policies to make prices reflect more adequately the social costs and benefits of using resources in different types of productive activities.

A suitable approach of a strategy is a simultaneous consideration of the objectives to be furthered and the means (policies and programs) by which these objectives are to be attained. Choice of objectives and means of a strategy need to be guided by explicit recognition of certain constraints that can only be gradually eliminated, especially those imposed by structures and demographic situation. Multiple objectives of agricultural development are the choice criteria of an agricultural development strategy. The three major objectives indicated above are elaborated below.

1. ***Expansion of farm output and income:***There is a need to achieve a rate and pattern of output expansion in agriculture that promote overall economic growth and structural transformation taking full advantages of positive interactions between agriculture and other sectors. This objective encompasses the contributions of agriculture to development -
	1. providing increased surplus of food and raw materials to meet the needs of the expanding non- farm sectors,
	2. earning foreign exchange through production for export, and
	3. providing a net flow of capital to finance a considerable part of the investment requirements for infrastructure and industrial growth.

The growth of a marketable surplus of farm products, expansion of foreign exchange earnings and increased availability of resources for capital formation are necessary conditions for the development of a diversified modern economy. At the same time the growth of farm cash income associated with structural transformation means increased rural demand for inputs and consumer goods that can provide important stimulus to domestic industry. The strength of that stimulus and the associated feedback effects will be strongly influenced, however, by the composition of a rural demand.

This expansion of farm cash income generates demand for simple tools and consumer goods thus fostering the evolutionary growth of domestic manufacturing that lead to the strengthening and diffusion of entrepreneurial and technical competence.

1. ***Broad-based improvement of the welfare of the rural population****:* This objective is important simply because such a large fraction of the population of developing countries is destined to live and die in farming sector and society. This is achieved through altering the predominantly agrarian structure of the economy. The possibility of enlarging the average income of farm households is determined mainly by the rate and character of the structural transformation, as manifested in the decline of the relative, eventually the absolute size of the farm work force and the associated growth of commercial demand for agricultural products.

The inequality in income distribution is a conspicuous feature of most less developed countries. This inequality will either be reduced or exacerbated depending whether the kdemand for labor increases more or less rapidly than the country's workforce. On the other hand, the extent to which expansion of farm output leads to widespread increases in income-earning opportunities depend on the development and diffusion of technological innovations. Certain dimension of welfare can be furthered by direct action through government programs like rural works and public health and related activities.

1. ***Fostering a pattern of agricultural development*** that will have a favorable impact on social development (modernization as a result of inducing changes in rural attitudes, behavior and institutions). Development of social institutions is a feature of structural transformation (e.g. agricultural research centers, educational facilities for farmers, training, private, public or cooperative business organizations for credit and input distribution and product marketing; irrigation associations, and other groups).

Institutional progress is significant in countries undertaking unimodal strategy of agricultural development. Thus interactions between technical and economic change at the farm level and institutional, attitudinal, and behavioral change merit attention on assessing the differential effects of alternative strategies.

Broad participation of the farm population in improved income-earnings opportunities will influence the rural power structure and political institutions. This has implications with respect to political and financial support for rural schools and other institutions to serve fanning communities. Besides, conscious action to limit family size will take hold more readily if rural households are actively involved in a process of economic and technical change whether as owner cultivator or as tenants, rather than being relegated to a surplus population- supporting sector with slight opportunity to better their conditions. An acceptable agricultural strategy therefore needs to be assessed in terms of the objectives and features of agricultural development desired.

The central element of a unimodal strategy is the development and diffusion of highly divisible innovations that promote output expansion within an agrarian structure made up of operational units relatively equal in size and necessarily small because of large number of farm holdings relative to cultivated land. Progressive modernization based on widespread use of a sequence of technological innovations compatible with the constraints imposed by structural-demographic characteristics makes it possible to exploit the large potential that exists or augmenting the productivity of the agricultural sector's internal resources of labor and land.

Bimodal or capitalist agriculture can develop as landlord capitalism (capitalism from above) or as peasant capitalism (capitalism from below) or as a mixture of both forms. Such agrarian change in developing countries is the development of a differentiated peasantry, from which a class of capitalist farmers and one of the agricultural wage laborers can emerge. The agrarian question is however not solved from the point of view of the whole social formation until a regular surplus on reasonable terms (acquired through market, taxation or savings) is made available to enable industrialization to proceed and capitalism to develop outside agriculture. This will break then the political power of the rich peasantry.

## 3.9 Gunnar Myrda1's Thesis of 'Spread and Backwash Effects'

Gunnar Myrdal (1957) highlights the low levels of income in most of the non-Soviet countries in the world, and international disparities in income, wealth and investment. Myrdal finds the theoretical approach of automatic self-stabilization to be inadequate to grapple with the problems of inequality. In his opinion, in the normal case, a change does not call forth counter­vailing changes, but, instead, supporting changes which move the system in the same direction as the first change, but much faster. This is the principle of circular and cumulative causation. As a result of such circular cau­sation, a social process tends to move faster. A social process can be stopped by introducing new exogenous changes in the system.

He elab­orates this with an example of the African-American problem in the USA. Two factors, namely, White prejudices causing discrimination against the African-Americans, and their 'low level of living' are mutually inter­related. Their low standard of living is kept suppressed by discrimination by the Whites. On the other hand, the African-Americans' poverty, igno­rance, superstition, slum dwellings, health deficiencies and their suppos­edly unclean appearance, bad odour, disorderly conduct, unstable family relations and criminality, stimulate and feed the antipathy of the Whites for them. Both these factors mutually 'cause' each other.

He also emphasises the role of non-economic fal2ctors in development, and highlights the backwash effects of growth brought out by the free play of market forces. The clustering of labour, capital, goods and ser­vices in certain localities and regions leave the remaining areas, mostly rural, more or less in the backwaters and accentuate regional inequality. Concentration of firms, capital, and talented individuals in certain locali­ties (growth poles) at the expense of surrounding areas (the backwash) lowers the level of economic development below what it would have been, if growth poles had never emerged.

Against the backwash effects there are, however, certain centrifugal 'spread effects' of expansionary momentum from the centers of eco­nomic expansion to other regions. Empirical evidence shows that 'back­ wash effects' are neutralized, by 'spread effects' only at a high level of development. This is one of the reasons why rapid sustained progress becomes an almost automatic process, once a country has reached a high level of development. At low levels of development, the 'spread effects' are either very weak, or are just strong enough to cancel the 'backwash effects', and the result in both cases is poverty and stagnation.

Similarly, at the international level, trade, capital movement and migra­tion have strong backwash effects on the developing countries. Exam­ples can easily be cited of developing countries whose cultures have been impoverished as a result of the establishment of trading contacts with the outside world.

## 3.10 Development Theories from Other Socia1 Sciences

Development is a complex process which is affected by both economic and non-economic factors. The importance of non-economic factors in development was duly recognized by the Classical school. John Stuart Mill thought that non-economic factors, like beliefs, habits of thought, customs and institutions, play an important role in economic develop­ment, and he attributed the backwardness of underdeveloped countries to the despotic and anti-progressive character of their customs, institutions, and beliefs.

Boeke (1953) gives an attempt of an explanation of underdevelopment in terms of socio­logical dualism. he defines dualism as 'the clashing of an imported social system with an indigenous social system of another style'. On the basis of his analysis, largely based on the Indonesian experience, he concludes that the kindest thing the Western world can do for developing countries is to leave them alone; any effort to develop them along Western lines can only hasten their retrogression and decay. The acceptance of the dualism leads to two policy conclusions:

* + 1. as a rule, one policy for the whole country is not possible; and
		2. what is beneficial for one section of society may be harmful for another.

An appraisal of Boeke's theory would reveal that whereas there can be no question about the existence of dualism, its explanation lies not in the nature of society as Boeke perceives it, but in economic and technological terms. This is proved by the fact that not all efforts to promote development in the developing countries through technical and capital assistance from the West have been in vain.

For example, in India, a large part of the credit for bringing about the 'Green Revolution' goes to the United States Agency for International Development (US AID). This helped India, both financially and techni­cally, in setting up modern land-grant type state agricultural universities in the 1960s, and trained its agricultural scientists in American land-grant agricultural universities. Similarly, the Operation Flood Programme that is credited with modernising India's dairy industry, also benefited a lot from food aid in the form of skimmed milk powder and butter oil, first from the World Food Programme, FAO, and then from the European Economic Community (EEC).

One may reject the theory of sociological dualism advanced by Boeke, and still consider sociological, cultural and psychological factors impor­tant in economic development. Indeed, one may say that all economists who have specialized in economic development recognise the importance of the interplay of these factors with economic factors. In the words of Meier and Baldwin (1957), 'The psychological and sociological requirements for development are as important as the economic require­ments. They deserve full consideration in their own right.' Relatively few economists, however, have had the courage to attempt a systematic theory of development which would incorporate strategic sociological, cultural, and psychological factors. Outstanding among these few are David McClelland and Everett Hagen (Higgins 1966: Ch. 13).

McClelland's 'Need-for-Achievement Motivation' (N-Ach) theory seeks to establish a relationship between N-Ach and economic devel­opment. His theory rests on two propositions:

* group differences in the average level of certain motives, such as N- Ach, predict differences in the rate of economic growth; and
* certain motive combinations predispose individuals to act like successful business entrepreneurs, who have played key roles in all previous economic development.

On the basis of his studies and analyses, he concludes that if we are to promote economic growth, it is necessary to first change the values and motives of individuals. This, in his opinion, can be done by:

* persuasion or educa­tion;
* introducing changes in the social system; and
* early character training.

Of these three, the third is by all odds the one most likely to succeed. For in this way, values can be in-built from the very beginning. Early character training can be imparted by a corps of specially qualified nursery and primary school teachers carefully selected for the purpose.

Thus, McClelland's analysis leads to the conclusion that a take-off into economic development requires a large number of individuals with the entrepreneurial motivation complex, and particularly with high ‘Need –for – Achievement Motivation’ (N-Ach), and for this a long period of time is required to establish psychological preconditions.

**3.10 Models of Agricultural Development**

Experiences dictate that countries apply rural development models varyingly depending on their politics, socio-economic circumstances, and the available expertise.

In Ethiopia, the first period covering 1950-74, the government was mainly in line with industrial fundamentalism and hence used to apply the urban industrial impact model. In the second period (1974-1991), the government adopted the marxisian model. As a result, the private banks were nationalized. By the way, the marxisian model is one of the models that built into the dependency theory of development. Since 1992, the government has been adopting economic policy changes with structural adjustment programs (SAPs). Details of the agricultural development models are discussed below.

**3.10.1 The Frontier Model**

The frontier model is the oldest model that represents expansion of the area cultivated or grazed as the main way of increasing agricultural production. The most dramatic example in Western history was the opening up of the new continents, North and South America and Australia, to European settlement during the 18th and 19th centuries. With the advent of cheap transport during the latter half of the 19th century, the countries of the newly opened continents became increasingly important sources of food and agricultural raw materials for the metropolitan countries of Western Europe.

In earlier times, similar processes had proceeded, though at a less dramatic pace, in the peasant and village economies of Europe, Asia and Africa. The first millennium AD saw the agricultural colonization of Europe north of the Alps, the Chinese settlement of the lands of south of the Yangtze, and the Bantu occupation of Africa south of the tropical forest belts. Intensification of land use in existing villages was followed by pioneer settlement, the establishment of new villages, and the opening up of forest or jungle land to cultivation.

The frontier model is based on the assumption that land is physically infinite had it not been for transportation costs and problem of accessibility. In his model, transport cost and accessibility play a crucial role in determining the land rent and the agricultural frontier, and thereby land area under cultivation.In this approach, land is assumed to be homogeneous, and differ only by the location as measured by distance from a center (Village).

In the frontier model, land is assumed physically infinite. Hence, new areas were opened up to shifting cultivation or to nomadic grazing. Under conditions of rapid population growth, the limits to the frontier model were often quickly reached. Crop yields typically were low, measured in terms of output per unit of seed rather than in output per unit of crop area.

In this line, there are relatively few remaining areas of the world where development along the frontier model will represent on efficient source of growth during the last quarter of the 20th century. This century can be seen as the transition from a period when most of the increases in world agricultural production occurred as a result of expansion in areas cultivated to a period when most of the increase in crop and animal production will come from increases in the frequency and intensity of cultivation. In the future, growth in agricultural production must come from changes in land use that make it possible to crop a given area of land more frequently and more intensively and hence to increase the output per unit area and per unit of time.

In the Ethiopian case, given the subsistence agriculture dominated by cereal - producers who produce 80% of total agricultural output, given the primitive and unchanging technology, the means to increase output has been observed to be through increasing the size of farmland. This ensures that "with traditional agricultural technologies, farm production is almost completely dependent upon the natural resource available". This justifies the application of the frontier theory in Ethiopia wherein agricultural production among the smallholders is almost completely dependent up on the available natural resource (land mainly). The land expansion approach is also stated and used in practice implicitly by the investment policy of Ethiopia. As mentioned above, the farming system applied by the small holders in Ethiopia has primitive and unchanging technological base that implies the practice of extensive farming system. Thus, the structure of the economy, the farming system used among the small holders as well as the investment proclamations for the large scale commercial farmers are based on the notion of frontier agricultural development model.

**3.10.2 The conservation Model**

The conservation model of agricultural development evolved from the advances in crop and livestock husbandry associated with the English agricultural revolution and the concepts of soil exhaustion suggested by the early German chemists and soil scientists. The conservation Model is concerned with the application of the laws of diminishing returns to agricultural sector with the assumptions that: land for agricultural production is scarce and becoming more so.

Soil exhaustion is possible and action to prevent decreases in yields or to increase land productivity will have only slow effect at best. Thus, "as land scarcity increases, poorer land is used causing the marginal productivity of labor and land to decrease. To prevent these declines, high priority is attached to maintaining soil productivity at its present level or attempting to return the soil to its 'original' presumably more productive level" in the extreme conservation model.

To evaluate the relevance of the model in Ethiopia, it is helpful to assess the ground that justifies the application of the model. According to the 'Ethiopian Highlands Reclamation Study', the ecological and economic loses of land degradation and soil loses are proved to be tremendous.

In 1983, degradation was estimated to cost Ethiopia for about 600 million birr per annum, which was found to be equal to 14% of the contribution of agriculture to GDP of the time. As a result, conservation model was and is still a practical response to such alarming rate of loses. In effect, policies favoring the conservation measures have started to be practiced in Ethiopia since late 1980's and are getting further emphasis at present.

Applying the model, on the other hand, may result in slow production level per the population growth rate and hence it becomes difficult to be food self sufficient by following this model alone. Using a blend of the models across the appropriate contexts is, therefore, of paramount importance.

**3.10.3 The Urban-Industrial impact model**

According to the conservation model, location variations in agricultural development were related primarily to differences in environmental factors. Whereas the urban-industrial model stands in sharp contrast to conservation model by interpreting the geographical differences in the level and rate of economic development primarily in terms of the level and rate of urban-industrial development. This model relates agricultural productivity and development with the distance from & development effects of urban/ industrial areas. It is derived from the Recardio's theory of rent and John Von Thuenen's spatial model. In addition, Ruttan (1995) gave conclusions on how industrial development stimulates agricultural development by expanding demand for farm products, supplying the industrial inputs needed to improve agricultural productivity and drawing away surplus labor from agriculture.

In Ethiopia, the model is being partially exercised in few urban as well as industrial development policies, planning practices and budgetary allocations of the country. The model gives importance to availability of industrialized spots that can serve as a source of inputs and market for the agricultural sector. In line with this, the country has been making effort to connect agrarians and their efforts with market areas so that they would benefit from the sale of their products and inputs of the markets. Although, all policies, plans and strategies on paper say a lot about the importance of agricultural sector, the practices were far from the promises. By this analysis, the spirit of industrial fundamentalism and urban industrial impact models is not eroded although both the industrial as well as agricultural sectors couldn't show any transformations since long in the country.

**3.10.4. The Diffusion Model**

In the diffusion model, agricultural development is assumed to be based on devoting considerable resources to a)’’ increasing the flow of information to farmers about new agricultural technology and new institutional arrangements and b) teaching tradition bound farmers how to make more economically rational management decisions about the uses of resources they have access to". Moreover, it is an approach recommended from observed variations of land and labor productivities among farmers and regions as evidenced empirically. The route to agricultural development in this model was viewed to be through more effective dissemination of technical knowledge and a narrowing of the productivity difference among farmers and among regions using extension workers.

The limitations of the diffusion model as a foundation for the design of agricultural development policies become increasingly apparent as technical assistance and community development programs, based explicitly or implicitly on the diffusion model, failed to generate either rapid modernization of traditional farms and communities or rapid growth in agricultural output. More specifically, the limitations in the diffusion model are indicated to be, in line with participatory approaches, that traditional farmers have good knowledge of available traditional technology and are effective allocators of their resources. Hence, extension efforts devoted to trying to teach these farmers as how to improve the allocation of their traditional resources are wastage.

The practice in Ethiopia has proved similar condition with the preceding worldwide experiences. Although the initial efforts of extension activities on disseminating and demonstrating fertilizer application, partially improved seeds cultivation and new farming practices have shown good results, it could not be sustained. The effort to acquaint farmers with new farming practices has not registered significant result event at the beginning. The reason for all is that, on the one hand, per head income of farmers is not so much enabling to go beyond the common expenses. On the other hand, the prices of inputs are continuously increasing so that limiting further diffusion among the smallholder farmers of Ethiopia.

In fact, currently in Ethiopia, there is a new extension demonstration and training program of this model type. This program could change production and productivity level although the result is not significant and could not be sustained. As to the extension agents, the workers are recruited from the localities where they are supposed to be assigned so that they know sufficiently their areas and societies of their assignment which is one of the bottlenecks of diffusion otherwise.

**3.10.5. The High-pay off input Model**

The inability of models constructed based on geographic size; physical features as well as sector biasdness to explain and catch the development problems of agricultural sector have led to conceiving of and shifting to other alternatives. Among such alternatives, application of technological or industrially produced inputs to the agricultural sector was recommended specifically to improve the failures of conservation, urban industrial impact, and industrial It is concerned with the methods used by governments to change the context within which agricultural production takes place:

* By altering the prices of farm inputs and outputs,
* By changing the institutions in which farm input & output markets operate, or
* By promoting new technologies in agriculture fundamentalism and diffusion models.

According to this new conception, transformation of traditional agriculture was believed to be undertaken by investments aimed at increasing the availability and supply of modern high pay off inputs to farming activities. In this model the notion of peasants of poor countries are assumed to be efficient, rational resource allocators within their farming system.

Although this model is criticized for the problems of inapplicability at the micro level, it is implicitly applied in Ethiopia. For instance, the institution for Rural Technology is trying to produce and introduce new inputs and equipment designed for improved agricultural production and productivity but practically unable to be fully effective. The main reason is that some of the materials produced entail a large amount of money as compared to the financial background of the farmers. The Rural Technology centers (started since long during the then Dergue regime and functional still) have dimensions of diffusion model as well. In fact, the dissemination of materials produced/installed at demonstration level also failed mostly because of the activities being without the participation of peasants from the very beginning. That is, it was out of the knowledge and interest of the 'beneficiaries' from the outset. However, at all the costs, the trials did give lessons that have and would have commutative effect in the long run.

**Summary**

Although there is no universal theory of rural development, the various paradigms and hypotheses of development summarized in this section provides many valuable insights into the processes and determinants of rural development. We can extract relevant elements from the paradigms and synthesize them into an operational framework of rural development suited to our times and circumstances. The common elements or factors common to all paradigms include:

* natural resources,
* new technology,
* capital accumulation and investment,
* educated technically trained,
* enterprising and motivated human resources with values and ethos congenial to rural development, and
* an appropriate institutional and organizational framework.

What is needed for developing countries like Ethiopia with large size of population and

considerable natural resources is a long-term policy for development of human resources through education, training, health care, and empowerment and creation of a congenial socioeconomic, institutional (including legal) and political environment for the fullest possible utilization of the vast, untapped reservoirs of human power and ingenuity.

# CHAPTER FOUR

**STRATEGIES AND POLICES OF AGRICULTURAL AND RURAL DEVELOPMENT**

**Introduction**

Rural areas have and continue to undergo dramatic change. Climatic change, agricultural policy reform and national policy pose many challenges for the sustainable future of rural areas.  Socio-economic characteristics also create new perspectives.  The rural economy of many areas is now similar to that of urban areas. Land-based activities are not sole source of rural employment. The significant numbers of rural residents of working age commute to towns for work and services. This gap between rich and poor has only been widening so far, and, in many cases, has led to worse conditions for the poorer segments of the population.

The traditional socio-economic environment of the rural population has often been destroyed without being replaced by a better alternative. The increasing population could not be absorbed by the existing rural system, this leading to massive migration to cities, and resulting, in many cases, in a virtual breakdown of urban societies. Measures for increasing agricultural production concentrated on the improvement of land productivity in the better areas with larger farms, leaving behind the poorer masses in the rural areas. The increasing differences between haves and have-nots generated by past development are not restricted to the widening gap between rich and poor. The same growing dualism can be observed between regions within countries, and, on a world-wide scale, between industrial and developing countries.

## 4.1 Strategies of Rural Development

Agricultural and rural developments have been accorded a high priority in many countries’ development plans. A review of various rural development programs and policies fol­lowed in these countries reveal four strategies of development: Growth oriented strategies, Welfare oriented strategies, Responsive strategy and, Integrated or holistic strategy. These strategies are summarized briefly as follows.

### Growth Oriented Strategy

This is based on the philosophy that rural people, like any other people, are rational decision makers, who, when given adequate opportunity and a proper environment, will try to maximize their incomes. The role of the state in this strategy is to build infrastructure, and maintain a favorable climate to stimulate the growth of rural enterprises. The critical assumption of this strategy is that the benefits of increased pro­duction will gradually 'trickle down' to the poor. The regulation and coordination of the activities of private and public agencies is primar­ily through market mechanisms.

This paradigm formed the basis of the predominant agricultural development strategy of the 1960s, when pro­grammes like the Intensive Agriculture District Programme (IADP), the Intensive Cattle Development Programme (lCDP), the High Yielding Varieties Programme (HYVP), were launched. But this paradigm failed to make any dent on the basic problems of poverty, unemployment and inequality, and had to be abandoned.

### Welfare Oriented Strategy

This seeks to promote the well-being of the rural population in general, and the rural poor in particular, through large-scale social programmes like the Minimum Needs Programme, Applied Nutrition Programme, Mid- Day Meals Programme, etc. The primary means used in this strategy are free provision/distribution of goods, services and civic amenities in rural areas.

The critical assumptions of this strategy are that people are not com­petent to identify and resolve their problems, and that government spe­cialists can identify their needs and meet them with the financial and administrative resources available with the government. The role of villagers is that of passive receptors of services. This strategy has a pater­nalistic orientation. The performance of the programmes is judged by the quantity of goods, services, and civic amenities delivered. The wel­fare oriented programmes present a mixed picture; the rural poor have benefited significantly through some programmes in a few areas, but not in others. There are two major criticisms of this strategy, namely,

 *(a)* it has created dependence; and

*(b)* it requires resources that are beyond the means of governments.

### Responsive Strategy

This is aimed at helping rural people help themselves through their own organizations and other support systems. Its concern is with responding to the felt needs of the rural people, as defined by them*.* The role of the government is to facilitate the self-help efforts of vil1agers by pro­viding technologies and resources that are not usually available. The critical assumption of this strategy is that the rural poor will identify and resolve their problems if provided with minimal support and otherwise left to their own devices and initiatives. Community participation in, and control of, project activities is the primary performance indicator of this strategy.

### Integrated or Holistic Strategy

This combines all the positive features of the earlier three strategies, and is designed to simultaneously achieve the goals of growth, welfare, equity and community participation. This paradigm takes a very comprehensive but integrated view of the basic problems of poverty, unemployment and inequality, and seeks to address the physical, economic, technological, social, motivational, organizational and political bases of these problems.

The multiple goals of this strategy are sought to be achieved by build­ing the capacity of the community to involve itself in development in partnership with the government. The critical assumption underlying this approach is that the government can restructure societal power rela­tionships, and centralized bureaucracies can learn to share power with community groups. Successful implementation of this strategy requires complex decentralized matrix structures, with permanent mechanisms for vertical and lateral integration, a combination of specialist and generalist skills, institutional leadership, social intervention capability and system management.

## 4.2 Rural Development Programs

### Green Revolution

The Green Revolution is a term used to describe the transformation of agriculture in many developing nations that led to significant increases in agricultural production between the 1940s and 1960s. This transformation occurred as the result of programs of agricultural research, extension, and infrastructural development, instigated and largely funded by the [Rockefeller Foundation](http://en.wikipedia.org/wiki/Rockefeller_Foundation), along with the [Ford Foundation](http://en.wikipedia.org/wiki/Ford_Foundation) and other major agencies.

The term “Green Revolution” was first used in 1968 by the former [USAID](http://en.wikipedia.org/wiki/USAID) director William Gaud, who noted the spread of the new technologies and said, These and other developments in the field of agriculture contain the makings of a new revolution. The Green Revolution has had major social and ecological impacts, which have drawn intense praise and equally intense criticism.

### International spread of the Green Revolution

With the experience of agricultural development judged as a success by many of the power holders involved, the Rockefeller Foundation sought to spread the Green Revolution to other nations. The Office of Special Studies in Mexico became an informal international research institution in 1959, and in 1963 it formally became [CIMMYT](http://en.wikipedia.org/wiki/CIMMYT) (The International Maize and Wheat Improvement Center).

The second nation to which the Green Revolution spread was [India](http://en.wikipedia.org/wiki/India). The Ford Foundation had a presence in the nation, and their social scientists had decided that the technological development of agriculture was important to the future of India. At the same time [C.Subramaniam](http://en.wikipedia.org/wiki/Chidambaram_Subramaniam), the former Indian Minister of Steel and Mines, became Minister of Food and Agriculture. The Foundation and Indian government collaborated to import a huge amount of wheat seed from CIMMYT. India then began its own Green Revolution program of plant breeding, irrigation development, and financing of agrochemicals. By the late 1970s, the Green Revolution raised rice yields in India by 30 percent and brought India the vital time to curb its population growth without suffering a recurrence of the devastating famines of the 1940s.

The Rockefeller and Ford Foundation jointly established [IRRI](http://en.wikipedia.org/wiki/IRRI) (The International Rice Research Institute) in the Philippines in 1960. HYVs (high yielding varieties) spread throughout that country, Indonesia, Pakistan, Sri Lanka, and other non-Soviet bloc countries throughout Latin American, Asia, and North Africa. USAID became involved in subsidizing rural infrastructure development and fertilizer shipments.

### Agricultural production and food security

### Technologies

The projects within the Green Revolution spread technologies that had already existed, but had not been widely used outside of the industrialized nations. These technologies included pesticides, [irrigation](http://en.wikipedia.org/wiki/Irrigation) projects, and synthetic nitrogen [fertilizer](http://en.wikipedia.org/wiki/Fertilizer).

The novel technological development of the Green Revolution was the production of what some referred to as “miracle seeds.” Scientists created strains of [maize](http://en.wikipedia.org/wiki/Maize), [wheat](http://en.wikipedia.org/wiki/Wheat), and [rice](http://en.wikipedia.org/wiki/Rice) that are generally referred to as HYVs or “[High Yielding Varieties](http://en.wikipedia.org/wiki/High_yielding_variety).” HYVs have an increased nitrogen-absorbing potential compared to other varieties. Since cereals that absorbed extra nitrogen would typically lodge, or fall over before harvest, semi-dwarfing genes were bred into their genomes. [Norin 10 wheat](http://en.wikipedia.org/wiki/Norin_10_wheat), a variety developed by [Orville Vogel](http://en.wikipedia.org/wiki/Orville_Vogel) from Japanese dwarf wheat varieties, was instrumental in developing Green Revolution wheat cultivars. IRR, the first widely implemented HYV rice to be developed by IRRI, was created through a cross between an Indonesian variety named “Peta” and a Chinese variety named “Dee Geo Woo Gen.”

HYVs significantly outperform traditional varieties in the presence of adequate irrigation, pesticides, and fertilizers. In the absence of these inputs, traditional varieties may outperform HYVs. One criticism of HYVs is that they were developed as [F1 hybrids](http://en.wikipedia.org/wiki/F1_hybrids), meaning they need to be purchased by a farmer every season rather than [saved](http://en.wikipedia.org/wiki/Seed_saving) from previous seasons, thus increasing a farmer’s cost of production.

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### Production increases

World production of grain increased, 1961-2004, compared with area harvested over the same period. Cereal production more than doubled in developing nations between the years 1961 – 1985. Yields of rice, maize, and wheat increased steadily during that period. The production increases can be attributed roughly equally to irrigation, fertilizer, and seed development, at least in the case of Asian rice.

Some, however, have challenged the purported production increases of Green Revolution agriculture. Miguel A. Altieri, for example, writes that the comparison between traditional systems of agriculture and Green Revolution has been unfair, because Green Revolution agriculture produces [monocultures](http://en.wikipedia.org/wiki/Monocultures) of cereal grains, while traditional agriculture usually incorporates [polycultures](http://en.wikipedia.org/wiki/Polyculture). Additionally, some traditional systems of agriculture that were displaced by the Green Revolution such as the [chinampas](http://en.wikipedia.org/wiki/Chinampas) in Mexico or raised-field rice farming in Asia are known to be very highly-productive.

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### Effects on food security

The effects of the Green Revolution on global [food security](http://en.wikipedia.org/wiki/Food_security) are difficult to understand because of the complexities involved in food systems. The major purported achievement of the Green Revolution has been that the production increases have helped to avoid widespread [famine](http://en.wikipedia.org/wiki/Famine). It is also often claimed that Green Revolution agriculture is responsible for feeding billions of people. These assertions generally assume some variation of the [Malthusian](http://en.wikipedia.org/wiki/Malthusian_catastrophe) principle of population.

Malthusianism has been evident throughout the history of the Green Revolution. The team sent to survey Mexican agriculture in 1941 for the Rockefeller Foundation cited the high birth rate and relative inadequacy of its agriculture as a cause for concern. In 1959, the Ford Foundation carried out a study in India that stated the nation’s population would outstrip its food supply by 1966, although validity of its methodology was a subject of criticism. At Borlaug’s Nobel acceptance speech he stated, “...we are dealing with two opposing forces, the scientific power of food production and the biologic power of human reproduction.”

The [world population](http://en.wikipedia.org/wiki/World_population) has grown by over four billion since the beginning of the Green Revolution and most believe that, without the Revolution, there would be yet greater famine and malnutrition than the UN presently attributes to the planet Earth (approximately 850 million people suffering from chronic malnutrition in 2005). The average person in the developing world consumes about 25% more calories per day now than before the Green Revolution.

Increasing food production however is not synonymous with increasing food security, and is only part of a larger equation. For example, [Amartya Sen](http://en.wikipedia.org/wiki/Amartya_Sen)’s work has found that large historic famines have not been caused by decreases in food supply, but by socioeconomic dynamics and a failure of public action. There are several claims about how the Green Revolution may have decreased food security for some people. One such claim involves the shift of subsistence-oriented cropland to cropland oriented towards production of grain for export and/or animal feed. For example, the Green Revolution replaced much of the land used for pulses that fed Indian peasants for wheat, which did not make up a large portion of the peasant diet. Also, the pesticides involved in rice production eliminated fish and weedy green vegetables from the diets of Asian rice farmers.

### Socioeconomic impacts

The transition from traditional agriculture in which inputs were generated on-farm to Green Revolution agriculture, which required the purchase of inputs, lead to the widespread establishment of rural credit institutions. Smaller farmers often went into debt, which in many cases result in a loss of rights to their farmland. The increased level of mechanization on larger farms made possible by the Green Revolution removed an important source of employment from the rural economy. Because wealthier farmers had better access to credit and land, the Green Revolution increased class disparities. Because some regions were able to adopt Green Revolution agriculture more readily than others (for political or geographical reasons), interregional economic disparities increased as well.

The new economic difficulties of small holder farmers and landless farm workers led to increased [rural-urban migration](http://en.wikipedia.org/wiki/Rural-urban_migration). The increase in food production led to a decrease in food prices for urban dwellers, and the increase in urban population increased the potential for industrialization. However, industry was unable to absorb all of the displaced agricultural labor and some cities grew at unsustainable rates.

### Ecological change

### Pesticides

Green Revolution agriculture increased the use of pesticides, which were necessary to limit the high levels of pest damage that inevitably occur in monocultures. [Organochlorides](http://en.wikipedia.org/wiki/Organochloride), a chemical group of pesticides including [DDT](http://en.wikipedia.org/wiki/DDT) and [dieldrin](http://en.wikipedia.org/wiki/Dieldrin) that spread with the Green Revolution, do not easily break down in the environment and therefore accumulates through the [food chain](http://en.wikipedia.org/wiki/Food_chain) and spread throughout [ecosystems](http://en.wikipedia.org/wiki/Ecosystems). Other problems with pesticides include the poisoning of farm workers, the contamination of water, and the evolution of resistance in pest organism populations.

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### Water issues

Irrigation projects have created significant problems of [salinization](http://en.wikipedia.org/wiki/Salinization), [waterlogging](http://en.wikipedia.org/wiki/Waterlogging), and lowering of [water tables](http://en.wikipedia.org/wiki/Water_table) in certain areas.

### Biodiversity

The spread of Green Revolution agriculture affected both agricultural [biodiversity](http://en.wikipedia.org/wiki/Biodiversity) and wild biodiversity. There is little argument that the Green Revolution acted to reduce agricultural biodiversity, as it relied upon just a few varieties of each crop. This has led to concerns about the susceptibility of a food supply to pathogens that cannot be controlled by agrochemicals, as well as the permanent loss of many valuable genetic traits bred into cereal varieties over thousands of years. To address these concerns, massive seed banks such as CGIAR’s [International Plant Genetic Resources Institute](http://en.wikipedia.org/w/index.php?title=International_Plant_Genetic_Resources_Institute&action=edit) have been established.

There are varying opinions about the effect of the Green Revolution on wild biodiversity. One hypothesis speculates that by increasing production per unit of land area, agriculture did not need to expand into new, uncultivated areas to feed a growing human population. A counterhypothesis speculates that biodiversity was sacrificed because traditional systems of agriculture that were displaced have often incorporated practices to preserve wild biodiversity, and because the Green Revolution expanded agricultural development into new areas where it was once unprofitable or too arid.

## Community Development Program (CDP)

Community development may be defined as a process by which the efforts of the people themselves are combined with those of governmental authorities, to improve the economic, social and cultural conditions of communities, to integrate these communities into the life of the nation, and to enable them to contribute fully to national progress.

The central objective of the CDP was to secure the total development of the material and human resources of rural areas, and to develop local leadership and self-governing institutions. The basic idea was to raise the levels of living of rural people through a number of programmes. This objective was to be attained

* by bringing about a rapid increase in food and agricultural production
* by strengthening programmes of resource development, such as minor irrigation and soil conservation,
* by improv­ing the effectiveness of farm inputs supply systems, and
* by providing agricultural extension services to farmers.

### Activities of CDP

The following rural community development activities are undertaken in such varying degrees (within the limits of the available funds), as are advisable under the circumstances peculiar to each block.

**Agricultural and Related Matters**

* Reclamation of available virgin and waste land.
* Provision of water for agriculture through irrigation canals, tube­ wells, surface wells, tanks, lift irrigation from rivers, lakes and pools, etc.
* Development of rural electrification.
* Provision of commercial fertilizers.
* Provision of quality seeds.
* Promotion of improved agricultural techniques and land utilization.
* Provision of veterinary aid.
* Provision of technical information, materials and bulletins on agriculture.
* Provision for the dissemination of information through slides, films, radio broadcasts and lectures.
* Provision of improved agricultural implements.
* Promotion of marketing and credit facilities.
* Provision of breeding centers for animal husbandry.
* Development of inland fisheries.
* Promotion of home economics.
* Development of fruit and vegetable cultivation.
* Provision of soil surveys and information.
* Encouragement of the use of natural and compost manures.
* Provision of arboriculture, including plantation of forests.

**Communications**

* Provision of roads.
* Encouragement of mechanical road transport services.
* Development of animal transport facilities.

**Education**

* ;Provision of compulsory and free education, preferably basic edu­cation, at the elementary stage.
* Provision of high and middle schools.
* Provision of adult education and library services.

**Health**

* Provision of sanitation (including drainage and disposal of wastes) and public health measures.
* Provision for the control of malaria and other diseases.
* Provision of improved drinking water supplies.
* Provision of medical aid for the ailing.
* Antenatal care of expectant mothers and midwifery services.
* Provision of generalized public health service and education.

**Training**

* Refresher courses to improve the existing standard of artisans.
* Training of agriculturists.
* Training of extension assistants.
* Training of artisans.
* Training of supervisors, managerial personnel, health workers and executive officers for projects.

**Social *Welfare***

* Organization of community entertainment.
* Provision of audio-visual aids for instruction and recreation.
* Organization of sports activities.
* Organization of me/as (village fairs).
* Organization of the cooperative and self-help movement.

**Supplementary Employment**

* Encouragement of cottage industries and crafts as the main or subsidiary occupation.
* Encouragement of medium and small-scale industries to employ surplus hands for ;3local needs, or for export outside project areas.
* Encouragement of employment through trade, auxiliary and wel­fare services.

**Housing**

* Demonstration and training in improved techniques and designs for rural housing.
* Encouragement of improved rural housing on a self-help basis.

### Evaluation of CDP

There have been a number of surveys and studies which have high­lighted the tangible achievements of the CDP in terms of distribution of improved seeds, use of chemical fertilizers, plant protection chemi­cals, improved farm tools and equipment, construction of roads, wells, irrigation canals, establishment of primary health centers, etc. On the basis of these studies, it would be fair to say that the CDP contributed significantly towards the cre­ation of basic socio-economic infrastructure in rural areas, and helped expand and improve the production base of the rural economy of many developing countries (specifically India) who have implemented the program. The CDP has also fulfilled, to a large extent, the equity norm of rural development. **(**Katar Singh**)**

However, the CDP failed to achieve the expected increase in agricul­tural production. This failure could be attributed to its diffused character, as it did not put sufficient and direct emphasis on agricultural produc­tion. The financial, material and administrative resources of the CDP were spread too thinly-albeit uniformly-all over the countryside to produce any tangible impact on agricultural production and rural poverty. In other words, the resources devoted to agricultural production fell short of the 'critical minimum' required to escape from the perpetual problem of low productivity in agriculture.

Some of the other criticisms of the CDP include that:

* + 1. it has not been a people's programme;
		2. it has followed a 'blueprint' approach to rural development;
		3. it has employed a large army of untrained exten­sion workers who, because of lack of coordination among themselves, were less a source of help to the villagers and more a source of bewil­derment and confusion;
		4. a spirit of ritualism has permeated the block programmes, and the inauguration, opening or foundation stone laying became the 'be-all and end-all' of all block activities; and
		5. there was lack of functional responsibility at the block level that led to a good deal of confusion and interdepartmental jealousy.

## Integrated Rural Development Program

The verb "to integrate" is defined by the Oxford dictionary as meaning "complete (imperfect thing) by the addition of the parts", or to "combine (parts) into a whole". It does not involve the collection of a large number of unrelated parts, but of parts which combine together to form a whole. The parts, therefore, should be "linked" and capable of being "bonded" together within the context of the project. Integrated rural development can be defined as "area development schemes" which involve a broad range of activities designed to improve production, infrastructure, services and living standards in line with the objectives, and with emphasis on the linkages between the various components and geographical areas internal and external to the area."

This does not mean, however, that everything should be done at the same time, for the determining of priorities and the time sequence of components is important, and the funds available are normally insufficient or everything to be done all at once. Neither does it mean that a project may be described as being "integrated” if a welfare component is simply added to a productive component. Rather, integrated rural development (IRD) is concerned with delivering a more sustainable future for rural areas. It considers the interrelationships between the environment, economy and communities of particular places to deliver wide-ranging benefits. It is the process through which the economic, social, environmental and cultural resources of rural communities are organized in order to achieve and sustain the long term viability of those communities

In integrated rural development the range of possibilities for development are examined comprehensively, and the emphasis is on the identification of linkages that relate to the objectives determined. This differs from a strictly agricultural approach, which may ignore the role of other sectors in the development process. Integrated rural development schemes are generally "area development schemes", that is they are planned and executed to serve the perceived needs and opportunities of a specific geographical area.

The geographical area of the project or scheme may be determined on the basis of various criteria, such as a region, administrative district, watershed, homogeneous region, physical region (i.e. mountain area, plateau etc.), cultural region, ethnic area, agro-climatic region, and economic region (i.e. low income area, depressed region, high unemployment, industrial region etc.). It is generally useful if the project area is easily definable by some commonly acceptable criteria or is widely identified as being a region with special characteristics. But even if this is not the case, experience has shown that such projects can be successful even in regions that cannot be identified by clear cut criteria, as long as the demarcation of the area is clearly defined.

### Objectives of Integrated Rural Development

There can be a broad range of objectives for integrated rural development projects, from the very ambitious such as attaining national average income or employment goals, to more moderate aims such as maintaining the size of the local population, or even more modest ones such as simply improving the productivity of one crop.

A reasonable objective, however, for most integrated rural development projects is "to lay out the project interventions in the area economy that are most likely lead to important improvements in the way the economy operates and in the ability of the area population to achieve fitting living. .."

Integrated rural development has a role to play in identifying opportunities and local needs, and presenting a framework for raising incomes and improving living standards. This involves complex planning, co-ordination and execution combined with good project management. Such integrated projects facilitate development both through investment and infrastructural works by changing the perception and the reality in a region, so as to encourage self-sustained growth.

### Components of Integrated Rural Development

The components of integrated rural development projects must vary from one area to another in relation to the specific problems and potential of each area. The following is a list of project components that should be considered but only adopted where appropriate. An integrated approach does not require that all the components listed should be adopted, but rather that they be considered, and priorities determined because rarely are budget funds available for everything to be done. Emphasis should be given to the most viable and cost effective components. Integrated rural development projects should consider the inclusion of the following components:

1. **income generating sectors:**
	* Agriculture, including crop production and animal husbandry and the associated hunting, fishing and forestry
	* Manufacturing industry, including workshops, handicrafts, cottage industry, traditional products and products for which the region is particularly suited.
	* Trade, including the encouragement of markets for local products, serving other areas, sales through traffic etc.
	* Tourism, including agro-tourism, special interest and environmental tourism
2. **Income generating supporting services:**
	* Marketing of agricultural products, processed goods and locally produced manufactures and cottage industry.
	* Storage for agricultural outputs and inputs.
	* Transport of people and goods.
	* Supplies of inputs and materials.
	* Credit for annual needs, investment and family requirements.
3. **Training**

Training is important not only for farmers through extension services but also for encouraging manufacturing industry and tourist development. The educational system also affects skills levels.

1. **Labour Force and Personnel Requirements**

The existence of an adequate labour force with the necessary skill requirements is ;essential. Special provision should be made for the appointment of sufficient state funded personnel, since in many countries procedures for the appointment of state personnel differ from provision for the Budget (i.e. agreed provisions for teachers, medical staff etc. have to be made).

1. **Infrastructure**
	* Roads: Access and transportation are among the most serious constraints in mountain areas. Road improvement is likely to be a priority in most cases.
	* Utilities: Other infrastructure services, such as water, telephones and electricity are also essential for development and improved living standards, while sewerage can pose problems in mountain villages.
	* Irrigation: in arid and semi-arid areas irrigation isthe major input for improved farm productivity.
2. **Social Services**
	* Education: Including pre-school which is important for the labour supply (releasing young mothers for work), primary and secondary.
	* Health: Provision of medical services, notably doctors, hospitals and medical services
	* Welfare: Research is needed on welfare needs (care for old and retarded people, social
3. **Recreation**

The lack of recreation facilities in rural areas is a major factor causing young people to migrate to urban areas.

1. **Village environment**

The improvement of the village itself and housing is important for future survival. Improvements in village streets, lighting, public buildings, and general environment are important for improving village life.

1. **Environment**

The environment around the villages and within the region provides opportunities for improvements in income from tourism (including hunting, hill resorts, skiing, agro-tourism, special interest and environmental tourism). Similarly, the built environment such as traditional buildings, also form attractions.

1. **Institutional Development**

This is important and includes village leadership, creation of credit institutions, co-operatives, management of infrastructure (small irrigation schemes.)

### Organization of Integrated Rural Development

**Project Preparation**

The lead role in project preparation should be taken by an agency independent of the line ministries, which is capable of co-ordination and directing a large number of other agencies, and which they will accept in this role without worrying about encroachment on their functions. The lead agency should have experience in dealing with multi-sectoral projects and be given the functions, funds and status to ensure co-operation. In many countries the planning ministry or bureau or the regional administration may be best place to undertake the lead role. Alternatively, Project preparation could b e undertaken by independent consultants assisted by Government Departments.

The participants in project preparation should be the lead agency, line ministries, regional/district administrations, local authorities, state corporations and non-government organizations (Chambers of Commerce/industry, farmers organizations, co-operatives etc.). One method of ensuring smooth co-operation is by appointing representatives of the ministries and agencies, who also act as liaison for their agencies. In this way one person in each organization is responsible for seeing that the obligations of that body are met. Unavoidably, however, major issues will have to be dealt with at the top management level, or in the event of clashes, at the ministerial level.

Consultations with the local authorities and local NGO’s are essential, both in informal contacts and formal project preparation. The agreement of local authorities is absolutely essential where they are expected to contribute to costs and where infrastructural programmes run through their administrative boundaries.

The main problems in project preparation involve co-ordination, particularly where there are disputes between agencies as to jurisdiction, and inflexible rules that have not been adjusted to meet the needs of multi-sectoral projects. This is true both of governments and international agencies.

**Project Implementation**

There are two basic approaches to implementation of multi-sectoral integrated rural development projects: one isthe establishment of a self-contained fully staffed and equipped independent organization (perhaps regional development authority) and the other is to undertake the project through existing agencies with a small management and co-ordination unit having overall responsibility for the project. Both approaches have their advantages and disadvantages, but in smaller countries the second project management unit approach is preferable because it is more cost effective.

**Self-Contained Implementation Unit:** This approach can only be justified with respect to very large projects, in big countries, because it essentially entails the recruitment of personnel for all project implementation activity in all sectors. This is in fact virtually impossible because co-ordination with other departments or agencies and local authorities is still required, and no one organization can cover the full scope of activity envisaged in most integrated rural development projects.

The integration of such units into the existing administrative and legal structure poses very serious problems, and ministries afraid of encroachment on their jurisdiction may be uncooperative. This type of structure is also costly, and complex since it is unlikely that line agencies and local authorities can be altogether excluded and there may be duplication ofactivity. The main problem, however, is in ensuring project continuity, maintenance and further development when the project is completed and the special self-contained unit disbanded.

The great, advantage is that much red-tape and effort is made unnecessary and project management has considerable powers to move quickly with project implementation, because the unit’s dependence on other organizations is minimal. This approach is suitable where Government administration and technical capability is weak.

**Coordinating Management Unit:** The establishment of a small management co-ordination unit is more cost effective because it involves the recruitment of only a small nucleus of staff around a project manager, with responsibility for ensuring that all the line ministries and other agencies fulfill their commitments to project implementation within the budget allocation and the time schedule for implementation. The main problems arise because the authority of the unit may be challenged.

This can be overcome by ensuring that the Project Manager has sufficient status and authority assigned by the Council of Ministers and is independent. It is essential for the status and control of the management unit that it controls all project funds and assigns them to line ministries and other agencies. This provides an incentive for good co-ordination.

The great advantage of this approach is that it ensures continuity since implementation is undertaken through existing bodies. It is most suitable, however, where Government administration is strong.

**Essential Conditions for Implementation:** The essential conditions for the organization of the implementation effort are as follows:

* Clear authority for project management to do the job of implementation.
* Instructions to ministries to cooperate and assign representatives and/or liaison officers.
* Control of the project budget by project management.
* Priority to be given by ministries to the project components.
* Appointment of **a** very good, full-time project manager.

.**Conditions for Success:** The experience gained from integrated rural development projects suggests that the conditions for success are as follows:

* Strong government commitment to the Project.
* Effective administration in place at central government, regional and community levels.
* Good project preparation.
* Clear objectives must be set with respect to short and long term objectives and component.
* A good, full-time, project manager must be appointed.
* Flexibility in implementation.
* Authority for implementation must be given to project management.
* Good co-ordination and co-operation by all ministries, departments, agencies, local government and NGOs isessential.
* Project management must have overall budget control
* The project should be economically viable, at least with respect to its productive components.
* The project should be cost efficient.
* Local resource mobilization is important for self sustainability and development impact.

In addition to the aforementioned it is necessary for the project to bring about a change in the perception of the project area, from disillusionment to and optimistic assessment of future prospects. This is essential for there to be sufficient investment for self-sustained growth.

### Advantages and Disadvantages of Integrated rural development

**Advantages**

Integrated rural development involves a concerted effort to encourage the development of delineated rural areas, in line with national programmes and objectives, but entailing a concentrated effort over and above national programmes. The advantages over national programmes are:

1. The concentration on effort for improvements in one area at time.
2. The design of programmes and the combination of schemes specifically suited to conditions in the area, which relate to the problems, potential and conditions of the region.
3. The strengthening of local institutions and the encouragement of further (self-sustained) growth.
4. The possibilities for cost effectiveness arising from the concepts of comparative advantage and the identification o f linkages between sectors.

**Disadvantages**

The disadvantages are the high cost in terms of national budgets, the budget constraints inhibiting the repetition of the experience in other regions, and the problem of determination of priorities between regions. Because of these factors repeat projects in the same area are difficult because other regions are anxious to get their turn for attention and investment. In general the investment involved in concentrating on one region at a time poses exceptional pressure on the budget because national programmes for rural development cannot be curtailed, and consequently expenditure over and above is required for the development of specific areas.

Another major disadvantage is the complexity of integrated projects which require inputs from many different departments, agencies and organizations. Good co-ordination is therefore the key to success both with respect to preparation and implementation.

**Polices of agricultural and rural development**

Policy formulation is an integral part of the planning process and is specified successively at the macro, sector, sub-sector, program/project and operation of an economic unit level. Generally speaking, “policy" implies state intervention in the economy, whereas "policies" refers to the specific types of intervention further down the planning process. It is essential that these are consistent and complementary to each other. For example, once the general economic policy has been formulated, it is imperative that sector level policies are drawn up that are consistent with the general policy.

It is imperative that governments’ general objectives for economic development are usually defined in the form of policy statements. They specify the major goals to be achieved and the forms of suitable economic organization for resource ownership and management. Consistent with this are then drawn up sector policies, sub-sector policies, etc.

In the case of agriculture development, typical objectives may include faster growth of agricultural output, peasant sector development, reduction of rural poverty, more efficient marketing, more stable prices of agricultural products, more equitable rural land distribution and more attractive rural land tenure system, privatization of agriculture, improvement of status of pastoralists, etc. As regards organizational arrangements, agriculture sector policies may define the types of economic enterprise that will be encouraged (e.g., small farmers, pastoralists, cooperatives, private commercial farms, state farms, etc.), the role and size of domestic and foreign participation, and the extent to which markets and prices will be subject to official regulation. These policy declarations about the ends and means of agricultural development represent the fundamental terms of reference for any agricultural planning exercise.

A fairly conventional approach to the formulation of agricultural policies in developing countries is that which focuses on the relationship of policy to the inputs and outputs of the farm system and thus aims at influencing the inputs, outputs, and technology of farm household production. In this respect, some eight policies can be distinguished, viz., price policy, marketing policy, input policy, credit policy, mechanization policy, land reform policy, research and extension policy, and irrigation policy.

**The need for Policy**

Think of any economic environment without policy and its likelihood effects. State has a central role to play in accelerating the pace of growth towards achieving the objectives stated earlier. State also needs to carry out tasks, which are unlikely or impossible, if they are left only to market forces because of market failures. Market refers to production, consumption and distribution decisions made by households and individuals as producers, consumers and distributors, the combined effects of which result in the determination of a market price for a commodity.

**What are market failures?**

The factors that contribute for market failures are failure of competition, lack of private interest in the supply of public goods and services, presence of externalities, common property resources and sub-optimality, lack of information and infrastructure, interplay of macroeconomic forces, and the presence of socially unacceptable forces disrupting market forces. The above stated factors for market failures reveal that it is inevitable for state intervention to seek solutions and gear towards sustainable development.

• Failures of competition could be due to the existence of various types of monopoly power in the economy.

• Lack of private interest in the supply of public goods and services, such as police force, national defense, street lighting, roads, etc.

• Presence of externalities, which could be negative or positive and when there are externalities there will be difference between marginal net benefits and costs.

• Common property resources such as common grazing areas, which are alway subjected to overgrazing and permanent damage to the resource.

• Lack of infrastructure and incomplete information,

• Interplay of macroeconomic forces such as money supply, exchange rate, taxation, inflation, etc

• The presence of socially unacceptable forces disrupting market forces such as poverty, inequality and others.

The view that state interventions are effective in overcoming the above stated market failures is based on the critical assumption that ‘government and state act benevolently to secure the public interest.’

However, it is also evident that there are also state failures mostly in developing countries, which are equally having detrimental effect as market failures. State failures are resulted as the result of information failures, complex side effects (there is no way to predict the secondary and tertiary effects of actions), implementation failures, and motivation failures and rent seeking behavior.

**Overview to Agricultural policy Formulation**

The conventional approach to agricultural policy formulation is to focus on the relationship between inputs and outputs, and their accessibility to end-users. In the context of agricultural development, eight distinct policy interventions widely used in developing as well as developed countries are: Price policy, Market policy, Input policy, Credit policy, Mechanization policy, Land reform policy, Irrigation policy and Research and extension policy.

**Price policy**:- It is designed to influence the level and stability of the prices received by farmers and paid by consumers for farm outputs. It is a very important factor as it influences the entire fabric of an agricultural economy. In general, it has three main functions,

1. allocation of farm resources,
2. income distribution, and
3. Determination of the level of investment and capital formation in agriculture.

**Marketing policy:-** is concerned with the transfer or movement of farm outputs from the farm-gate to the domestic consumer or to ports of export. It has two major roles;

1. in the transmission of price signals between consumers (demand) and producers (supply), and
2. in the physical movement of the output from points of production by farmers to points of purchase by consumers.

**Input policy** is designed to influence the prices and delivery systems of purchased variable inputs used in farm production. Purchased variable inputs include chemical fertilizers, pesticides, herbicides, improved seeds and high yielding varieties, fuel, animal feeds, etc. The policy has three major dimensions,

1. price level of variable inputs,
2. delivery system for the inputs, and
3. Information available to farmers regarding type, quantity and combination of inputs suitable for their farm systems.

**Credit policy**:- concerns mainly, but not exclusively, on the provision of working capital for the purchase of variable inputs used in farm production. Generally, the policy aims at

* alleviating a critical constraint which hampers growth in agricultural output,
* replacing the fragmented and incomplete rural financial market dominated by selfish private money-lenders,
* accelerating the adoption of new technology by peasant farmers, and
* achieving equity goals, whether these are intra-rural, inter-regional, or rural-urban income distribution.

**Mechanization policy:-** is designed to influence the pace and direction of the adoption of mechanical technologies, or farm fixed capital, by farmers. Given the resources and constraints of the farm sector and the economy at large, the policy is concerned with the appropriate pace of the transition amongst

(i) hand tools and

implements that increase the effectiveness of human power or energy,

(ii) animal - draught power, in which machines or equipment are driven by animals, and

(iii)mechanical power, in which engines or motors (powered by fuel or electricity) are

used to drive farm machines.

**Land reform policy:-** seeks to alter the ownership distribution or conditions of access to land as a resource in farm production. It covers a wide range of social changes involving the access of people to land, the ownership structure of land, the size structure of land holdings, and legal or contractual forms of land tenure. Land reform has always a mixture of political, social and economic objectives.

**Research and extension** policy is concerned with the generation and diffusion of new technology designed to increase the productivity of resources in farm production. In this respect, generation refers to the undertaking of research, and diffusion to the provision of extension services or other dissemination methods for spreading information among farmers. These all indicate for the need to create strong link between research and extension services.

Irrigation policy is concerned with the provision of water as a resource in farm production, often involving large-scale public investment in the infrastructure of farm production. Irrigation may be defined as the use of human technology to increase and to control the supply of water for crop production. Whilst in most cases, irrigation is provided to supplement rainfall in crop production; it is sometimes supplied in places (e.g., arid and desert regions) where no crop production is possible without irrigation.