

B.Sc. (Hons.) Forestry

FPU 401 Finance and Project Analysis for Forestry (1+1)

(2015 Syllabus)

Lecture 1: Agricultural finance – definition, importance, nature and scope. Agricultural credit – definition, need, classification.

Farm finance has become an important input due to the advent of capital intensive agricultural technologies. Farmers require capital in order to enhance the productivities of various farm resources. Indian agriculture, in general, is characterized by low and uncertain returns. In order to break the vicious cycle of low returns → low savings → low investment → low returns, provision of external finance to farmers becomes inevitable.

The existence of both organized and unorganized credit agencies in the agricultural credit system, different banking system followed by bankers, changing government credit policies regarding institutional credit set-up, credit rationing, rates of interest, subsidy and the functioning of markets and other developmental agencies which would influence the extent of credit available to farmer-borrower ultimately have a bearing on farm returns. Hence, problems regarding agricultural finance could be well understood, if one could realise the theoretical basis of agricultural credit system in India, different banking systems, bottlenecks faced by bankers and borrowers, and the governments' efforts in solving the problems involved in the agricultural credit system in India.

Importance of Agricultural Finance

Credit is essential for agricultural development and also for the development of the economy as a whole. The agricultural finance is required for the following reasons:

i) The scope for extensive agriculture in India is limited. Therefore, increase in agricultural production is possible only by intensification and diversification of farming. Intensive agriculture needs huge capital.

ii) Extreme inequalities exist in the distribution of operational holdings and operational area. 85 per cent of the total numbers of farm households which own less than 2 hectares operate only 44 per cent of the total operated area whereas only 15 per cent of total number of farm households which own more than 2 hectares operate 56 percent of the total operated area in 2010-11. (In India, there were 88.88 million farm households which operated 163.79 million hectares in 1980-81 But in 2010-11 there were 137.76 million farm households which operated 159.18 million hectares).

The purchasing power of these small and marginal farmers is limited to their subsistence farming. Hence, they have to depend on the external financial assistance to use the costlier (modern) inputs.

iii) Farmers economic condition is subject to frequent onslaught of flood, drought, famine etc. Therefore, either the continuance of cultivation of crops or making improvements on the farms depends on the nature and availability of finance.

iv) In recent years, more area is brought under irrigation which in turn would increase the use of inputs like fertilizer and plant protection chemicals. In order to accomplish this, external finance is needed.

v) In order to sustain the development of agro-based industries, there should be a substantial increase in the supply of raw materials needed for such industries. Therefore, for the development of farm sector, a constant flow of credit is essential and it would enhance overall growth of the economy.

vi) In agriculture, fixed capital is locked up in permanent investments like land, well, buildings, etc. Moreover, it takes a long time to get returns from farm. Hence, farmers need finance to continue their farm operations.

vii) The weaker sections of the farming community should be motivated to participate in development programmes by giving financial assistance to acquire productive assets.

viii) Small and marginal farmer's are trapped in the vicious cycle of poverty i.e., low returns → low saving → low investment → low return. To break this cycle, credit has to be injected in agricultural sector.

Definition

Credit is obtaining control over the use of money at the present time in exchange for a promise to repay it at some future time.

Agricultural Credit is the amount of investment funds made available for agricultural production from resources outside the farm sector.

Hopkin et al referred agricultural finance as the means of acquiring and control of assets, ownership by cash purchase or borrowing or leasing or custom-hiring.

Warren F.Lee et al defined Agricultural Finance as the economic study of the acquisition and use of capital in agriculture. It deals with the supply of and demand for funds in the agricultural sector of an economy.

According to William G. Murray, agricultural finance is the economic study of borrowing of funds by farmers; of the organization and operation of farm lending agencies; and of society's interest in credit for agriculture.

Farm Finance is a branch of agricultural economics which deals with the provision and management of services of financial resources related to the individual farm units.

Farm finance can also be defined as the amount of funds obtained from off-farm sources for use on the farm, repayable in future with an interest agreed to either explicitly or implicitly.

Nature and Scope of Farm Finance

- i. is not meant merely for more production but also to raise the productivity of farm resources;
- ii. not a mere loan or advance, but it is an instrument to promote the well being of the farming community;
- iii. is not just a science to manage the money, but is an applied science of allocating scarce resources to derive optimum output; and
- iv. is not a mere social obligation on the society; but it is a lever with backward and forward linkages to the economic development both at the micro and macro level.

At macro level, farm finance may be defined as the study of impact of finance (extended to the farmers by the intermediaries) on agricultural sector and also on the economy as a whole. At micro level, farm finance may be defined as the study of these intermediaries who extend finance to the farming sector and obtain their loanable funds from financial markets.

Thus, farm finance should have the following features:

- i. Finance should be extended to farmers for farm activities;
- ii. Finance should stimulate the productivities of farm resources resulting in higher economic returns for the investment;
- iii. Finance should promote economic development of farm households; and
- iv. Finance should be provided by an external agency for strengthening the backward and forward linkages with country's economic development.

Classification of Agricultural credit

Agricultural credit can be classified based on purpose, time (repayment period), security, generation of surplus funds, creditor and number of activities for which credit is provided.

i) Purpose: Based on the purpose for which loan is granted, agricultural credit is categorized into:

1) Development credit or Investment Credit: This is provided for acquiring durable assets or for improving the existing assets. Under this, credit is extended for: purchase of land and land reclamation, purchase of farm machineries and implements, development of irrigation facilities, construction of farm structures, development of plantation and orchards, development of dairy, poultry, sheep/goat, fisheries, sericulture, etc.

2) Production credit: is given for crop, production. Here, the loan amount is used for purchasing inputs and for paying wages.

3) Marketing credit: It is essential to carry out the marketing functions and to get higher prices for the produce.

4) Consumption credit: It is the credit required by the farmer to meet his family expenses.

ii) Repayment Period: Based on the period for which the borrower requires credit, it is divided into:

1) Short-Term Credit: It is given to farmers for periods ranging from 6 to 18 months and is primarily meant to meet cultivation expenses viz., purchase of seed, fertilizer, pesticides and payment of wages to labourers. It serves as the working capital to operate the farm efficiently and is expected to be repaid at the time of harvesting / marketing of crops. It should be repaid in one installment.

2) Medium-Term Credit: Repayment is for the period of 2 to 5 years, It is for the purchase of pump-sets, farm machineries and implements, bullocks, dairy animals and to carry out minor improvement in the farm. It can be repaid either in half yearly or annual installments.

3) Long-Term Credit: It is advanced for periods more than 5 years and extends even unto twenty five years against mortgage of immovable property for undertaking development works viz., sinking wells, purchase of tractor, and making permanent improvements in the farm. It has to be repaid in half-yearly or annual installments.

iii) Security: Credit is provided to farmers based on the security offered by them.

1) Farm Mortgage Credit: It is secured against mortgage of land.

2) Collateral Credit or Chattel Credit: It is given against the security of livestock, crop or warehouse receipt.

3) Personal Credit: It is given based on the character and repaying capacity of the person and not on any tangible assets. In general, LT credit is usually advanced against security of land while MT and ST loans are sanctioned against personal and collateral security.

iv) Generation of Surplus Funds: Based on generation of surplus funds, credit can be classified as self-liquidating and non-self-liquidating credit.

1) Self Liquidating Credit: In this case, loan amount gets absorbed in the production process-in one year or production period and the additional income generated is sufficient to repay the entire loan amount.

2) Non-Self Liquidating Credit: Here the resources acquired with the borrowed funds are not consumed in the production process during the project period. The investment is spread over a period of several years. The additional income generated in one year is not sufficient to repay the entire loan amount and hence the repayment is spread over to number of years.

v) Creditor or Lender wise Credit: Credit can be classified from the point of view of creditor.

1) Non - Institutional Agencies: They include money lenders, traders, commission agents, friends and relatives. This kind of loan is generally exploitative.

2) Institutional Agencies: They include co-operatives, commercial bank and regional rural bank.

vi) Number of Activities Served: Based on the number of activities for which amount the loan can be used, credit can be categorized into a) single purpose loan and b) composite loan.

Lecture 2: Source of Credit-Institutional and Non-institutional Agencies- types, roles, advantages and disadvantages

Agricultural Credit System in India

Farmers get external financial assistance from two sources namely, i) non-institutional or unorganized agencies, and ii) institutional or organized agencies. It is a fact that agriculture has been financed by non-institutional agencies for a long time and institutional agencies were started functioning only during the early part of twentieth century.

Non-Institutional Sources of Finance in India

Non-institutional sources include money lenders, land lords, traders, commission agents, friends and relatives.

Table 1. Borrowing by Farmers from Organized and Unorganized Agencies

Lending Agencies	1951	1961	1971	1981	2002
I Organized Agencies					
1. Government	3.3	6.7	7.1	4.0	1.7
2. Co-operatives	3.1	11.4	22.0	29.0	30.2
3. Commercial banks	0.9	0.3	2.4	28.0	26.3
4. Insurance and Provident Fund	-	-	0.2	-	0.5
5. Other institutional agencies	-	-	-	-	2.4
Sub-Total	7.3	18.4	31.7	61.0	61.1
II Unorganized Agencies					
1. Land Lord	1.5	0.9	8.1	4.0	0.9
2. Agricultural Money lender	24.9	48.1	23.0	9.0	9.9
3. Professional money lender	44.8	15.8	13.1	8.0	16.9
4. Trader	5.5	7.1	8.4	3.0	2.6
5. Friends and Relatives	14.2	5.2	13.1	9.0	6.2
6. Others	1.8	6.5	2.6	6.0	2.4
Sub-Total	92.7	81.6	68.3	39.0	38.9
Total	100.0	100.0	100.0	100.0	100

Sources: NSS 48th Round, Report No. 420, Indebtedness of Rural Households as on 30.06.91, Debt and Investment Survey, 1992; NSS 59th Round, Report No. 501, Household Indebtedness in India as on 30.06.2002, All India Debt and Investment Survey, 2003.

i) Money Lenders

There are two types of money lenders in rural areas namely agricultural money lenders and professional money lender. Agricultural money lender's main occupation is

farming and money lending is secondary one. Professional money lender's main profession is money lending. Although the reliance on money lender by rural poor declined over the years, the credit disbursed by money lenders still forms a major portion of the total credit obtained by the farmers.

Advantages

- i. Unrestricted supply of credit for any purpose.
- ii. As money lenders maintain close relationship with rural families, easy access.
- iii. Methods of business adopted are simple and flexible.
- iv. Timely availability of credit without much formality.
- v. Knowledge on local conditions and experience of money lender facilitate his business.
- vi. Money lenders do not insist upon any particular type of security for the grant of loans.

Disadvantages /Unfair Practices of Money Lenders

Money lenders deceive the farmers through many ways such as:

- a. They manipulate bonds and promissory notes obtained from debtors and enter large sum
than actually lent.
- b. They give no receipt for repayments and often they deny such repayments.
- c. They charge very high rate of interest.
- d. They give loans for both productive and unproductive purposes which results in indebtedness

ii) Land Lords

Small farmers and tenants rely on land lords for finance to meet out their productive and unproductive expenses. This source of finance has all the defects associated with money lenders. Interest rates are exorbitant. Often small farmers are forced to sell out their lands to these land lords and they become land less labourers and bonded labourers.

iii) Traders and Commission Agents

They are functioning either to get regular supply of products for their trade or to have a control over the provision of credit by other creditors. Though the rate of interest charged by them is not as high as charged by the money lenders, they charge more in the form of concessions and service charges. They mostly finance for the cultivation of commercial crops like sugarcane, cotton, groundnut, tobacco, onion, etc.

iv) Relatives

Farmers borrow from their relatives for temporary exigencies. It is simply a mutual help. Since all farmers are living under similar conditions, they cannot lend large sums as loans. Normally, no interest is paid on such loans.

Need for Institutional Credit Agencies

Although, the private agencies satisfied some of the criteria of a good system of credit, their loan were not related to production purposes, they never cared for the end use of the loan extended and the loan is often used for wasteful purposes. However, institutions adopt a productive and purpose oriented credit policy while providing credit. So this policy made the institutions to discourage the provision of credit to consumption purpose. But it is evident that the need for consumption loan in rural households continues to persist. As the institutions deny consumption loans to farmers, the non-institutional agencies continue to dominate the rural credit system. Moreover, the institutional agencies could not provide more than 60-65 per cent of the total credit needs of the farmers. Therefore, the private credit agencies should be brought under a more realistic system of state regulation. Otherwise, the rural people would continue to suffer from indebtedness in spite of various efforts taken by the government to uplift their economic conditions.

Institutional Credit Agencies

As compared to the quantum of credit requirement and the capacity of institutions to meet these credit demands under multi-agency system, it is impossible to completely wipe out the private agencies from the rural scene. The Banking committee, (1931) and the Banking Commission (1972) offered suggestions to get over the evil aspects of private lending agencies and bring them under sound credit system. These suggestions may be adopted till the institutional agencies attain the capacity to meet the full demand for credit. The initiation of co-operative movement in 1904 and nationalization of commercial banks in 1969 have strengthened the institutional credit network in the country.

The major institutions supplying credit to agricultural sector are : i) Government, ii) Co-operatives, iii) Commercial Banks, iv) Regional Rural Banks, v) Reserve Bank of India (RBI) (National Bank for Agricultural and Rural Development- NABARD)

i) Government

The Government provides both direct and indirect finance to farming sector.

a) Direct Finance

The government provides taccavi loans in times of distress like famine, flood, drought etc. Land Improvement Loans Act of 1883 and the Agriculturists Loans Act of 1884 were

enacted to extend long and short term financial assistance to farmers for agricultural development and also as relief measures during distress times.

Merits

1. They are granted for long period of time.
2. Low interest is charged.
3. The repayment plan is convenient, i.e., repayment in equal annual installments.

Demerits

1. Quantum of loan is determined on the basis of value of security offered, by which, large farmers receive more credit than small and marginal farmers.
2. As these loans are not production oriented, they do not satisfy the standard needed for sound system of farm credit.
3. The loan amount is inadequate.
4. The land less labourers were left out in the lurch at the time of distress.
5. The taccavi loans are not popular among farmers due to inordinate delay in sanctioning of loan, imposition of irrelevant conditions, incompetent supervision and in convenient recovery methods.

In view of these demerits, it was recommended to channelize these loans through co-operatives.

b) Indirect Finance to Agriculture by Government

- 1) It allocates subsidized fertilizer to states according to their needs.
- 2) It provides technical assistance to farmers through Tamil Nadu Agricultural Development Program.
- 3) It implements price stabilization schemes for various crops.
- 4) In consultation with the RBI, the government prescribes the rates of interest to be charged on loans granted to weaker sections of rural areas.
- 5) It contributes to the share capital and debentures of co-operatives.

Instead of playing direct role in providing farm credit, the government may play a vital role in creating conditions or infra-structural facilities to the promotion of institutional credit.

ii) Co-operation and Co-operative Credit.

Co-operation is a specialized form of economic organization in which people voluntarily associate together on a basis of equality for the promotion of their economic interests. A Co-operative Society is an enterprise formed and directed by an association of users, applying within itself, the rules of democracy, and directly intended to serve both its own members and the community as a whole.

Principles of Cooperative Credit

- a) Universality:** The membership of a co-operative society is open to those who are convinced of its benefits and those who are prepared to share the benefits and responsibilities involved in such a membership.
- b) Democratic Control:** The affairs of the society must be ministered by the members themselves and all the members must equally be treated
- c) Self Help Through Mutual Help:** The benefit arising out of the collective effort is available to all members.
- d) Unity or Political and Religious Neutrality:** Unity is the fundamental force behind all co-operative organizations. It is above all beliefs, faiths and convictions.
- e) Limited Interest on capital:** The main aim of the society is not to earn abnormal profit but to enable the members to improve their economic conditions. If there is any excess income, it will be used to meet unforeseen loss or strengthening the funds of the society so that cheaper services may be made available to the members.
- f) Principles of Publicity:** The co-operative organizations do not believe in maintaining secrecy about their working and progress.
- g)** Members should have the spirit of dedication and service with absolute honesty and unquestionable integrity. Hence, co-operation is the movement of the people, for the people and by the people.

Rural Indebtedness

Farmers require finance not only to cultivate their lands in time but also to switch over to modern techniques of agricultural production. They also require loan to meet out their family expenditure, expenses for social functions like marriage, birth and death and litigation. Indian farmers especially, the small and marginal farmers are severely affected by poverty for generations. Hence, it is almost impossible for them to save and invest money on farm production. The ultimate way to do farming is to borrow from external agencies. Since these loans contribute nothing to production, it becomes difficult to allocate money for repayment. As a result, such debts go on increasing from generation to generation and the borrowers are trapped in indebtedness. Thus, it is rightly pointed out that the Indian farmer is born in debt, lives in debt and dies in debt. The Rural Credit Survey Report also quotes the French proverb which says that credit supports the farmer as “the hangman’s rope supports the hanged”.

Extent of Rural Indebtedness

The NSSO 59th round (2003) indicates that the average amount of debt outstanding per household which stood at Rs. 406 in 1961 rose to Rs.653 in 1981 to Rs.10000 in 2002. Thus, the rural indebtedness has increased during 1961 to 2002.

Causes of Rural indebtedness

i) Poverty

Marginal and small farmers have to borrow both for production and consumption purposes, as they do not have past savings for generations. Moreover, farmers are also often affected by flood, drought etc. and hence, they are forced to borrow. Just as poverty forces him to borrow, it is this poverty again forces him to have so little far repaying his debt.

ii) Use of traditional production techniques

Most of the Indian farmers do not use high yielding varieties, fertilizers and modern techniques of cultivation. They do not have assured irrigation also. Consequently, the farm productivity is extremely low and it does not allow them to get out of indebtedness.

iii) Uncertainty of income

The farmer is unable to get stable income either due to uncertain output or due to price fluctuation (low prices).

iv) Defective agricultural credit system

The exploitative practices adopted by money lenders are responsible for continued indebtedness of rural poor. The government also has failed to effectively control these anti-social activities of money lenders. The co-operatives and commercial banks could not be strengthened due to challenge from the existence of money lenders.

v) Pressure of Population on Land and Ineffective Land Reforms

The rapid population growth and the failure of industrial development to absorb the surplus rural population have increased the pressure of population on land and this had led to further sub-division of holdings. The land reforms like regulation of rent, consolidation of holdings, prevention of sub-division and fragmentation, distribution of surplus land to landless labourers were not effectively and seriously followed and hence the marginal farmers had very little resources to tackle indebtedness.

vi) Inherited Debt

A larger part of the present debt consisted of debts inherited from the past and it increased with the passage of time.

vii) Social and Religious Needs

The expenditures on various social and religious needs are high. As the loan is used for these unproductive purposes, the borrowers are trapped in indebtedness.

viii) Litigation

Various kinds of disputes often force the farmers to go to court of law. This increases their unproductive expenditure, reduces their income and increases the need for loan.

Consequences of Rural Indebtedness

i) Economic consequences

- a. Incentive to efficient farming and increase of agricultural production is curtailed.
- b. Farmers mortgage their properties to the money lenders and ultimately lose it to the latter.
- c. Farmer is hit hard through the adverse terms of trade, i.e., he has low bargaining power as he has to sell his produces to the money lender from whom he has borrowed.

ii) Social Consequences

- a. Social group split into two classes, viz., exploited and exploiting and this leads to social tension in rural areas.
- b. Because of deprivation of land, the cultivators not only suffer economically but also they are pushed down in the social hierarchy.

iii) Political Consequences

Money lenders have fraudulently deprived the simple and illiterate villagers of their land ownership. This creates intense political activities in the villages and this has been encashed by all the politicians.

Remedies for Rural Indebtedness

The problem of rural indebtedness has to be tackled in two ways: i) the burden of present indebtedness should be reduced, and ii) indebtedness in future should be controlled.

i) Reducing the Burden of Present Indebtedness

Since the major cause of continued indebtedness of rural poor is the malpractices adopted by money lenders, many states have taken steps like prescribing maximum rates of interest and compulsory registration and licensing of money lenders. Many states enacted laws according to which the borrower can not be asked to pay more than twice the loan amount taken by him.

ii) Control of New Loans

The initiation of co-operative movement and nationalization of commercial banks have strengthened the institutional credit network in the country. These institutions have the objective of extending financial support to the weaker sections of the rural community.

Lower interest rate, subsidy, and technical support offered by institutional agencies would reduce indebtedness.

Farmers should avoid diverting the production credit to consumption purposes. For achieving this, consumption loans (for marriage, medical expenses, etc) can be provided by institutional agencies.

Lecture No.3: Institutional agencies - Commercial banks- nationalization of commercial banks – their role in rural credit. AD Branches – Area Approach. Priority Sector Lending, Regional Rural Banks

COMMERCIAL BANK

The industrial sector is relatively more organized and less dependent on natural factors than agricultural sector. Hence, the commercial banks tended to concentrate more on industrial sector than agricultural sector.

The Indian Central Banking Committee (1931), the Agricultural Finance Subcommittee (1945), the Rural Banking Enquiry Committee (1950), the All India Rural Credit survey committee (1951), the All India Rural Debt and Investment Survey (1961-62) and the Informal Group on Institutional Arrangements for Agricultural Credit (1964)-all these expert committees were of the opinion that co-operatives and not the commercial banks were the suitable credit agencies for agriculture.

Financing agriculture by commercial banks was not significant till 1950. However, the Rural Banking Enquiry Committee (1950) recommended that banking facilities should be extended to rural areas. The commercial banks were reluctant to enter the field of agricultural finance as they think it would be risky and costly.

The Imperial Bank of India was established in 1921 by the amalgamation of the residency Banks, (Bank of Bengal, Bank of Bombay and Bank of Madras). Until the establishment of the Reserve Bank of India (RBI) in 1935, the Imperial Bank of India was the sole banker to the government. There was no branch for RBI; the Imperial Bank of India acted as an agent of the RBI for the purpose of transacting businesses of government.

In 1955, the state Bank of India Act was passed and Imperial Bank India was named as the State Bank of India. In 1959, State Bank of India (subsidiary Banks) Act was passed and seven Associate Banks or subsidiary banks of SBI were started functioning. They are:

1. State Bank of Mysore
2. State Bank of Travancore
3. State Bank of Saurashtra
4. State Bank of Hyderabad.
5. State Bank of Bikanir and Jaipur.
6. State Bank of Patiala.
7. State Bank of Indore.

The role of commercial banks in rural credit was negligible till the sixties as is evident from the All India Debt and Investment survey Report, 1961-62 and 1971-72. They had

shown little interest in direct financing of agriculture and had confined their financing activities to the movement of agricultural produces only.

To serve better the credit needs of rural society, fourteen commercial banks with deposits worth Rs.50 crores or more were nationalized on July 19, 1969. In her broadcast address of July 19, 1969 on bank nationalization, Prime Minister Mrs. Indira Gandhi stated that nationalization was meant for an early realization of the objectives of social control which were spelt out as:

- (i) Removal of control of money market by a few,
- ii) Provision of adequate credit for agriculture, small industry and export,
- iii) Encouragement of a new class of entrepreneurs and
- iv) Strengthening the professional banking management system.

The nationalized banks were:

1. Central Bank of India
2. Bank of India.
3. Punjab National Bank
4. Bank of Baroda.
5. United Commercial bank.
6. Canara Bank.
7. United Bank of India
8. Dena Bank
9. Syndicate Bank.
10. Union Bank of India
11. Allahabad Bank
12. Indian Bank
13. Bank of Maharashtra
14. Indian Overseas Bank

This was followed by nationalization of six more commercial banks in April 1980. They were:

1. New Bank of India.
2. Vijaya Bank.
3. Corporation Bank.
4. Andhra Bank.
5. Punjab and Sind Bank.
6. Oriental Bank of Commerce.

This institutional change was effected to pursue the goals of growth and social justice.

Functions of Commercial Bank

The objectives of the changes in the banking structure and the king policy since the nationalization of commercial banks are:

- i) wider territorial and regional spread of branch net work;
- ii) faster mobilization of savings through bank deposits; and
- iii) deployment of bank credit in favour of neglected sectors the economy.

In order to achieve these objectives, the commercial banks involved in the following activities:

- i) Commercial banks provide both direct and indirect finance to farmers. Banks provide direct finance to farmers for the purchase pump-sets, tractors and other agricultural machineries, for sinking and (deepening wells, for land development, for raising crops, and for setting up of dairy, sheep/goat, poultry, fishery, piggery and sericulture units. Commercial. banks also provide indirect finance which includes loan for distribution of fertilizers and other inputs, loan to electricity boards, loan to primary Agricultural credit societies and subscribing to debentures of land development banks.
- ii) They extend financial assistance to small/marginal farmers identified by District Rural Development Agency (DRDA).
- iii) They established specialized branches exclusively for rural lending.
- iv) They finance Primary Agricultural credit societies ceded to them and organize Farmer's service societies since 1973-74.
- v) They have set-up Regional Rural Banks, F.S.S and LAMPS in selected areas to cater to the credit needs of the weaker sections.

Policies and Performance of Commercial Banks

1) Branch Expansion

The branch expansion policy for 1982-83 aimed at achieving a coverage of one bank office, on an average, for a population of 17000 in the rural and semi-urban areas (as per 1981 census) in each block and also to eliminate spatial gaps in the availability of banking facilities so that a rural branch was available within a distance of 10km and would serve an area of about 200 square kilometres. The population norm has been relaxed from March 31st, 1990 to 10,000 with regard to tribal / hilly areas and sparsely populated regions.

The number of rural branches rapidly increased from 22 percent of the total number of branch offices in 1969 to 58 percent in 1989 and at the end of March 2013 share of bank

branches in rural area was 55 per cent. The Population per branch office came down from 65,000 in 1969 to 12,000 in 2013.

Table 1. Branch Expansion of Commercial Banks

Sl.No.	Area	Number of bank offices			
		1969	1989	2009	2013
1.	Rural	1832 (22.1)	33640 (57.6)	82897 (55.7)	109811 (54.9)
2.	Semi-urban	3322 (40.2)	11201 (19.2)	31598 (21.3)	39439 (19.7)
3.	Urban	3108 (37.7)	13576 (23.2)	21022 (14.1)	28691 (14.4)
4.	Metropolitan	-	-	11839 (7.9)	19961 (10.0)
	Total	8262 (100.0)	58417 100.0)	149365 (100)	199915 (100.0)

Source: Statistical Tables relating to Banks in India 2012-2013, Reserve Bank of India bulletin, March 2013 (Figures in Parentheses indicate percentages to total)

2) Priority Sector lending

The priority sector includes agriculture and allied activities and small scale and cottage industries. A target of 33% lending to the priority sector was set in 1975 (to be achieved by March 1979). In 1979, the target was raised to 40% (to be achieved by 1985). In 1980, sub-targets were set: 16% of lending was to go to agriculture and 10% had to be targeted to "weaker sections". The priority sector advances should be atleast 40 percent of the net bank credit. In 1969, the share of priority sector was only 15 percent of the net bank credit and it increased to 42 per cent in 1990. In 2013, the share was 29 per cent. The priority sector advances by private sector banks at the end of March 1989- constituted 36.7 per cent of their net bank credit. Foreign banks operating in India were advised in August 1988 that their advances to priority sector should reach a level of 10 per cent of their total outstanding advances by the end of March 1989, and 12 per cent and 15 per cent by the end of March 1990 and March 1992 respectively.

3) Specialized Branches for Agricultural Lending

The nationalized banks have set up specialized branched to deal with rural credit. These branches were established to overcome the practical difficulties relating to man power, high cost of operation and follow up of loans given to the farmers.

A few examples of specialised branches are:

- Agricultural Development Branches (ADB-State Bank of India).
- Gram Vikas Kendra (GVK)- Bank of Baroda.
- Gramodaya Kendra (GK)- Indian Bank.

- d) Rural Service Centres (RSC)- Dena Bank.
- e) Farm Clinic Centre- Syndicate Bank.
- f) Rural Credit and Development Division-Indian overseas Bank.

4) Multi-Agency Approach

The Multi-Agency Approach was adopted as an overall national policy since 1970 as no single agency had the necessary organizational structure or financial strength to meet the total credit requirements of farmers.

Multi-agency approach to finance agriculture was accepted based on the recommendation of All India Rural Credit Review Committee (1969). The committee observed that the co-operatives alone, though they had increased their coverage since 1950 both in terms of membership and finance provided, would not be in a position to meet the increasing requirements of credit. The committee also pointed out that a large number of PACS are not viable and therefore these could be regarded as inadequate and unsatisfactory agencies for the distribution of production credit. It was of the view that both commercial banks and co-operative credit societies can play a complementary role without getting into conflict with each other.

At present, many agencies, viz., commercial banks, co-operative credit societies and Regional Rural Banks, are significantly operating in the field of agricultural finance.

Problems

RBI constituted a working group in 1976 under the chairmanship of C.E.Kamath to go into the problems of inefficiency in disbursement of credit under multiagency approach in agricultural financing. The main findings were:

- a) The existence of a number of financing agencies in a common area of operation and disbursement of credit in an uncoordinated manner have led to multiple financing, over- financing, tinder financing and diversion of loan amount to unproductive purposes.
- b) Credit agencies could not formulate a meaningful agricultural development plan on an area basis
- c) Recovery of loans becomes difficult as more than one credit agency claim, on the same income/security.
- d) Problems arise due to different systems, procedures and policies in lending by different agencies. Differences exist in the spheres of timeliness in sanctioning credit, sanctioning powers, security norms, service and supervisory charges, recovery performance and procedures *etc.*

5) Area Approach

The National Credit Council (NCC) appointed a Study Group in 1969 under the Chairmanship of Prof. D. R. Gadgil to suggest an appropriate organisational framework for effective implementation of social objectives. The Study Group recommended an **Area Approach** for the development of financial structure through intensive efforts. In the same year, RBI appointed Sri F.K.F. Nariman Committee to study this recommendation. The Committee endorsed the views of the 'Lead Bank Scheme'. The RBI accepted the recommendation and 'Lead Bank Scheme' came into force from 1969.

As per the scheme each districts is allotted to a prominent commercial bank in the district and it will play a lead role in promoting the development schemes in co-ordination with other banks and the central and state Government agencies, the twin objectives of the Lead Bank Scheme are:

- i) to launch a programme of rapid branch expansion particularly in unbanked and under banked areas; and
- ii) to ensure adequate flow of institutional credit to the neglected and weaker sections of the community to fill up spatial and sectoral credit gaps.

After the introduction of this scheme, the population per bank office has come down from 65,000 in 1969 to 12,000 in 2013.

Specifically the functions of the Lead Bank Scheme are:

- Surveying the potential areas for development of banking in the district;
- Identifying the business establishments which were hitherto dependent upon non-institutional agencies and financing them so as to enable them to raise their resources and surpluses from the advances made by the bank
- Examining the marketing facilities available for disposal of agricultural and industrial commodities and linking credit with marketing
- Assisting other lending agencies
- Developing contacts and maintaining liaison with Government and other agencies and
- Preparing District Credit Plans much ahead of the season with the help of technical committee

The lead bank is not a monopolist in the banking business but acts as consortium leader for coordinating the efforts of all financial institutions operating in the district. Under the lead bank scheme in each district one of the commercial banks functions as a lead bank

for providing branch network and development of credit under various areas of priority sector.

DISTRICT CREDIT PLAN (DCP)

Scattered lending over a large area does not create any desired impact of institutional finance on agricultural development. However, the impact of bank finance can be achieved if the lendings are advanced in a compact area.

The District Credit Plans introduced through the 'Lead Bank Scheme' have become instruments for the Government to implement the developmental activities, identify the priority sectors and reduce the imbalances in the operational area. The 'District Credit Plans' are prepared keeping in view the credit requirements for agriculture and allied activities and small industries. Regulating the flow of funds as per the plan priorities is the main objective of District Credit Plans. It is a blue print of bankers containing the technically viable and economically feasible schemes which will be implemented by the collective efforts of all institutional agencies.

According to the original scheme, these plans used to be prepared by Lead Bank Officers covering a period of 3 to 5 years based on the development plans of various participating agencies and conveniently phased into 'Annual Action Plans' for smooth implementation. However, with the implementation of 'Service Area Approach', the bank branches are required to prepare their Branch Credit Plans for each financial year, which are aggregated at district level into 'Annual Credit Plan' by the Lead Bank Officer. With the introduction of 'Service Area Approach' the method for preparation of 'Annual Action Plans' at district level has undergone a sea change. According to the new method, Branch Managers are required to prepare branch credit plans, which after finalization by Mandal Level Bankers' Committee/Taluk Level Bankers' Committee, are aggregated at joint mandal level/taluk level and district level.

DISTRICT CONSULTATIVE COMMITTEE (DCC)

It is formed at the district level. Lead Bank Officer is the Convener and District Collector/District Magistrate is the Chairman. The participants are Chief Executive Officer of Zilla Parishad, Project Director of DRDA, General Manager of District Industries Centre, District level functionaries of agricultural/animal husbandry/sericulture, Regional Managers of the participating banks, representatives of NABARD, RBI and representatives of Co-operative Institutions.

Functions of DCC:

- Identifying potential areas for development and formulation of bankable schemes for inclusion in DCP/AAP;
- Discussing and finalising DCP/AAP/IRDP plans;
- Reviewing the implementation of the plans and identifying unbanked areas for branch expansion;
- Reviewing advances made by all institutional agencies to various sectors;
- Reviewing the recovery performance and rendering necessary help for recovery of various Government sponsored programmes;
- Reviewing the problems faced by the banks and Government agencies (officials) in implementing various Government programmes; and
- Considering the security arrangements and other infrastructural facilities for rural branches

State Level Bankers Committee

It functions as a clearing house for the issues emerging from the discussions of the DCCs. RBI is closely associated with the State Level Bankers Committee.

Constraints in the Lead Bank Scheme

- i) The district credit plan is formulated on the basis of existing infra-structural facilities and on the assumption of future development plans as envisaged in the five year plans (FYP). But there is delay in the development of such infrastructural facilities.
- ii) Non-availability of raw materials and escalation of their costs affect the technical and economic feasibilities.
- iii) The execution of this programme is not the exclusive responsibility of the Lead bank. Other banks are equally responsible for the implementation of the programme. Under such circumstances, lack of co-ordination among lending and other development agencies affect the implementation of various programmes.

b) Village Adoption Scheme (VAS)

Village Adoption Scheme was first conceived by State Bank of India with an intension to finance small farmers under the area approach strategy. The scheme aims at deriving, in full, the advantages accruing from concentrated and coordinated efforts in areas with significant agricultural development potential and having a large number of small and marginal farms. It is for the bank to take special interest in the development of the village it has adopted, in co-ordination with other agencies functioning in that area. The banks have to undertake detailed survey of the village and prepare development plans. These plans have to

be implemented with constant follow-up action. And the banks have to evaluate the performance of productive activities for which loan are given.

C) Service Area Approach

With a view to improve the linkage between the bank credit and its objectives viz., increasing the production, enhancing the productivity of resources and raising the income of rural population, the RBI advised the chief Executives of public sector banks to personally carry out field visits in rural areas of different districts all over the country. A seminar by the top executives of banks and GOI was held in January 1988 wherein it was decided to launch the service Area Approach (SAA) and hence SAA was commenced from April 1, 1989.

Stages of SAA

- i) Identification of the service area for each bank branch:
- ii) Survey of the villages in the Service Area.
- iii) Preparation of credit plan on an annual basis for the service area by each branch

6) Capital Rationing

Capital Rationing refers to allocation of scarce capital resources among competing ends. The concept of credit rationing is applicable to borrower and lender. The tendency of the lender to limit the amount of credit provided to the farm business is known as external capital rationing. Likewise, the borrower also adopts capital rationing with his limited capital to derive maximum returns from the alternative investment choices. This is called internal capital rationing.

7) Instant Credit Scheme

This scheme was introduced during 1991 with the aim of providing credit without any delay to the persons who repay the loans regularly. Under this scheme, green card is issued to those members who had repaid the loan promptly in the last three years. By showing the green card, the member can avail the credit immediately without waiting for the sanction of loan by the concerned officials. It is expected that this system will induce the farmers to repay the loan promptly and avail fresh loans without any delay. The possession of the green card will also give a social status.

8) Crop Production Loan

Crop Production loans are granted by the financing institutions for growing crops. This loan amount depends on the input requirements of the crop and hence it varies with the crop. The loan was first introduced in 1950 in the erstwhile Bombay State. Later it was introduced throughout the country based on the recommendations of All India-Rural Credit Survey

Committee (1954) and the Committee on co-operative credit (1960). At present, all financing institutions provide crop loan.

The disbursement of loan is made in cash and kind. a major part of the loan is disbursed in the form of inputs such as improved seeds, fertilizers and pesticides which ensures its proper utilization. The repayment of loan is so fixed as to enable the farmer to repay the loan after marketing the produce. Wherever facilities are available the credit is linked with marketing to enable the farmer to get better price for his produce. The banker could also easily recover the loan. The crop loan is issued either by hypothecating the crop to the lending institution or based on the personal security of the farmer.

Scale of Finance

A scale of finance per acre for different crops is determined on the basis of cost of cultivation. Scale of finance is the credit limit fixed for each crop based on its cost of cultivation. It includes both cash and kind. It is revised once in a year. Since the cost of cultivation varies with the region and time uniform scale of finance could not be adopted.

Lecture No 4: Role and functions of Lead bank-Preparation of district credit plan. Kisan Credit Card Scheme. DIR Scheme – Relief Measures and Loan waiver Scheme. Rural credit policies.

Regional Rural Banks

The need for evolving a hybrid type of credit agency which combines the resource orientation of the commercial banks and the rural orientation of the co-operatives has been expressed in the reports of a few of the committees which have looked into rural credit problems.

To review the flow of institutional credit especially to the weaker sections of the rural community, the Government of India appointed a working Group in 1975 under the **chairmanship of Narasimhan**. The Group identified Certain deficiencies in the functioning of Co-operatives and commercial banks and recommended the setting up of state-sponsored, regionally based and rural oriented banks called Regional Rural Banks (RRBs) which would encompass local feel and familiarity with several problems which the co-operatives possess and the degree of business organisation, ability to mobilise the deposits, access to central money markets and a modernised outlook which the commercial banks have. The Government of India accepted this recommendation and RRBs were established in 1976.

The main objective of RRB is to provide finance to small and marginal farmers, agricultural labourers, artisans and small entrepreneurs whose annual income is less than Rs.10,000.

- To develop rural economy
- To provide credit for agriculture and allied activities
- To encourage village industries, artisans, carpenters, craftsmen, etc.,
- To reduce dependence of weaker sections on money-lenders;
- To fill up the gap created by moratorium on borrowings from money-lenders
- To help poor, financially for their consumption needs; and
- To make backward and tribal areas economically better by opening new branches.

Features

The idea behind the establishment of RRBS is to develop a comparatively backward area where the commercial bank and co-operative is relatively poor. The main difference from the commercial bank is that the area of operation of RRB is confined to a region comprising one or two contiguous districts. One of the tasks envisaged for the RRBs is to

maintain their cost of operations at a lower level than that of the commercial banks. So the salary structures of the staff were comparable to that of the state Government employees.

RRBs are sponsored by schedule commercial banks. A few non-public sector commercial banks and state co-operative Banks are also allowed to sponsor RRBs. The sponsoring bank provides managerial assistance to RRBs for the first five years. The management of RRB is through a nine member Board of Directors headed by a chairman who is an officer of the sponsor bank. The Board consists of three nominees of Government of India, two nominees of the concerned State government, four including the chairman by the sponsor commercial bank.

The authorized share capital of a RRB has been fixed at Rs.5 crore and issued capital is Rs. One Crore. Of this, 50 per cent is subscribed by the central government, 15 per cent by the concerned state government and 35 per cent by the sponsor bank.

Performance

As scheduled banks, they mobilize deposits and they have been allowed to offer slightly higher rate of interest, i.e., 0.5 per cent per annum, on their deposits up to five years.

RRBs have been advised to render other banking services like collection of cheques and bills, issue of drafts, collection of insurance premia, safe custody etc.

Table 4. Progress of RRBs in India

Sl.No.	Particulars	1976	1980	1988	1990	2013
1.	Number of RRBs	40	85	196		64
2.	Number of branches	489	3279	13350	14315	105813
3.	Deposits (Rs.in crores)	7.72	199.83	2305.82	3988.04	196422
4.	Advances (Rs.in crores)	7.02	243.38	2232.26	3525.08	129936
5.	Number of loss making banks	23	60	149	NA.	NA

Source: Statistical Tables relating to Banks in India 2012-2013, Reserve Bank of India bulletin, March 2013

Table 5. Purpose-wise Break up of RRB advances (Percent)

Sl.No.	Purpose	1987	2013
1.	Agriculture	57.7	52.8
2.	Rural artisans, village and cottage industries	6.2	2.4
3.	Retail trade and self employment	27.2	24.0

4.	Consumption loans/other purposes	8.9	20.8
	Total	100.0	100.0

Source: Statistical Tables relating to Banks in India 2012-2013, Reserve Bank of India bulletin, March 2013

List of RRBs

Sl. No	Sponsor Bank	RRB	Headquarters
1	Syndicated Bank	Prathma Bank	Moradabad (UP)
2	State Bank of India	Gorakhpur	Gorakhpur (UP)
3	United Bank of India	Gaur Grameena Bank	Malda (WB)
4	Punjab National Bank	Haryana Kshetriya Grameena Bank	Bhiwani (Haryana)
5	United Commercial Bank	Jaipur Nagalur Anchalik Grameen Bank	Jaipur (Rajasthan)

Problems:

- i) There is a lack of managerial efficiency due to larger area of operation. Some RRB cover 10-15 lakh population
- ii) Lack of uniform guidelines for recruitment and promotion.
- iii) The number of loss making banks in 1976 was 23 and it rose to 149 in 1988. The accumulated loss of RRB was Rs.550 crores (1991) which was more than their entire paid up capital and reserves.
- iv) Lack of both the expertise of commercial banks and local feel of the co-operatives.
- v) RRBs could not meet the credit needs of non-farm sector effectively.

Kisan Credit Card (KCC)

Provision of timely and adequate credit has been one of the major challenges for banks in India in dispensation of agricultural and rural credit to the farmers. Constant innovation is required in order to achieve the aim. Agricultural credit cards are not a new concept in the field of agricultural banking in India. The scheme had already been introduced in a number of public sector banks in a few states much earlier. These schemes were niche-marketed and were exclusively preserved for the privileged class of farmers and the small and marginal farmers did not have much access to them.

Similarly cash credit facilities were being extended by several public sector banks and cooperative banks to farmers with the view to improving their access to credit. Again this scheme was used only selectively. The KCC scheme was started by the Government of India

(GOI) in consultation with the RBI (Reserve Bank of India) and NABARD (National Bank for Agricultural and Rural Development) 1998-99 to join the features of both these schemes and to overcome their shortcomings.

The features of the scheme at a glance are:

- Type of revolving cash credit facility with unlimited withdrawals and repayments.
- Meet the production credit need, cultivation expenses, and contingency expenses of the farmers.
- Limits based on the basis of operational land holding, cropping pattern and scale of finance. This limit is inclusive of 20% of production credit.
- Each withdrawal to be paid within 12 months.
- Card valid for 3 years subject to annual renewals.
- Credit limits can be enhanced depending on performance and needs.
- Rescheduling is also possible depending upon the situation. If for example the crops fail due to a natural calamity and the farmer is not able to repay his loan, then he could get an extension of upto four years.
- Cash withdrawals through slips accompanied by card and passbook.
- A credit cum passbook would be issued.
- All branches engaged in agricultural lending could issue Kisan Credit Cards.

Eligibility

Borrowers with good track record over the past 2 years would be the prime customers. New borrowers could also be included if they could get proof of operational land holding from the *Patwari* (Village Administrative Officer).

Target group

Short-term crop loans required by existing/new borrowers

Selection methodology

The farmer would be evaluated by the bank, on financial grounds by looking at his past record with the bank, and on personal grounds by looking at his reputation in the village.

Fixation of credit limit

The credit limit under the card may be fixed on the basis of the operational land holding, cropping pattern and the scale of finance by the District Level Technical Committee (DLTC) and SLTC. If the limit has not been fixed by the DLTC / SLTC or the limit in the opinion of the bank is low, appropriate scale of finance for the crop may be fixed by the bank.

Validity and repayment schedule

A card once issued would be valid for a period of 3 years. The facility may be extended, the amount enhanced or cancelled, depending on the performance of the farmer. Repayments are to be made within 12 months of taking the credit.

Collateral

- Loan Amount security to be furnished
- Upto Rs. 10,000 DPN (demand promissory note) / loan agreement is needed only
- Rs. 10000 and upto Rs. 25,000 Hypothecation of crops is required.
- Above Rs. 25,000 Hypothecation of crops and mortgage of land (or) third party guarantee is needed

Interest

This is subject to change. Amount of Interest for Repayment period:

Upto one year Exceeding one year

- Upto Rs. 25,000 11 % 11 %
- Above Rs. 25,000-Rs. 2,00,000 12 % 12 %
- Above Rs. 2,00,000-Rs. 25,00,000 13.5% 13.5%
- Rs. 25,00,000 and above - (Depending on Credit Risk Rating) 13.25% to 15.5%

Table 3. Number of Kisan Credit Cards issued Agency Wise (Number in Lakhs)

Year	Co-operative Banks		Regional Banks		Commercial Banks		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1998-99	1.55	19.80	0.06	0.77	6.22	79.44	7.83	100.00
1999-00	35.95	70.02	1.73	3.37	13.66	26.61	51.34	100.00
2000-01	56.14	64.89	6.48	7.49	23.90	27.62	86.52	100.00
2001-02	54.36	58.20	8.34	8.93	30.71	32.88	93.41	100.00
2002-03	45.79	55.55	9.64	11.69	27.00	32.76	82.43	100.00
2003-04	48.78	52.76	12.74	13.78	30.94	33.46	92.46	100.00
2004-05	35.56	36.73	17.29	17.86	43.96	45.41	96.81	100.00
2005-06	25.98	32.43	12.49	15.59	41.65	51.98	80.12	100.00
2006-07	22.98	27.00	14.06	16.52	48.08	56.48	85.12	100.00
2007-08	20.91	24.69	17.72	20.92	46.06	54.39	84.69	100.00
2008-09	13.44	15.64	14.14	16.46	58.34	67.90	85.92	100.00

2009-10	17.43	19.36	19.49	21.64	53.13	59.00	90.05	100.00
2010-11	28.12	27.66	17.74	17.45	55.82	54.90	101.68	100.00
2011-12	26.61	23.22	19.95	17.41	68.04	59.37	114.60	100.00
2012-13	26.91	20.73	20.48	15.78	82.43	63.50	129.82	100.00
Total	460.51	35.90	192.35	14.99	629.94	49.11	1282.80	100.00
EGR	1.57%		26.37%		14.27%		9.39%	

Source: Report on Trend and Progress of Banking in India, RBI, Mumbai, various issues

The scheme was revised in 2012 to make room for ATM enabled debit card, operation thorough wider delivery channels including mobile handsets, in-built cost escalation for assessing limits, wider coverage under crop loans, etc., During 2013-14 upto August 2013, 10.78 lakh cards were issued by Cooperative banks and the amount outstanding was 3,124.51 crore. During the same period RRBs had issued 7.83 lakh cards with outstanding amount of 6,184.50 crore (NABARD, Annual Report 2013-14).

Differential Rate of Interest

The Different Rate of Interest Scheme was introduced in 1972 based on the recommendations of a RBI committee headed by R.K. Hazari to overcome the limitation of the interest rate policy on account of its general and in indiscriminate nature. The Government of India has formulated a scheme for extending financial assistance at concessional rates to selected low income groups for productive endeavours.

The salient features of the scheme as on 31.03.2009 are as under:

1. Eligibility Criteria

- i) Family income of the borrower from all sources does not exceed Rs.18000/- in Rural area and Rs. 24000/- in Urban and Semi urban area per annum.
- ii) Land holding not to exceed 1 acre of irrigated land or 2.5 acres of nonirrigated land.
- iii) SC/ST borrowers are eligible for finance irrespective of their land holdings
- iv) The applicant should not be assisted under any of the subsidy linked schemes of Central/State Government and State owned corporation.
- v) Physically handicapped persons pursuing a gainful occupation
- vi) Indigent students of merit going in for higher education who do not get scholarships /maintenance grants from Governmental or educational authority

2. Institutions

Following institutions are eligible for credit under the Scheme:

- i) Orphanages and women's homes where saleable goods are made and for which no adequate and dependable source of finance e.g., endowments or regular charities, exist.
- ii) Institutions of physically handicapped persons pursuing a gainful occupation where some durable equipment and/or continuous supply of raw material is useful.

3. Quantum of Loan

- i) For House Loan Purpose : Rs 20000.00
- ii) For Others Purpose : Rs 15000.00

4. Target

Minimum of 40% of DIR advances to SC/ST beneficiaries. 2/3rd of the advances should be routed through Rural/Semi urban branch. Overall target for the Bank: 1% of the total advances of the bank as on previous year.

5. Lending to Artisans under DRI

- i) Rural Branches : 10 loans per quarter per branch
- ii) Semi-Urban/Urban Branches : 5 loans per quarter per branch

6. Subsidy : NIL

7. Margin : NIL

8. Rate of Interest : 4% p.a. at Simple rate

9. Security: Hypothecation of assets created by bank loan. No collateral security is required

10. Repayment : 5 years including moratorium period

11. Moratorium period : Suitable moratorium period may be considered.

14. Selection of beneficiary: By Field Staff

15. Insurance : No insurance except for live stock. If considered necessary, the premium amount should be borne by the Bank.

15.Extend lending under DRI scheme to non-SGSY SHGs provided all the members of SHG meets individually the eligibility and other criteria under DRI lending. The lending to SHGs will be at 4% p.a.

Agricultural Debt Relief Scheme / Loan Waiver Scheme:

Under the Government of India's Agricultural and Rural Debt Relief (ARDR) scheme, 1990, rural borrowers were provided relief by way of waiver / write- off their dues in default as on laid October, 1989. The extent of relief varies from state to state. In Tamilnadu, it was upto Rs10,000. The responsibility of providing relief to defaulters of co-operatives was entrusted to the state governments with the central assistance in accordance with the guidelines issued by the NABARD.

To avail this facility, the farmers have to produce the anawari certificate issued by Tahsildar. The extent of debt relief provided is given below: The agricultural debt waiver scheme announced in 2008 completely waived small and marginal farmers agricultural credit distributed after march 2007.

On 29 February 2008, P. Chidambaram, at the time Finance Minister of India, announced a relief package for farmers which included the complete waiver of loans given to small and marginal farmers Called the Agricultural Debt Waiver and Debt Relief Scheme, the 600 billion rupee package included the total value of the loans to be waived for 30 million small and marginal farmers (estimated at 500 billion rupees) and a One Time Settlement scheme (OTS) for another 10 million farmers (estimated at 100 billion rupees). During the financial year 2008-09 the debt waiver amount rose by 20% to 716.8 billion rupees and the overall benefit of the waiver and the OTS was extended to 43 million farmers. In most of the Indian States the number of small and marginal farmers ranges from 70% to 94% of the total number of farmers.

The general impact of this scheme is as follows:

- Though the scheme has helped the farmers who have been affected by natural calamities, it has increased the number of willful defaulters i.e., it has accentuated the problem of recovery of loan.
- It has resulted in inadequacy of capital for normal business.
- It has put a heavy financial burden to the government.

So the government has to take a policy decision that the relief measures would benefit only by those who are really affected by natural calamities.

Rural Credit Policies

Advantages of institutional Lending

- i) The mobilization of deposits and their allocation to sector and projects can be controlled / monitored by the government.
- ii) The terms and conditions of credit can be made favourable to farmers especially to weaker sections of the rural area so as to prevent the exploitation of farmers by private lending agencies.
- iii) The farmers can avail the professional expertise available at the institutional agencies.

Problems

- 1 Marginal farmers and agricultural labourers received very less benefits from institutional agencies.
- 2 One of the major lacunas of IRDP was the wrong identification of beneficiaries in order to achieve the targets quickly and this had made the whole programme unproductive, creating further problems for both the bankers and borrowers.
- 3 Subsidy has to be passed on to the borrower only after the successful completion of the project, however, in practice, subsidy is given along with loan and this results in the misuse by unscrupulous borrowers, sources of credit.
- 4 Poor recovery of loans affects the functioning of institutional lending agencies.

Vaidyanathan: Comments on rural credit policies

- Increased credit supply [indebtedness] may not lead to increase in agricultural productivity
- Private capital formation without concurrent effect on economics of agriculture is worrying
- If credit is not appropriately directed, it might lead to deep indebtedness and distress
- Focus on public capital formation and infrastructure to address the problem of productivity

Reserve Bank of India

The Reserve Bank of India (RBI) was established in April 1, 1935 in accordance with the provisions of the RBI Act, 1934. The Agricultural credit Department (ACD) was organized in 1935 to co-ordinate the Bank's operations with State Co-operative Banks and other banks and organization dealing with agricultural credit. Financing agriculture by commercial banks is looked after by the Department of Banking Operations and Development (DBOD) while ACD continued to take care of co-operative credit may be viewed from three aspects:

- a) Provision of finance
- b) Promotional Activities
- c) Regulatory functions

a) Provision of Finance:

RBI extends short, medium and long-term credits to agriculture through co-operative channels. The bulk of the credit granted by the RBI is related to short-term to meet seasonal agricultural operations. The RBI Act was amended in 1955 to provide for the establishment of two funds, viz., the National Agricultural credit (Long Term Operation) fund and National Agricultural Credit (Stabilization) fund. The three components of medium-term credit are: a) loans for purchasing shares in co-operative processing societies, b) loans for agricultural and other allied purposes, including animal husbandry and viniculture and c) conversion of short-term agricultural loans into medium term loans when repayment becomes difficult due to natural calamities. While the first two a) and b) are financed out of the NAC (LTO) fund and the c) (Last one) is out of NAC (stabilization) fund. The RBI provides long-term credit as loans to the state governments for contribution to the share capital of the co-operative credit institutions and to NABARD. The RRBs get refinance facility from the RBI up to 50 per cent of their outstanding advances.

b) Promotional Activities:

Under rehabilitation programme, most of the cooperative banks have attained viable status. The study Teams appointed by the RBI have given constructive suggestions to reorganise the co-operative structure on sound lines. The RBI evolved a scheme to finance the weak PACS by commercial banks. It initiated the lead Bank Scheme in 1969 and its impact is seen branch expansion and other activities of the commercial banks. It advised the banks to participate effectively in the Integrated Rural Development Programme and extend loans to the weaker sections.

C. Regulatory Functions:

As a lender, the RBI not only concerns itself with the quantity of credit but also attempts to improve the quality of credit extended and also the efficiency of the channels through which it is provided to the rural sector. The RBI frames the overall credit policy on the basis of the credit needs of agriculture. Limits to credit institutions are fixed by taking into account the demand for credit and not just arbitrarily. The cash / liquidity ratios applicable to co-operatives are lower than those fixed for commercial banks. The co-operatives are enabled to borrow from the RBI at an interest rate which is three per cent below the bank rate in respect of crop loans. They are also permitted to pay slightly higher rates of interest on their deposits. The refinancing functions of RBI relation to rural credit were taken over by NABARD after its formation in 1982.

Agricultural Refinance and Development Corporation (ARDC)

The inadequacy of institution finance with regard to long-term credit was brought to light by the committee on co-operatives credit (1960). So it was recognized that the country needed a refinance body with adequate resources of money and to co-ordinate, guide and assist the long term credit lending institutions. Thus, the Agricultural Refinance Corporation (ARC) was established on 1 July, 1963 under the Agricultural refinance Corporation Act of 1963 for granting medium and long-term credit by way of refinance. In order to emphasize the development and promotional role of the corporation, it was renamed as Agricultural Refinance and Development Corporation (ARDC) in 1975. It was largely meant to refinance, assist and guide State Land Development Banks. In due course, it extended assistance to commercial banks and the state co-operative banks. This corporation was taken over by NABARD in 1982.

National bank for Agriculture and Rural Development (NABARD)

On the basis of the views expressed by the All India Rural credit Review Committee (1969), the Administrative Reforms Commission (1970), the banking Commission (1972), and the National Commission on agriculture (1976), the Committee to Review the Arrangements for Institutional credit for Agriculture and Rural Development (CRAFICARD) appointed by the RBI under the chairmanship of B. Sivaraman in 1979 considered the desirability and the feasibility of establishing a national bank for rural development in the context of integrated rural development. While examining the activities of the ARDC and the RBI in the delivery of rural credit against massive credit needs for rural development over the coming years, the CRAFTICARD felt that the present national level institutions had certain deficiencies affecting their capacity to meet the stupendous task of integrates' rural development aimed at the uplift of the weaker sections in the rural areas within a

given time horizon. The committee recommended for the establishment of NABARD and hence it was started, functioning since 12th July 1982.

As such it has replaced by merging in itself, the ARDC and the two credits related constituents of the RBI, namely Agricultural Credit Department and the Rural Planning and Credit Cell, dealt with by DBOD, was placed under the charge of the RPCC in 1979). Thus, NABARD is conceived as an exercise of decentralization of the RBI's functions relating rural credit and that it would take over the ARDC and the refinancing functions of RBI in relation to state co-operative banks and RRBs.

Resources

The share capital of NABARD is Rs. 100 crores and is held by the RBI and GOI in equal proportion. The NABARD draws funds from the RBI for its short-term operations and for long-term operations, it draws from the Government of India, floats bonds in the open market and also draws from its National Agricultural credit (Long Term operations) Fund and National Agricultural Credit (stabilization) Fund . The NABARD is also authorized to accept deposits with maturity period of not less than twelve months from the central and state Governments, local authorities, scheduled banks etc. and also to borrow foreign currency with the approval of central government.

Management

The management of NABARD is vested with a 15 member Board of management which consists of a chairman, a managing Director and 13 Executive Directors. The chairman is the ex-officio Deputy Governor of RBI. The managing Director is the Chief Executive of the Bank with operational responsibility for the performance of various tasks. The Executive Director will be in charge of each of the major functional divisions i.e., two Directors from central Government, three sitting Directors from co-operative and commercial Banks and two experts on rural economy and rural development. The Board of Directors can constitute an Advisory Council.

The two Directors from state Governments will be appointed by rotation to give representation to five Zones, Viz., Northern, Southern, Eastern, Western and North-Eastern. NABARD will be, thus, broadly divided into five zones with its head quarters at Bombay and 16 regional offices located in i) Jammu ii) Chandigarh iii) Lucknow, iv) Patna, v) Gauhati, vi) Kolkata, vii) Bhubaneswar viii) Hyderabad, ix) Bangalore, x) Chennai Xi. Trivandram, xii) Bombay xiii) Indore, xiv) Ahmadabad xv) New Delhi and xvi) Jaipur.

Functions of NABARD

1. Provision of Finance

NABARD provides different types of refinance to the eligible institutions.

a. Short term credit: The eligible institutions are State co-operative Banks, Regional Rural Banks and other financial institutions approved by RBI. The purposes are seasonal agricultural operations and marketing of crops, marketing and distribution of inputs like fertilizers, pesticides, etc., production and marketing activities of artisans small scale industries, village and cottage industries, any other activity connected with agricultural / rural sector. The period is up to 18 months

b. Medium term credit: The eligible institutions are state cooperative banks, State Land Development Banks, Regional Rural Banks and other financial institutions approved by RBI.

The purposes are any investment connected with agriculture and rural sector requiring MT credit assistance. The period is between 18 months and 7 years.

C. Long term credit: The eligible Institutions are State Cooperative Banks (SCB), State Land Development Banks, Regional Rural Banks, Commercial Banks and other financial institutions approved by RBI. The period available is upto to a maximum of 25 years.

The purposes of long term credit are:

- Refinance for investment in agriculture and allied activities such as minor irrigation, land development, soil conservation, dairy, sheep, poultry, piggery, farm mechanization, plantation/horticulture, forestry, fishery, storage and market yards etc.
- Refinances loans meant for artisans, small-scale industries, village and cottage industries and others (non-farm sector)
- Loans to state government for contributing share capital to co-operative institutions.

2. Development Functions

- Co-ordinates operations of rural credit institutions.
- Assists governments, RBI and other institutions in rural development efforts.
- Contributes to the share capital and securities of eligible institutions concerned with agriculture and rural development.
- Assists state government to enable them to contribute to the share capital of eligible institutions.
- Frames overall rural credit policies
- Provides facilities for training, research and dissemination of information in the fields

of rural banking, agriculture and rural development.

- Undertakes the inspection of RRBs and co-operative credit institutions.

3. Supervisory Functions

- To protect the interest of the present and future depositors
- To ensure that the business conducted by these banks is in conformity with the provisions of the relevant Acts/Rules, regulations/Bye-Laws
- To ensure observance of rules, guidelines, etc., formulated and issued by NABARD / RBI/ Government
- To examine the financial soundness of the banks and
- To suggest ways and means for strengthening the institutions so as to enable them to play more efficient role in purveying rural credit

Deposit Insurance and Credit Guarantee Corporation (DICGC)

The concept of insuring deposits kept with banks received attention for the first time in the year 1948 after the banking crisis in Bengal. Subsequently, in the year 1950, the Rural Banking Enquiry Committee also supported the concept. Serious thought to the concept was, however, given by the Reserve Bank of India and the Central Government after the crash of the Palai Central Bank Ltd., and the Laxmi Bank Ltd. in 1960. The Deposit Insurance Act, 1961 came into force on January 1, 1962.

The Deposit Insurance Scheme was initially extended to functioning commercial banks only. This included the State Bank of India and its subsidiaries, other commercial banks and the branches of the foreign banks operating in India. Since 1968, with the enactment of the Deposit Insurance Corporation (Amendment) Act, 1968, the Corporation was required to register the 'eligible co-operative banks' as insured banks. Further, the Government of India, in consultation with the Reserve Bank of India, introduced a Credit Guarantee Scheme in July 1960. The Reserve Bank of India was entrusted with the administration of the Scheme and was designated as the Credit Guarantee Organization (CGO) for guaranteeing the advances granted by banks and other Credit Institutions to small scale industries. The Reserve Bank of India operated the scheme up to March 31, 1981. The Reserve Bank of India also promoted it as public limited company on January 14, 1971, named the Credit Guarantee Corporation of India Ltd. (CGCI).

The main thrust of the Credit Guarantee Schemes, introduced by the Credit Guarantee Corporation of India Ltd., was aimed at encouraging the commercial banks to cater to the credit needs of the hitherto neglected sectors, particularly the weaker sections of the society engaged in non-industrial activities, by providing guarantee cover to the loans and advances granted by the

credit institutions to small and needy borrowers covered under the priority sector. With a view to integrating the functions of deposit insurance and credit guarantee, the above two organizations (DIC & CGCI) were merged and the present Deposit Insurance and Credit Guarantee Corporation (DICGC) came into existence on July 15, 1978. Consequently, the title of Deposit Insurance Act, 1961 was changed to 'The Deposit Insurance and Credit Guarantee Corporation Act, 1981'.

Effective from April 1, 1981, the Corporation extended its guarantee support to credit granted to small scale industries also, after the cancellation of the Government of India's credit guarantee scheme. With effect from April 1, 1989, guarantee cover was extended to the entire priority sector advances, as per the definition of the Reserve Bank of India. However, effective from April 1, 1995, all housing loans have been excluded from the purview of guarantee cover by the Corporation.

Management

The authorized capital of the Corporation is Rs.50 crore, which is fully issued and subscribed by the Reserve Bank of India (RBI). The management of the Corporation vests with its Board of Directors, of which a Deputy Governor of the RBI is the Chairman. As per the DICGC Act, the Board shall consist of, besides the Chairman, (i) one Officer (normally in the rank of Executive Director) of the RBI, (ii) one Officer from the Central Government, (iii) five Directors nominated by the Central Government in consultation with the RBI, three of whom are persons having special knowledge of commercial banking, insurance, commerce, industry or finance and two of whom shall be persons having special knowledge of, or experience in co-operative banking or co-operative movement and none of the directors should be an employee of the Central Government, or the RBI or the Corporation or a director or an employee of a banking company or a co-operative bank, or otherwise actively connected with a banking company or a co-operative bank, and (iv) four Directors, nominated by the Central Government in consultation with the RBI, having special knowledge or practical experience in respect of accountancy, agriculture and rural economy, banking, co-operation, economics, finance, law or small scale industry or any other matter which may be considered to be useful to the Corporation.

The Head Office of the Corporation is at Mumbai. An Executive Director/Chief General Manager is in overall charge of its day-to-day operations. It has four Departments, viz. Accounts, Deposit Insurance, Credit Guarantee and Administration, under the supervision of other Senior Officers.

Deposit Insurance

Banks covered by Deposit Insurance Scheme are (i) All commercial banks including the branches of foreign banks functioning in India, Local Area Banks and Regional Rural Banks. (ii) Co-operative Banks - All eligible co-operative banks as defined in the DICGC Act are covered by the Deposit Insurance Scheme.

Insurance coverage

The Act also empowers the Corporation to raise this limit with the prior approval of the Central Government. Accordingly, the insurance limit was enhanced from time to time and it has been raised to Rs. 1,00,000/- with effect from 1st May 1993 onwards.

Types of Deposits Covered

DICGC insures all bank deposits, such as saving, fixed, current, recurring, etc. except the following types of deposits.

- Deposits of foreign Governments;
- Deposits of Central / State Governments;
- Inter-bank deposits;
- Deposits of the State Land Development Banks with the State co-operative banks;
- Any amount due on account of and deposit received outside India;
- Any amount which has been specifically exempted by the corporation with the previous approval of the RBI.

Insurance Premium

The rate of insurance premium was fixed at .05 or 1/20th of 1 per cent per annum with effect from 1st July 1993. Since 2001, the Corporation has had to settle claims for large amounts due to the failure of banks, particularly in the Co-operative Sector causing a drain on the Deposit Insurance Fund (DIF). While there is sufficient corpus in Deposit Insurance Fund for the present, it is necessary to build up a sound DIF in the long term to protect the interests of the banking system. With this objective the Corporation decided to enhance the deposit insurance premium from 5 paise per Rs.100 of assessable deposits per annum to 10 paise per Rs.100 of assessable deposits per annum in a phased manner over a period of 2 years.

Accounts

The Corporation maintains the following Funds: Deposit Insurance Fund, Credit Guarantee Fund and General Fund. The first two are funded respectively by the insurance premia and

guarantee fees received and are utilized for settlement of the respective claims. The General Fund is utilized for meeting the establishment and administrative expenses of the Corporation.

The Mission of DICGC is to contribute to stability and public confidence in the banking system through provision of deposit insurance and credit guarantee to small depositors and borrowers. The Vision is to make it as one of the most efficient and effective deposit insurance and credit guarantee providers, responsive to the needs of its stakeholder.

Agricultural Finance Corporation

Agricultural Finance Corporation India Limited (**AFC India Limited**) was incorporated on April 10, 1968 as a Public Limited Company with an Authorized Capital of Rs. 100 crore and Paid-up Capital of Rs. 5 crore by the then private sector commercial banks to “finance agriculture by all possible means”. (Currently the Paid-up Capital is Rs. 15 crore). Subsequent to the nationalization of fourteen major Indian Scheduled Commercial Banks on July 19, 1969, AFC repositioned itself as a Technical Support Institution for facilitating accelerated growth of Indian agriculture. AFC has now blossomed into a diversified reputed consultancy organization.

AFC India Limited (AFC) is governed by eminent Board of Directors comprising Chairmen and Managing Directors of eight Public Sector commercial Banks; Chairman of Development Finance Institutions i.e. National Bank for Agriculture and Rural Development, (NABARD) and Export & Import Bank of India (EXIM Bank) nominees of Government of India from the Ministries of Agriculture, Finance and Planning Commission; and three Experts in the fields of Agriculture, Finance and rural development. One of the three experts is currently the Chairman of the Board of Directors of the company. The Managing Director is the chief executive of the Company.

Promoted and owned by Banks and Development Finance Institutions, AFC is a Board driven Deemed Government Company u/s 619-B of the Companies Act, 1956. AFC’s Headquarter is situated at Mumbai. The Company has three Regional Offices at Kolkata, New Delhi and Bangalore besides three Branch Offices at Lucknow, Hyderabad and Pune and Field Offices at Kalahandi, Bargarh (Orissa) and Godda (Jharkhand).

AFC India (AFC) is a multi-disciplinary consultancy and technical support organization specializing in agriculture and rural development segments of the economy. The company has been providing broad-based consultancy services since 1968. Of late, the company has diversified into large scale grassroots level project implementation under watershed development, livelihood promotions, organic farming, agriculture extension

services, environmental impact assessments, retail microfinance operations, training and capacity building, education, skill development and financial literacy. In its four decades of its existence, AFC has been involved in more than 5000 consulting assignments in India and also in other countries. AFC's services has been utilised by various Ministries and Institutions of the Central and State Governments and Multi-lateral funding institutions like World Bank, Asian Development Bank, International Fund for Agricultural Development, UNDP/UNOPS, DFID, Islamic Bank.

Asian Development Bank

The Asian Development Bank, a multilateral development finance institution, was founded in 1966 by 31 member governments to promote the social and economic progress of the Asian and Pacific region. Over the past 31 years, the Bank's membership has grown to 57, of which 41 are from within the region and 16 from outside the region. It is a non-governmental organization providing funding and technical assistance throughout the Asian region.

Sources of Finance

ADB raises fund through bond issues on the worlds' capital markets, also rely on members' contributions, retained earnings from its lending operations and the repayment of loans.

Principal Functions

- to extend loans and equity investments for the economic and social development of its developing member countries (DMCs);
- to provide technical assistance for the preparation and execution of development projects and programs, and for advisory services;
- to promote and facilitate investment of public and private capital for development purposes; and
- to respond to requests for assistance in coordinating development policies and plans of its DMCs.

Functions

- Promote investment in the region of public and private capital for development purposes.
- Provide loans for the economic and social development of the member countries of the region.
- Help member countries in coordinating their development policies and plans.

- Provide technical assistance for the preparation, financing and execution of development projects and programmes.
- Undertake such other activities and provide such other services as may advance its objectives.
- Provide financial and technical assistance to member countries for environmental protection.
- Act as financial intermediary by transferring resources from global capital markets to developing countries.
- Support public resource mobilization and management to member countries

World Bank

The World Bank group originated as a result of the Bretton woods conference of 1944, is one of the world's largest sources of development assistance and it has extended assistance to more than 100 developing economies, bringing a mix of finance and ideas to improve living standards and eliminate the worst form of poverty.

Mission

- To fight poverty with passion and professionalism for lasting result.
- To help people themselves and their environment by providing resources, sharing knowledge, building capacity and forging partnership in the public and private sectors
- To be an excellent institution able to attract, excite and nurture diverse and committed staff with exceptional skills who know how to listen and learn.

Purposes of World Bank

The purposes of World Bank as laid down in the articles of agreement are

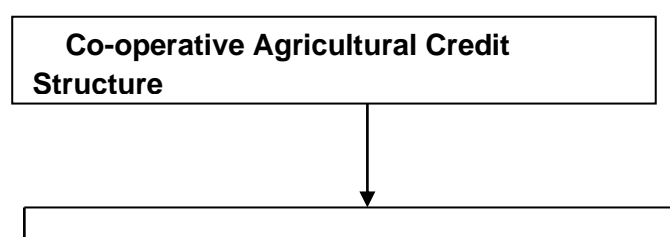
- To assist in the reconstruction and development of the territories of the members, by facilitating the investment of capital for productive purposes, including the restoration of economies destroyed or disrupted by war.
- To promote private foreign investment by means of guarantees or participation in loans and other investments made by private investors, and when private capital is not available on reasonable terms, to supplement private investment by providing on suitable conditions.
- To promote the long range balanced growth of international trade and main tenancy of equilibrium in the balance of payment, by encouraging international investment of the

productive resources of members, there by assisting in the raising productivity, the standards of living and conditions of labor in their territories.

Co-operative credit institutions – structure - short term and long term credit – its functions - Strength and weakness of co-operative credit system.

Co-operative Credit Institutions

The co-operative credit structure in India is characterized by two types of institutions: one, involved in the dispensation of short and medium term credit and the other in the provision of long term credit.



The Primary Agricultural Credit Societies (PACS) is the foundation stone on which the whole co-operative credit structure is built up. These societies are federated to District Central Co-operative Bank (DCCB), generally at the district level. The DCCBs are federated to State Co-operative Bank (SCB) which is an apex institution having close link with the RBI and NABARD. Long term credit is provided by Land Development Banks (LDBs). The State / Central Land Development Bank is the apex institution which operates through Primary Land Development Banks (PLDBs) at district / taluk / block level in some states or through its own branches where PLDBs do not exist.

a) Primary Agricultural Credit Societies (PACS)

The Formation of these societies dates back to 1904 when the first credit societies Act was passed. The objective was to provide cheap credit to the farmers in order to relieve them from the clutches of money lenders. The main functions of the PACS are:

- a. To promote economic interests of the members in accordance with the co-operative principles;
- b. To provide short and medium term loans;
- c. To promote savings habit among members;
- d. To supply agricultural inputs like fertilizers, seeds, insecticides, implements, etc.;
- e. To provide marketing facilities for the sale of agricultural produces; and
- f. To supply domestic products requirements such as sugar, kerosene, etc.

Management: The general body elects a managing committee which consists of five to nine members and elects a president and a secretary to look after the day – to – day functioning of the society. All the office bearers render honorary service. The RBI has given a directive to appoint a full time paid secretary to maintain the accounts for each society.

Membership: All agriculturists, agricultural labourers, artisans and small traders in the villages can become members of the society.

Share Capital: PACS issue ordinary shares of small value, i.e., Rs.10 and Rs.100 each to their members. The ownership of shares decides the rights and obligations of the holder to the society. Share capital forms an important part of the working capital. Members' borrowing capacity is determined by the number of shares held by them.

Liability: Initially, societies were formed with unlimited liability. The All India Rural Credit Review Committee pointed out that unlimited liability operates as a restraint on the willingness of the society to liberalize its loan policies, to admit new members and to extend its area of operation. Besides, it hinders the society to receive contribution from the state government whose liability inevitably has to be limited. In view of this, the societies were formed with limited liability and the existing societies were converted into limited liability societies.

Sources of Funds: Share capital, entrance fee, deposits, reserve fund, and loans borrowed from higher institutions and government are sources of funds of the co-operative societies.

PACS obtain loans from CCB or SCB to cater to the needs of their members. The maximum borrowing power of the society is based on its liability and it differs from state to state. It is generally fixed at 1/6th or 1/8th of the total value of the net assets of the solvent members. Credit limit is fixed by the Registrar or CCBs on the basis of the factors viz., total assets of the members' income and repaying capacity of members, owned funds of the society, audit classification and repayment performance.

Loaning Policies: PACs supply short term credit on the personal security of the borrowers, while medium term credit is given either by creating charge on their immovable assets or by mortgages. Repayment period is determined on the basis of incremental income derived out of the loan.

b) Central Co-operative Banks (CCBs)

CCBs form an important link between PACs and SCBs.

Functions

The major functions of CCBs are:

- a. to meet the credit requirements of member societies;
- b. to perform banking business;
- c. to act as balancing centres for the PACs by diverting the surplus funds of some societies to those which face shortage of funds.
- d. to guide and supervise the PACs; and
- e. to undertake non-credit activities.
- f.

The area of operation is generally a district. All types of co-operative societies such as marketing societies, consumers' societies, farming societies and urban co-operative credit societies apart from PACs can become member of CCBs.

Sources of Finance: These banks raise funds by way of share capital, deposits from public, and borrowings from SCBs government, RBI, SBI and commercial banks. The borrowing power of these banks ranges from 12 to 15 times of their paid-up share capital and reserve fund.

Loaning Policy: These banks generally extend short and medium term loans to PACS for financing agricultural activities. Loans are granted against proper security, landed assets, house mortgage, cattle, agricultural produce, jewels.

The number of CCBs has increased due to increase in number of branch offices. Because of various reasons, the percentage of overdue has increased from 8.7 per cent in 1950-51 to 20 per cent in 2012-13.

Management: The management of these banks is vested with board of Directors consisting of 12 to 15 members. A DCCB is considered weak when its estimated bad and doubtful debts, other overdue above three years and accumulated losses exceed 50 percent of its paid-up capital and reserves. Rehabilitation programme is being implemented to revitalize. As on March 2013, as many as 43 DCCBs were at loss and put under rehabilitation programme.

C. State Co-operative Bank (SCB)

It is the apex institution at the state level which links widely scattered PACS with the money market. The main objective of the bank is to link PACS with the money market and the RBI and to coordinate the work of CCBs.

The Functions of SCBs are:

- a. to act as bankers' bank to CCBs and also to supervise, control and guide CCBs;
- b. To mobilize financial resources needed by the PACS and deploy them properly among the various sectors of the movement;
- c. to co-ordinate the various development agencies and help the government in drawing plans for co-operative development and their implementation;
- d. to formulate and execute uniform credit policies for co-operative movement; and
- e. to perform banking functions such as issuing cheques, drafts, letters of credit (By issuing letter of credit, a banker requests another party (a banker or trader) to grant a specified amount to a third party specified therein and the issuing banker himself binds to pay the money paid under the letter of credit), collecting and discounting bills etc.
- f.

Area of Operation and Membership

Area of operation is within the state. Each state has one apex bank. Some States have more than one as in Maharashtra, Madhya Pradesh, Punjab and Andhra Pradesh. Membership is open to all CCBs and such other societies which have direct dealings with SCBs. State Governments have now become shareholders with a view to give them strength, influence and borrowing power.

Management: While the main authority of SCBs is vested with the General Body and powers of day-to-day functioning rests with the Board of Directors. As a share holder, the government nominates some directors and the rests are selected by the General Body. The General Body meets once in a year.

Sources of Finance: The sources of these banks are share capital, reserve funds, deposits from members and non-members, borrowings from NABARD, SBI, State Government and direct state contributions. The ceiling on borrowing varies from 12 to 20 times of the owned funds.

Loaning Policies: SCBs provide short term loans to meet expenses of agricultural operations, marketing of agricultural produces and distribution of controlled commodities. They grant medium term loans for the purchase of cattle, machineries, reclamation of land, renovation of wells, tanks and channels, construction of farm sheds and godowns, etc. Loans are granted to the member societies through their branches.

Achievements of Co-operative Credit Societies in India

The Co-operative credit system has been in existence for the past 90 years. The best assessment of co-operative movement was given by the All India Rural Credit Survey Committee, 1954 (i.e., exactly after 50 years of co-operative movements' existence) which stated "Co-operation has failed in India but it must succeed....". But since 1954, the co-operative movement has made great progress. Some of its achievements era listed below:

- a. The co-operative credit societies satisfy the basic condition of proximity as they can have intimate knowledge of the character and abilities of their members. Further, the credit provided by co-operative societies is bound to be cheap due to their low administrative costs.
- b. In 1951, the money lenders provided 69.7 per cent of the farmers' credit needs and it declined to 17 per cent in 1981. Presently the rural credit system is being dominated by co-operatives as they increased their share from 3.1 percent in 1951 to 30.20 per cent in 2002.
- c. Credit societies also provide non-credit services like marketing of farm produces, supply of farm inputs and consumer goods.
- d. Co-operatives have created a political awareness among rural people and made them to participate in economic development in a democratic way.

Weaknesses of Co-operative Credit Societies:

There are some important snags and deficiencies in the working of co-operative credit societies and they have failed to acquire the dynamism needed to discharge their responsibilities. The All India Rural Credit Survey committee and other Committees on co-operatives have brought out the following deficiencies in the cooperative credit societies.

(i) Lack of spontaneity: The movement was not voluntary and the people did not come forward to form societies to satisfy their economic needs. The villagers generally thought that the societies were government lending institutions.

(ii) Lack of funds: The basic feature of co-operative banking system must be a large reliance on resources mobilised locally and a lesser and lesser dependence on higher credit institutions. However, not only PACS but also the higher credit institutions, viz., DCCBs and SCBs could not attract as much deposits from the general public as was anticipated.

(iii) Loans for productive purpose only: Co-operatives give loans only for agricultural operations. But farmers need credit for consumption purpose also. Hence, they either depend on money lenders or they divert the production loans to sorry unproductive purposes which in turn lead to overdue problem.

(iv) Production of credit only: The Co-operatives have failed to appreciate the link between credit and processing and Marketing. What is really needed is a cooperative society which would integrate various aspects of agricultural operations in order to meet all the needs of the farmers.

(v) Non-viable Units: A viable unit is one which renders the more important services adequately to as many numbers of members as possible within a reasonable time. However, it is found that only 54.5 percent of the total number of societies earned profit at the end of 2012-2013 and the remaining societies could not function effectively and efficiently.

(vi) Uneven growth: The development of co-operative movement indicated that the progress in different parts of the country has been uneven.

(vii) Mounting Over dues: The financial soundness of cooperative credit structure depends on the prompt recovery of loans. The problem of overdue affects not only the interests of the defaulters themselves, but also the other regularly repaying members, creditors, and the very co-operative movement itself. The percentage of over dues to demand at the level of

PACS was reported to be 24.65 per cent in 2012-2013. At the level of DCCBs, the percentage of over dues to demand was 20.37 per cent in the same year.

(viii) Defective management and leadership: The failure or non-viability of co-operative credit societies is also due to defective management and leadership. The officials do not have proper training and hence they could not compete with money lenders or private lending agencies.

(ix) Interference of the government: The Government attempts to convert co-operatives into a government department with all its rigidities and short-sightedness associated with a government department. Government also did not take adequate interest in improving the financial strength of the societies. It also resorts to ban or postponement of recovery of loans which hampers the functioning of societies.

(x) Delayed credit: A Common complaint is that farmers do not get loans in time. So credit delayed is credit denied. Delayed credit tempts the borrower to divert it to other unproductive purposes.

(xi) Another problem faced by PCARDBs is the high cost of raising ordinary debentures. As noted by ACRC, issue of ordinary debentures for non-schematic lending for production purposes is at present a loss making proposition as the ordinary debentures carry higher rates of interest than the rates at which loans are issued by them.

(xii) Because of their strong socio-economic position, large farmers have cornered greater benefits from co-operatives.

Lecture No 7: Microfinance – definition, role in poverty alleviation – Self-Help Groups – characteristics, role, functions, growth and development in India. Role of Non-Governmental Organizations in promoting SHGs.

Finance is a vital input for economic activity, growth and development of rural areas as poverty is more pronounced in rural India. Financial institutions play a major role in capital formation, and in generation of income and employment of targeted groups of rural community. However, there is no spontaneity from these institutions by way of providing financial assistance to the resource – poor rural households owing reasons such as:

- i) the difficulties in loan recovery due to both willful and non-willful default in repayment by borrowers and
- ii) high financial risks associated with production and marketing of agricultural activities. As these rural backward areas lack infrastructure, entrepreneurship, business opportunities, and people are victims of exploitation and ignorance, the transaction cost of investment by the financial institutions and credit risks are high, and return on capital by the borrowing investors are also not attractive.

The nationalization of major commercial banks of India in 1969, paved way for the adoption of several strategies such as project centered approaches, target – group oriented approaches, area specific approaches such as Village Adoption Scheme, Service Area Approach, etc. to alleviate rural poverty. The ambitious credit scheme – Integrated Rural Development Programme (IRDP) with an element of subsidy could not yield the expected results because it was a supply-led, not demand-led credit programme such that the clients did not have their choice over ‘purpose’ and ‘amount’. The Agricultural and Rural Debt Relief (ARDR) scheme further hardened the attitude of the bankers towards rural credit and the rural borrowers towards repayment. All these only weakened the strength of the financial institutions and further reduced their interest to transact such business.

The co-operative credit societies also have deteriorated due to lack of efforts in resource mobilization, mismanagement and inefficiency of the bureaucracy, everlasting problem of overdue and callous attitude of the members about the functioning of their societies. The failure of formal institutions to serve the rural poor effectively led to a review and a look at the informal financial systems and lending groups. One such informal financial system in India, namely ‘Chit funds’ are old institutions in which members made periodic contributions that are pooled into a fund from which money is given to the members.

In order to bridge the gap between formal and informal credit systems, Mohamed Yunus started a research project in Bangladesh in 1979 and established Grameen Bank (GB) in 1983. The lending programme of GB basically depended on external fund although the members' savings has increased substantially overtime.

The resolutions of the third international symposium on the mobilization of personal savings in developing countries organized by the United Nations in 1984 were that i) internal savings must provide a basis for credit programmes, ii) state control of interest rates must be relaxed in favour of market or near-market rates, iii) for effective service, financial services need to be decentralized, iv) both formal and informal financial institutions are necessary for the financing of development and v) linkages between formal and informal financial institutions seem to be more promising than separate development.

In 1984, the Federal Ministry of Economic Co-operation and the Agency for Technical Co-operation of the Federal Republic of Germany undertook a series of studies and workshops on rural finance in developing countries resulted in a new policy for promoting Self-Help Groups (SHGs), different from Grameen Bank Model, and Self-Help Promotional Institution (SHPI) as a financial intermediation between the rural and micro-enterprises in the informal sector on the one hand and formal institutions on the other.

The project "Linking Banks and SHGs" started in 1988 as a pilot project of the Central Bank of Indonesia through the involvement of SHPI which would provide either training and consultancy services to the SHGs and in some cases additionally act as financial intermediaries.

Micro financing by 'non-formal' organizations has already been started. SEWA (Self Employed Women's Association) owned by women of petty trade groups was established on co-operative principle in 1974 in Gujarat. Working Women's Forum started promoting working women's co-operative societies in Tamil Nadu since 1980. Shreyas in Kerala actively got involved in micro finance operations since 1988 with the objective of promoting people's co-operatives, thrift and self managing people's bank.

Micro Finance

Micro-credit (World Bank, 1997) is defined as "programmes that provide credit for self employment and other financial and business services (including savings and technical assistance to very poor persons". Micro finance or micro credit institutions are dedicated to making it easy for very poor would be-entrepreneurs to borrow start-up capital. Micro finance institutions provide thrift, credit and other financial services and products of very small amounts, mainly to the poor in

rural, semi-urban and urban areas for enabling them to raise their income level and improve living standards. Their operations emphasize lending very small, short term loans to very poor micro-entrepreneurs.

In India, during 1986-87, NABARD funded a research project on “Savings and Credit Management of Self-Help Groups of Mysore Resettlement and Development Agency (MYRADA)”. In 1988-89, NABARD undertook a survey of 43 Non-Governmental Organizations (NGOs) spread over 11 states in India to study the functioning of SHGs and possibility of collaboration between banks and SHGs in the mobilization of rural savings and improving the delivery of credit to the poor.

Encouraged by the survey results, NABARD impressed upon Reserve Bank of India (RBI) to come out with a circular on July 24, 1991 advising commercial banks (and later RRBs and co-operatives also) to extend credit to SHGs under the pilot project of NABARD (500 SHGs to be covered). During the project period, The Association of Sarva Seva Farms (ASSEFA), Madras promoted 214 groups, mobilized Rs.1.4 million of thrift and disbursed credit of Rs.2.3 million; People’s Rural Education Movement (PREM), Behrampur promoted 829 groups, mobilized Rs. 1.9 million of thrift and disbursed credit of Rs.1.9 million; Professional Assistance for Development Action (PRADAN), Madurai, promoted 313 groups, mobilized Rs.1.3 million of thrift and disbursed credit of Rs.3.9 million; Community Development Society (CDS), Alappuza promoted 350 groups, mobilized Rs.2 million of thrift and disbursed credit of Rs.4.7 million. Thus, the results were quite encouraging.

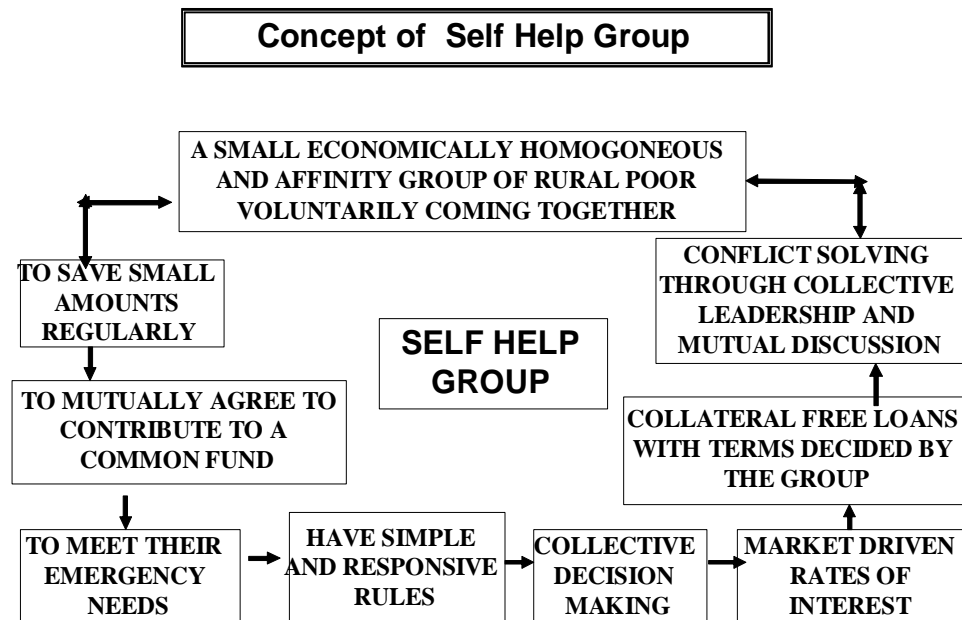
To formalize the mechanism further, RBI constituted a working group in November 1994 to review the functioning of NGOs and SHGs under the Chairmanship of Mr. S.K. Kalla and make recommendations for expanding their activities in rural sector. Accepting the recommendation, in April 1996, RBI advised the banks that lending to the SHGs should be considered as an additional segment under priority sector advances with the mainstream credit operation.

Organization and Functions of Self-Help Groups

The SHGs are small, informal and homogeneous group of not more than 20 members each. The groups have been recommended to keep them away from bureaucracy and corruption, unnecessary administrative expenditure and profit constraints. The size of 20 has been made mandatory because any group larger than this would need to be registered under the Indian legal system. These groups are expected to foster true (direct) democratic culture where all the members actively participate in the debate and decision – making process which is possible only in small groups. When the groups become larger, direct democracy tends towards indirect democracy which

would result in the formation of vested interests within the group. Groups are to be homogeneous so that members do not have conflicting interests and all members can participate freely without any fear and adverse consequence. The repayment rate tends to be lower in large groups and the propensity to default is high among heterogeneous groups. These are the features which distinguish small, homogeneous and informal SHGs from large, heterogeneous and formal co-operatives although both are found on the same principle of co-operation.

Loan repayment is guaranteed by group members collectively and access to future credit depends on successful repayment. These institutions are successful in terms of i) outreach and performance in delivering credit services to the poorest of poor women and rural artisans in rural and urban areas, ii) reduction in adverse selection of borrowers and iii) empowerment of women. Micro finance institutions (MFI) in India fall under two categories: i) Financial: Commercial banks, Regional Rural Banks and Co-operative banks and ii) Non-financial: a) Not for Profit MFIs: NGOs, Trusts, etc., b) Mutual Benefit MFIs: State / national credit co-operatives, and c) Profit Centered MFIs: Non-banking financial companies.



(Source : NABARD, 2004)

The SHGs after being formed (generally by an external agency) start collecting fixed amount (rarely variable amount) of thrift from each member regularly (mostly monthly). For about six months it only collects thrift; no loan is given to any member for the following reasons. Firstly, the working fund generated out of small thrift is negligible in the initial period; and secondly, it tests the patience and tries to instill mutual trust among the members. During this period the groups are expected to open a savings account with a financial institution which would like to extend credit. After accumulating a reasonable amount of resource, the group starts lending to its members for petty consumption needs. Claimants may be large, but resource is small. This forces them to take appropriate decision to identify the neediest person with regard to endowment level and the purpose of loan. A free and fair discussion removes the element of subjectivity from the decision-making process, makes the borrower understand the value of credit and the importance of repayment and accountability to the group.

The repayment of the loan along with interest and regular thrift enlarge the working fund and increase the scope of lending. Notwithstanding this, the working fund generated by the group may not be adequate to meet all types of credit needs of all the members. The group then approaches the financial institution where it had opened the savings account. If the bank is satisfied with the group in terms of: i) genuineness of demand for credit, ii) credit handling capacity of the members, iii) repayment behaviour within the group and iv) the accounting system and maintenance of the records, it extends a term loan of smaller amount to the group. The group in turn continues to take decision as in the past, the only difference being it has now a higher amount of resource. In addition, the group is jointly liable to the bank for repayment. The group's responsibility in monitoring the members therefore increases. This joint liability, however, provides incentives or compels the group to undertake the burden of selection, monitoring and enforcement that would otherwise fall on the lender. This joint liability, decision – making process and pressure at the group

level are the most important aspects for the banks to do business with the poor, illiterate and informal groups.

There is a huge demand for credit in small amounts for consumption, health, education, marriage, petty production, petty trade, etc., for very short to long durations which do not match the priority supply of banks. Banks have large loan amount meant for production purpose but not for other purposes that too for very short periods. It is not the rigidity of the banking procedures, but their constraints due to high transaction costs and risk because of asymmetric information that they cannot extend such credit to individual borrowers. Individual borrowers, on the other hand, face the problems of absorbing large amounts of credit for some unwanted purpose. Instead when the financial institution (FI) extends credit to SHG, i) the transaction cost for FI is minimized because the group takes the decision to borrow on behalf of the members and also the responsibility to repay; ii) the transaction cost of the individual member is reduced because the member transacts at the group level only; iii) the mismatch between demand and supply is reduced because the bank extends credit in lump-sum amount and the group uses the amount according to its own needs; also repayment pattern of the members to the group and of the group to the bank need not be the same.

When both the lender (FI) and the borrower (SHG) grow in mutual trust and the borrower honours the previous contracts, the lender expresses its willingness to extend higher amount of credit and even provide cash credit facility implying more flexibility and lesser interest burden for the borrower; the SHG in turn increases its capacity to manage higher volume of finance, develop entrepreneurial skills, co-operative sense and finally income and employment generating capacity.

This is not confined to a single group of about 20 people. Either because of efforts of the SHGI or demonstration effect, more groups start forming and functioning. A linkage among groups also evolves. In some cases, a number of nearby groups are federated. This federation is nothing but a coordinating mechanism and is not expected to assume any hierarchical role. Crucial decision-making process for sanctioning loan to individual members remains with the SHG. The federation is basically supposed to: i) channelise funds from surplus to deficit SHGs, ii) promote more SHGs and act as facilitator for weak SHGs, and iii) perform entrepreneurial jobs like helping the grass root SHGs for backward and forward linkages and liaisoning with external agencies for the benefit of the groups. Banks may sometimes find it more convenient and economical to deal with the federation rather than individual SHGs. However, the peer pressure which is inversely proportional to the distance is much less at the federation level than at the village or group level.

Interest Rate

The SHPI along with others who promote the SHGs get refinance from different national financial institutions like NABARD, SIDBI (Small Industrial Development Bank of India), FWWB (Friends of Women World Banking), HUDCO (Housing and Urban Development Corporation), RMK (Rashtriya Mahila Kosh), HDFC (Housing Development and Finance Corporation) and a host of other international institutions. Most of the above institutions except RMK and commercial banks do not fix a ceiling on interest rates on the loan amount for lending to the members of the group. The groups are the best judges to determine the rate of interest. It should be as close to the market rate as possible. The following are the rates of interest charged:

Institutions / SHGs Annual Rates of Interest

- Banks to SHGs : 12.0%
- Banks to NGOs : 10.5%
- NGOs to SHGs : 12.0%
- SHG to members : As decided by SHG. Most of the SHGs charge 2 -3 % of interest per month.
- NABARD to bank (Refinance): 6.5% (For SHG lending, 100% refinance is available)

Financing SHGs in India

The number of SHGs availing credit has increased from Rs.287.89 crores in 2000-01 to Rs.14548 crores in 2010-11 (Table 9). The total number of SHGs during 2000-01 alone was 1, 49,050. Ninety per cent of them are women groups. The number of SHGs increased to 12,00,000 in 2010-11.

Table 9. Growth of SHG-Bank Linkage Program (MF) In India

(In Rs. Crores)

Year	No.of SHGs	Annual GR	Bank loan	Annual GR	Refinance	Annual GR
2000-01	1,49,050		287.89		244.85	
2001-02	1,97,653	32.60	545.47	89.47	395.26	61.42
2002-03	2,55,882	29.46	1022.33	87.42	622.47	57.48
2003-04	3,61,731	41.36	1855.53	81.50	705.44	13.32
2004-05	5,39,365	49.10	2994.26	61.36	967.76	37.18

2005-06	6,20,109	14.97	4499.09	50.25	1067.72	10.32
2006-07	11,05,749	78.31	6570.00	46.02	1292.86	21.08
2007-08	12,27,770	11.03	8849.26	34.69	1615.50	24.95
2008-09	16,09,586	31.09	12253.50	38.46	2620.30	62.19
2009-10	15,87,000	-1.403	14453.30	17.95	3173.56	21.11
2010-11	12,00,000	-24.38	14548.00	0.65	2545.36	-19.79
AVG	804899.5	26.21	6170.78	50.78	1386.46	28.93
C.V	69.01	25.18	89.84	42.86	71.14	22.50

Source: NABARD Annual Reports, 2000-2001 to 2010 – 2011

Note: GR – Growth Rate, AVG – Average, CV – Coefficient of Variation

Participation of Banks in Assisting SHGs

The commercial banks provided maximum assistance by linking 50 per cent of the SHGs and its share of assistance to total financial assistance to all SHGs was to the extent of 67 per cent and they were followed by RRBs and Co-operatives. Southern Region provided for maximum assistance to SHGs (74 per cent) followed by Eastern Region (11.5 per cent), Central Region (6.3 per cent) and so on (Table 12). The various partner agencies, the loan amount sanctioned and the number of SHGs formed by each partner is furnished in Table 13.

Table 13. Grant Support to Partner Agencies (₹ in lakh)

Agency	Cumulative sanction up to 31.03.2013		Cumulative Achievement (31.03.2013)	
	Amount	SHG Nos.	Amount	SHG Nos.
NGOs	19932.18	526699	6647.68	362803
RRBs	744.99	49250	185.43	45852
Coop. Banks	1046.23	73634	353.50	51266
IRVs(Individual Rural Volunteers	460.12	26883	77.04	11228
Farmers Clubs	40.63	2544	20.40	9832
SHG Federation	28.61	250	1.85	46
PACS	397.45	8533	4.28	85
Total	22650.21	687793	7290.18	481112

Types of SHGs

Three broad models of bank-SHG linkage which have emerged are: Model - I in which the bank itself acts as SHPI and forms and nurtures the SHG, Model - II in which the NGOs act as SHPIs and banks lend to the SHGs directly, and Model - III in which the NGOs act as both SHPI and micro finance intermediaries.

The sources of income

The sources of income to the SHGs are

- Penalty fee collected from the members on account of default of repayment in time.
- Fine on account of non-attendance of members in the meetings convened by SHGs
- Interest earned on the surplus funds lent to other SHGs and
- Grants received from the external sources such as government and non-governmental organizations.

Lecture 8: Tree Insurance- Features, coverage, risk in tree crops, assessment of crop loss

The agriculture sector has the facilities of crop insurance and credits, whereas agroforestry was left behind. The National Agroforestry Policy, 2014 has also given recommendations for the need of tree insurance and tree credits to encourage farmers in expanding the area under agroforestry and to protect them from various climate related disasters. The good news is that, the recommendations has already been implemented and for the first time in the country “Agroforestry Plantation Insurance” was launched by United Insurance Company in Tamil Nadu. This scheme is expected to open a new chapter in sustainability of tree husbandry in India. Trees has been considered as the best insurance to cope up with different climate change scenarios. Now, insurance companies how come forward to ensure that the best bet technology is also insured.

Tree insurance

Tree insurance is one method by which farmers can stabilize farm income and investment and guard against disastrous effect of losses due to natural hazards or low market prices. It cushions the shock of crop losses by providing farmers with a minimum amount of protection.

There are two major categories of agricultural insurance:

- Single and multi-peril coverage

Single peril coverage offers protection from single hazard while multiple peril provides protection from several hazards.

In India, multi-peril tree insurance programme is being implemented, considering the overwhelming impact of nature on agricultural output and its disastrous consequences on the society. Farmers generally suffer huge losses due to factors ranging from floods, cyclones, fire etc, which destroys their years of hard work.

This insurance scheme can act as a safety net for these farmers. This scheme covers pulpwood trees such as Casuarina, Eucalyptus, Melia dubia , Ardu (Ailanthus), Gamhar (Gmelina) (Subabul) Leucaena and Shisham (Dalbergia sissoo). These species are selected on the basis of their wide scale cultivation and varied use in different wood based industries. The other species included are biofuel plant/ tree like Jatropha, Karanja, Neem, Mahua, Callophyllum & Simarouba and horticultural crops like Arecanut, Cocoa and Rubber.

At present, three insurance companies namely United India Insurance, Agriculture insurance company of India and oriental insurance company are providing the facility of tree insurance. The risks covered, premium amount and sum assured varies with different companies (Table 1).

Features

- The average premium rate for basic plan would be 1.25 per cent of the input cost.
- As per the policy, the premium to be paid for one acre plantation would range between Rs. 300 and Rs. 600 depending on the input cost of the respective tree species.
- It would cover forest and bush fire, lightening, riot and strike, storm and cyclone, flood and inundation and loss due to wild animal attack.
- In the event of damage due to any of the above mentioned perils, the farmer would be settled with the input cost of respective trees.
- Sum Insured shall be based on the cost of cultivation i.e. input cost or cost of raising/development of insured tree(s) – whichever items is applicable depending on the crop which is insured.

Table 1 Different Tree Insurance policies in India

S.No	Trees covered	Premium	Sum assured	Policy Name	Insurance Company	Period of insurance
1.	Casuarina, Eucalyptus, Melia dubia Ailanthus, Gmelina, Leucaena and Dalbergia sissoo,	1.25 per cent of the input cost	Input cost	Agroforestry Plantation Insurance	United India Insurance, Chennai	Annual
2.	Eucalyptus, Poplar, Subabul and Casuarina	Depends on species, risks, geographical location etc	Equivalent to input cost and extended upto 125-150% of input cost	Pulpwood Tree Insurance	Agriculture insurance company of India	Annual

3.	Jatropha, Neem, Callophyllum Simarouba	Karanja, Mahua, &	Depends on species, risks, geographical location etc	Equivalent to input cost and extended upto 125-150% of input cost	Bio-Fuel Tree /Plant Insurance	Agriculture insurance company of India	Annual
4.	Rubber, Eucalyptus, Poplar, Teak, Arecanut, Cocoa, citrus, chickoo, pomegranate		1.25% of Sum Insured	Sum Insured shall be based on the cost of cultivation	Plantation / Horticulture Insurance	The Oriental Insurance Company Limited	Annual
5.	Rubber		Depends on input cost and stage of crop	Based on input cost and yield deduction	Rubber plantation insurance	Agriculture insurance company of India	Immature: 7 years Mature :8 to 25 years

Scope for improvement

1. At present, in this scheme farmer will have to pay an annual premium, which can be made into one-time payment

2. Requesting the government and industries to bear the insurance cost so that farmers will not have to pay the premium

3. The insurance scheme must be extended to other tree species and to all other states in the country

4. Rather than individual trees, whole agroforestry system has to be insured.

5. More insurance companies and agencies should come forward to support tree insurance/agroforestry insurance

PROJECT MANAGEMENT

Project management is the [discipline](#) of [planning](#), [organizing](#), and [managing resources](#) to bring about the successful completion of specific project goals and objectives. It is sometimes equated with [program management](#). However, technically a program is actually a higher-level construct: a group of related and somehow interdependent projects.

A [project](#) is a temporary endeavor, having a defined beginning and end (usually constrained by date, but can be by funding or deliverables), undertaken to meet unique goals and objectives, usually to bring about beneficial change or added value.

Project management approaches

There are a number of approaches to managing project activities. Regardless of the methodology employed, careful consideration must be given to the overall project objectives, timeline, and cost, as well as the roles and responsibilities of all participants and stakeholders.

The Traditional Approach

A traditional phased approach identifies a sequence of steps to be completed. In the "traditional approach", we can distinguish five components of a project (4 stages plus control) in the development of a project:

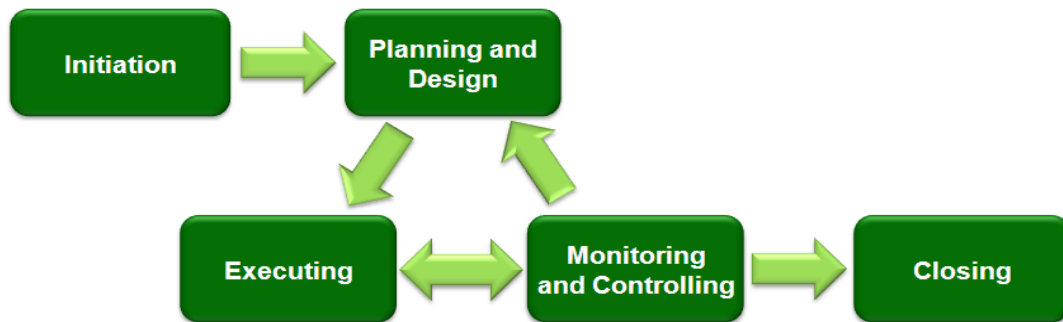
Typical development phases of a project

- Project initiation stage;
- Project planning or design stage;
- Project execution or production stage;
- Project monitoring and controlling systems;
- Project completion stage.

Not all the projects need to have all the above stages, as projects can be terminated before they reach completion. Some projects do not follow a structured planning and / or monitoring stages. Some projects will go through steps 2, 3 and 4 multiple times. Many industries use variations on these project stages.

Project Management Processes

Traditionally, project management includes a number of elements: four to five process groups, and a control system. Regardless of the methodology or terminology used, the same basic project management processes will be used. Major process groups generally include:



- Initiation
- Planning or development
- Production or execution
- Monitoring and controlling
- Closing

In project environments with a significant exploratory element (e.g., Research and development), these stages may be supplemented with decision points (go / no go decisions) at which the project's continuation is debated and decided.

Initiating process

The initiation processes determine the nature and scope of the project. If this stage is not performed well, it is unlikely that the project will be successful in meeting the business' needs. The key project controls needed here are an understanding of the business environment and making sure that all necessary controls are incorporated into the project. Any deficiencies should be reported and a recommendation should be made to fix them.

The initiation stage should include a plan that encompasses the following areas:

- Analyzing the business needs/requirements in measurable goals
- Reviewing of the current operations
- Financial analysis of the costs and benefits including a budget
- Stakeholder analysis, including users, and support personnel for the project
- Project charter including costs, tasks, deliverables, and schedule

Planning and Design

After the initiation stage, the project is planned to an appropriate level of detail. The main purpose is to plan time, cost and resources adequately to estimate the work needed and to effectively manage risk during project execution. As with the Initiation process group, a failure to adequately plan greatly reduces the project's chances of successfully accomplishing its goals. Project planning generally consists of

- determining how to plan (e.g. by level of detail or rolling wave);

- developing the scope statement;
- selecting the planning team;
- identifying deliverables and creating the work breakdown structure;
- identifying the activities needed to complete those deliverables and networking the activities in their logical sequence;
- estimating the resource requirements for the activities;
- estimating time and cost for activities;
- developing the schedule;
- developing the budget;
- risk planning;
- gaining formal approval to begin work.

Additional processes, such as planning for communications and for scope management, identifying roles and responsibilities, determining what to purchase for the project and holding a kick-off meeting are also generally advisable. For new product development projects, conceptual design of the operation of the final product may be performed concurrent with the project planning activities, and may help to inform the planning team when identifying deliverables and planning activities.

Executing

Executing consists of the processes used to complete the work defined in the project management plan to accomplish the project's requirements. Execution process involves coordinating people and resources, as well as integrating and performing the activities of the project in accordance with the project management plan. The deliverables are produced as outputs from the processes performed as defined in the project management plan.

Monitoring and Controlling

Monitoring and controlling consists of those processes performed to observe project execution so that potential problems can be identified in a timely manner and corrective action can be taken, when necessary, to control the execution of the project. The key benefit is that project performance is observed and measured regularly to identify variances from the project management plan. Monitoring and Controlling includes:

- Measuring the ongoing project activities (*where we are*);
- Monitoring the project variables (cost, effort, scope, etc.) against the project management plan and the project performance baseline (*where we should be*);
- Identify corrective actions to address issues and risks properly (*How can we get on track again*);

In multi-phase projects, the Monitoring and Controlling process also provides feedback between project phases, in order to implement corrective or preventive actions to bring the project into compliance with the project management plan. Project Maintenance is an ongoing process, and it includes:

- Continuing support of end users
- Correction of errors

Monitoring and Controlling Cycle

In this stage, auditors should pay attention to how effectively and quickly user problems are resolved. Over the course of any construction project, the work scope may change. When changes are introduced to the project, the viability of the project has to be reassessed. It is important not to lose sight of the initial goals and targets of the projects. When the changes accumulate, the forecasted result may not justify the original proposed investment in the project.

Closing

Closing includes the formal acceptance of the project and the ending thereof. Administrative activities include the archiving of the files and documenting lessons learned. This phase consists of:

- **Project close:** Finalize all activities across all of the process groups to formally close the project or a project phase
- **Contract closure:** Complete and settle each contract (including the resolution of any open items) and close each contract applicable to the project or project phase

Project Control Systems

Project control is that element of a project that keeps it on-track, on-time and within budget. Project control begins early in the project with planning and ends late in the project with post-implementation review, having a thorough involvement of each step in the process. Each project should be assessed for the appropriate level of control needed: too much control is too time consuming, too little control is very risky. If project control is not implemented correctly, the cost to the business should be clarified in terms of errors, fixes, and additional audit fees.

Control systems are needed for cost, risk, quality, communication, time, change, procurement, and human resources. In addition, auditors should consider how important the projects are to the financial statements, how reliant the stakeholders are on controls, and how many controls exist. Auditors should review the development process and procedures for how they are implemented. The process of development and the quality of the final product may

also be assessed if needed or requested. A business may want the auditing firm to be involved throughout the process to catch problems earlier on so that they can be fixed more easily. An auditor can serve as a controls consultant as part of the development team or as an independent auditor as part of an audit.

Farm Project Appraisal

While an ordinary banker expects a scheme to emanate from the farmer, the development banker prepares several schemes to suit the needs of specific areas and specific target groups.

The transformation of credit policy is from security to production orientation or from credit worthy person to credit worthy purpose, involves new strategy either to formulate new schemes or to appraise projects. Whether it is prepared by a banker or by a farmer, the scheme should generate surplus over and above the normal returns on investment and provide for the repayment of the loan. This is possible only when the scheme has been properly designed and planned considering technical, economic, managerial, organizational, commercial, financial, risk and legal aspects. However, all these aspects need not be applicable to all schemes. An outline is given below to formulate or appraise a scheme. Broadly, the schemes may be classified into four groups viz.,

- i. Crop production schemes,
- ii. Farm development schemes,
- iii. Farm mechanization schemes, and
- iv. Animal husbandry schemes.

i) Technical Aspects

Any scheme needs certain basic requirements in the absence of which execution of the scheme will be very difficult. The technical aspects to be considered in the following schemes are:

a) Crop Production Schemes

Climate, rainfall, soil type, availability of inputs, marketing and other infrastructural facilities, improved agronomic practices, new cropping pattern etc.

b) Farm Development Schemes

Availability of ground water for sinking wells, availability of tools and machineries for land leveling, availability of materials for fencing etc.

c) Farm Mechanization Schemes

Availability of repair workshops, spare parts, and electric power for purchase of tractor, power tiller, threshers, pump sets, sprayers, etc., availability of repair workshops, spare parts, and electric power, suitability of soil, size of holdings, etc.

d) Animal Husbandry Schemes

Establishment of dairy, poultry, sheep rearing, piggery, fisheries, sericulture and bee-keeping activities comes under this scheme. Suitability of climate to rear animals, facilities to market livestock products, availability of feeds, fodder, etc., is to be considered.

2. Economic Aspects

These aspects determine whether the scheme / project is likely to contribute significantly to the economic development of the farmer and earn a reasonable return on the investment. For example, the additional returns from crop production scheme / animal husbandry scheme should make the farmer to repay the loan and also to make further investment on farm. Investment on farm development (sinking wells, land leveling, etc) should bring more area under cultivation apart from helping him to repay the loan. Farm mechanization schemes should minimize costs and maximize the returns.

3. Managerial Aspects

Realistic farm planning and budgeting, future, forecasts, labour allocation, securing scarce resources from different sources and using them to get maximum results, marketing of produces at profitable price, optimum use of man and machine power, marketing of produces at profitable price and continuous running of the farm are some of the indicators of a good management. Large sized farms need more investments and require better managerial ability to maximize farm productivity. Even small farms require efficient management for growing crops like grapes, vegetables, flowers, high yielding variety crops, etc. All animal husbandry schemes need efficient management.

4. Financial Aspects

This aspect relates to the availability of financial resources for the implementation of the scheme, the income generation before and after execution, the disbursement of loan and the repayment schedule. In case of crop production, the quantum and source of finance should be confirmed, besides the mode of disbursement of loan, i.e., payment in cash or kind. The repayment schedule should synchronize with the sale of crops. In case of term loans, the loan amount should be disbursed in phased manner - after ensuring the utilization of credit already dispensed. In case of animal husbandry scheme also, the repayment schedule should be drawn up in such a way that the farmer is able to repay loan from the sale proceeds of milk, egg, etc. As a general rule, a part of the loan should be disbursed, to the input suppliers directly and the balance amount should be given to the farmer to meet out labour expenses.

5. Organizational Aspects

It is closely related to the managerial aspects, which help to execute the

scheme efficiently, while organizational aspects enable the implementation of the scheme successfully. For example, the help of an engineer is needed in case of land leveling; the guidance of agricultural expert is needed to grow high yielding varieties, etc. There should be an organizer to get all works done at the right time. The scheme should indicate how he will organize to get such things done, before and after implementation of the scheme.

6. Commercial Aspects

This aspect deals with the arrangement for buying the materials needed to initiate and operate the scheme. The inputs required may be raw materials, labour, power, machineries, fertilizer, pesticides, etc. The commercial aspect also deals with the arrangement for marketing the output produced by the scheme.

7. Risk Aspects

This aspect involves the examination of the possible risks a farmer and the financing institution have to take in implementing the scheme. It also deals with the preventive and curative measures to be adopted while facing risks.

There are several types of risks: i.e., RISKS due to natural hazards such as drought, floods, etc; RISKS due to technical causes such as break down of machinery, defective seeds and pesticides, delay in transport or perishable commodities, etc; RISKS due to social hazards such as theft, robbery, labour strikes, etc; RISKS due to price fluctuations of agricultural commodities. Farmers face with price fluctuations and yield variations. Therefore, the scheme should indicate the extent of risk involved in financing such projects and how far it can be borne by the beneficiaries and the financing institutions. It should also indicate the possibility of overcoming, the risk, i.e., insuring the crop, cattle, machinery, or fixing up of minimum support price by the government, etc.

8. Legal Aspects

Bank funds should be safe-guarded by taking adequate security measures while granting loans. A loan need not be denied to a farmer for want of adequate security when the scheme is otherwise feasible in all respects. When there is adequate security available with farmer, security measures are taken up to protect bank funds. Legal problems relating to title deeds, land legislation, Debt Relief Act, etc., should be thoroughly examined before a scheme is sanctioned. The scheme should indicate the legal formalities that are to be complied with by the borrowers.

Lecture :12: Dimensions of Project preparation-Financial dimension, Economic dimension. Commercial Dimension and Environment Dimension.

Financial and Economic Analysis for Investment Projects

The design of rural development investments should include tests of financial viability and sustainability, as well as a demonstration of the value of the project to the economy in general. Financial and Economic Analyses provide the relevant ex-ante evidence within the frameworks of Discounted Cash Flows and Cost Benefit Analysis (CBA). The principles that guide these frameworks are long established and well documented. However, the value of the analysis as a decision tool hinges on the quality of the assumptions that underpin it, as well as its ability to capture a variety of costs and benefits and accurately predict the project outcomes. Related to the above, some core issues to consider in the context of Quality Enhancement are:

i) Accurate estimation of financial costs: Inaccuracy of early cost estimates can be partly attributed to incomplete information and inherent difficulties in predicting a distant future. However, there is a marked bias towards underestimation, which frequently results from inadequate assessments of: local capacity for diligent and expedient implementation; availability of inputs locally / internationally; efficiency of procurement; and timely availability of counterpart funds.

ii) Accurate estimation of financial benefits: A critical variable for the estimation of incremental benefits is the adoption / adaptation rates of new technologies and enterprises. The case for change is usually made on the basis of technical and financial viability, but adoption rates also depend on: the risk perceptions and risk mitigation strategies of the target group, the labour and cash flow constraints of households, reliability and complexity of technology, and other social factors that can determine individual preferences and motives. Moreover, the commercialization of outputs hinges on the assumption of existing demand and of a functioning market. These assumptions should be appropriately examined in order to arrive at realistic estimates of producer prices and sales volumes.

iii) Demonstration of financial viability and sustainability: The routine test of financial viability of agricultural development projects is the financial analysis for the indicative private enterprises. The analysis should also encompass the viability of the institutions that is either participating or being formed under the project, in order to ensure that service provision can be sustained past the financing period. Cost recovery is key to financial sustainability and when services are provided on that basis the formulation should include an analysis of demand for them. However, the willingness and ability of the rural poor to pay for project supported services and outputs, and the capacity of institutions and service providers to charge for them, remains an issue that should be critically examined.

iv) Assessment of social costs and benefits: Economic analysis is traditionally used to correct financial prices for distortions and transfer payments. Extended cost benefit analysis (CBA) can also account for externalities and other social costs and benefits. This may require complex shadow pricing methods and value judgements, but key pecuniary externalities common to agricultural development (e.g. upstream / downstream links in watersheds) should be accounted for in the analysis, when they are linked to a significant portion of the project's costs and benefits.

v) Uncertainties in attribution of costs and benefits: Flexible financing instruments such as Community Development Funds will generate unpredictable cost and benefit streams. An analysis that is based on some indicative activities to be undertaken is feasible in some cases by assuming a menu of options for the target group. Uncertainty can weigh on more structured project designs as well, especially for research and extension activities. This is due to the large time lags for the accrual of benefits from research and extension services and the inherent fortunate but unexpected research outcomes.

Environmental Impacts –Definition

Environmental Impact

An environmental impact refers to any change caused in the environment by the project, which may include impact on the current use of lands and resources, on health and socio-economic conditions, on physical or cultural heritage.

The definition of environmental impact (above) goes beyond impacts on the physical and biological environmental components. During the environmental assessment, the social and economic impacts of the project are to be considered. It includes impacts on various social and economic components.

Environmental impact assessment

i) Environmental Impact Assessment (EIA) may be defined as a formal process used to predict the environmental consequences of any development project. EIA thus ensures that the potential problems are foreseen and addressed at an early stage in the projects planning and design.

ii) Environmental impact assessment is, in its simplest form, a planning tool that is now generally regarded as an integral component of sound decision making... As a planning tool it has both an information gathering and decision making component which provides the decision maker with an objective basis for granting or denying approval for a proposed development.

The purpose of the environmental assessment process is:

- (a) To support the goals of environmental protection and sustainable development.
- (b) To integrate environmental protection and economic decisions at the earliest stages of planning an activity.
- (c) To predict environmental, social, economic, and cultural consequences of a proposed activity and to assess plans to mitigate any adverse impacts resulting from the proposed activity, and
- (d) To provide for the involvement of the public, department of the Government and Government agencies in the review of the proposed activities.

Direct and Indirect Impacts

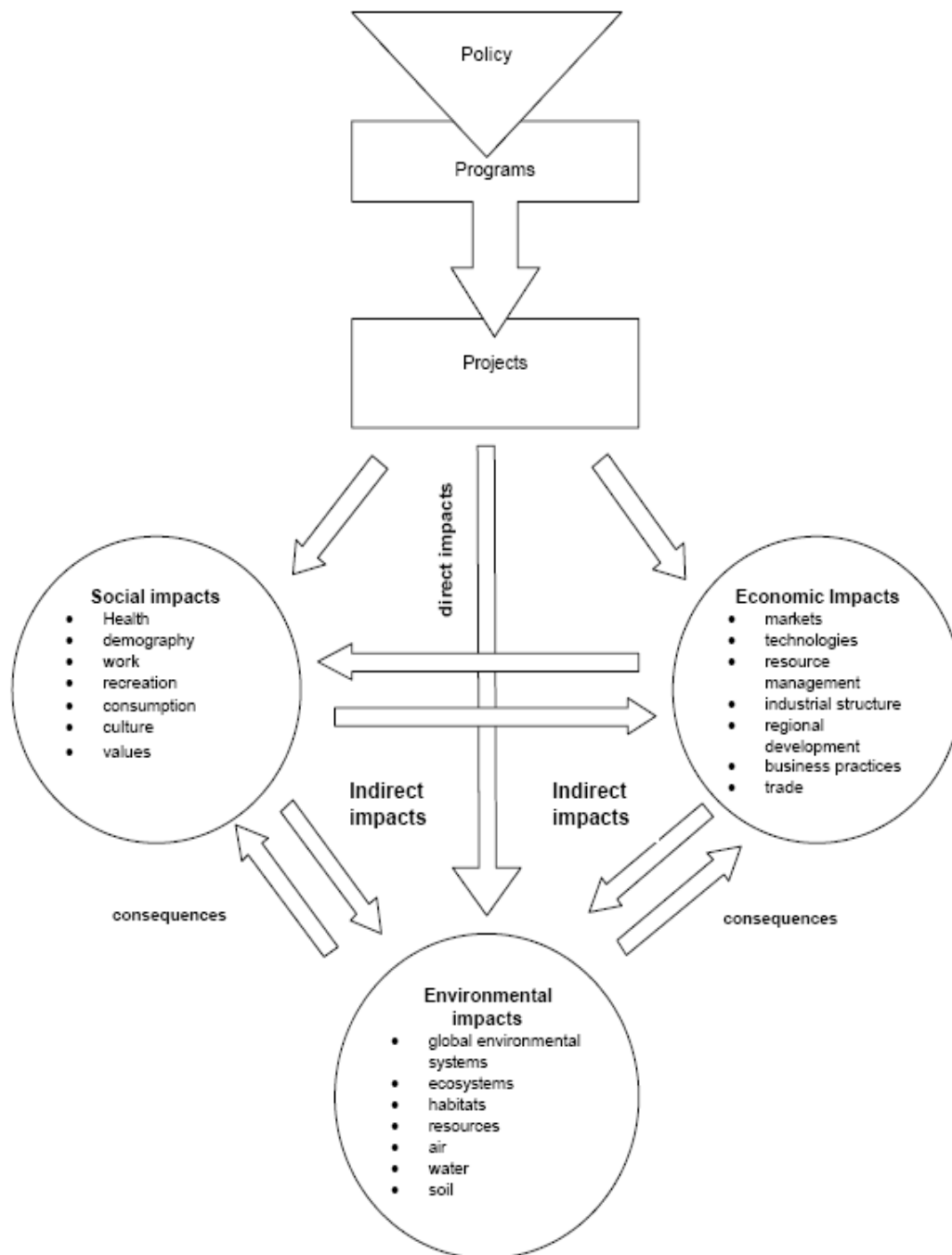
- (i) In conducting environmental assessment of its projects, one has to consider both direct and indirect impacts.
- (ii) Direct impacts are those occur through direct interaction of an activity with an environmental, social, or economic component (Figure). For example, a discharge of industrial effluent into a river may lead to a decline in water quality. Direct impacts on one environmental component may lead to indirect impacts on other components. For example, the decline in water quality in the river may lead to a secondary indirect impact on fish in the river. In turn, the impact on the fish population may lead to reduced harvests of fish with corresponding reductions in fishing incomes.

iii) Induced Development Impact

- iv) Indirect impacts may include growth-inducing impacts and other effects related to induced changes to the pattern of land use, population density or growth rate, and effects on air and water and other natural systems including ecosystems. For example, one of the typical example is the induced development impact of roads on forests, other

ecological habitats, and cultural sites. New roads may be planned to open a new area to settlement, to provide access to natural resources or to connect two areas of economic activity by crossing a forest or biologically sensitive area. The environmental assessment must not only consider the direct impacts of road construction and use, but also the induced impacts that will come from more people and more economic activity. However, the actual impacts of induced development over a long time horizon are uncertain. Therefore the decision whether or not to build roads must take these risks into account. Before action is taken to open access to new areas satisfactory provisions must be in place to avoid or mitigate adverse ecological and cultural consequences, even if they appear to have a low probability of occurrence.

Overview of the Environmental, Social, and Economic Impacts of Projects



General objectives of Environmental Impact Assessment (EIA)

EIA is an important tool for incorporating environmental concerns at the project level. EIA should be carried out as early as the project planning stage as part of feasibility thus it can assure that the project will be environmentally feasible.

The **general objectives** of the EIA study are to provide;

- baseline information about the environmental, social, and economic conditions in the project area;

- (ii) information on potential impacts of the project and the characteristic of the impacts, magnitude, distribution, who will be the affected group, and their duration;
- (iii) information on potential mitigation measures to minimize the impact including mitigation costs;
- (iv) to assess the best alternative project at most benefits and least costs in terms of financial, social, and environment. In addition to alternative location of the project, project design or project management may also be considered; and
- (v) basic information for formulating environmental management plan.

2. EIA requires an in-depth analysis because of the potential significance of environmental impacts from the project.

EIAs demand:

- (i) comprehensive analysis of the potential impacts;
- (ii) works to be carried out to formulate practical mitigation measures;
- (iii) in-depth economic valuation of impact to screen and evaluate the best alternative; and
- (vi) in-depth analysis to prepare an adequate environmental management plan.

Environmental Impact Assessment Report

The standard EIA report format address such issues as exploration of various alternatives, evidence of public consultation and social acceptability, economic analysis of impacts, and direct and indirect impacts. The suggested outline of the EIA report is as follows:

- A. Introduction
- B Description of the Project
- C. Description of the Environment
- D. Alternatives
- E. Anticipated Environmental Impacts and Mitigation Measures
- F. Economic Assessment
- G. Environmental Management Plan
- H. Public Involvement and Disclosure
- I. Conclusions

a. Introduction

This section usually includes the following:

- (i) purpose of the report, including
- (a) identification of the project and its proponent,

(b) brief description of the nature, size, and location of the project and its importance to the country, and (c) any other pertinent background information;

(ii) stage of project preparation (i.e., pre-feasibility study, feasibility study, detailed engineering design preparation);

(i) extent of the EIA study, including the scope of the study, magnitude of effort, and persons/expertise or agency performing the study and corresponding personmonths; and

(ii) brief outline of the contents of the report, including any special techniques or methods used for identifying issues, assessing impacts, and designing environmental protection measures.

b. Description of the Project

The project should be described in terms of its basic activities, location, layout, and schedule (in terms of the project cycle). This section of the EIA report should provide sufficient details on the following:

(i) Type of project

(ii) Need for project

(iii) Location (use maps showing general location, specific location, project boundary and project site layout)

(iv) Size or magnitude of operation including any associated activities required by or for the project

(v) Proposed schedule for approval and implementation

(vi) Description of the project including drawings showing project layout, components of project, etc. This information should be of the same type and extent as is included in feasibility reports for proposed projects, in order to give a clear picture of the project and its operations.

c. Description of the Environment

This section contains a description of the study area to provide a clear picture of the existing environmental resources and values within which the impacts must be considered. Detailed methodology to gather information, including data sources, should also be briefly described. As much as possible, the baseline information should be presented in maps, figures, and tables. The baseline environmental information area should include:

(i) **Physical Resources:** e.g.

- atmosphere (e.g. air quality and climate)
- topography and soils,

- surface water
- groundwater
- Geology/seismology

(ii) **Ecological Resources:** (e.g.)

- fisheries
- aquatic biology
- wildlife
- forests
- rare or endangered species
- protected areas
- coastal resources

(iii) **Economic Development:** (e.g.)

- industries
- infrastructure facilities (e.g. water supply, sewerage, flood control)
- transportation (roads, harbors, airports, and navigation)
- land use (e.g. dedicated area uses)
- power sources and transmission
- agricultural development, mineral development, and tourism facilities

(iv) **Social and Cultural Resources:** (e.g.)

- population and communities (e.g. numbers, locations, composition, employment)
- health facilities
- education facilities
- socio-economic conditions (e.g. community structure, family structure, etc)
- physical or cultural heritage
- current use of lands and resources for traditional purposes by Indigenous Peoples structures or sites that are of historical, archaeological, paleontological, or architectural significance.

d. Alternatives

The consideration of alternatives is one of the more proactive sides of environmental assessment - enhancing the project design through examining options instead of only focusing on the more defensive task of reducing adverse impacts of a single design. This calls for the systematic comparison of feasible alternatives for the proposed project site,

technology, and operational alternatives. Alternatives should be compared in terms of their potential environmental impacts, capital and recurrent costs, suitability under local conditions, and institutional, training and monitoring requirements. For each alternative, the environmental costs and benefits should be quantified to the extent possible, economic values should be attached where feasible, and the basis for the selected alternative should be stated.

e. Anticipated Environmental Impacts and Mitigation Measures

The "technical heart" of the EIA process involves the prediction of changes over time in various environmental aspects as a result of a proposed project. The prediction of the nature, extent, and magnitude of environmental changes likely to result from a proposed project is aided by various tools and techniques, the choice of which depends upon the impacts of concern, data availability or lack thereof, and the appropriate specificity of quantitative models. In addition, the prediction has to be based on established scientific knowledge that is still very limited in ecosystems. For this reason, the prediction of ecological changes and their impacts often does not generate concrete conclusions on the magnitude of the impacts.

This section will evaluate the project's expected impacts (in as quantified terms as possible) on each resource. Environmental impacts to be investigated will include those due to (i) project location; (ii) caused by possible accidents; (iii) related to design; and (iv) during construction, regular operations, and final decommissioning or rehabilitation of a completed project. Where adverse effects are indicated, discuss measures for minimizing and/or offsetting these, and opportunities for enhancing natural environmental values will be explored. It is necessary to present a reasonably complete picture of both the human use and quality of life gains to result from the project due to the utilization, alteration, and impairment of the natural resources affected by the project, so that fair evaluation of the net worth of the project could be made.

Mitigating Adverse Effects:

Once the impacts have been analyzed, their significance will be determined, i.e., whether they are acceptable, require mitigation, or are unacceptable. Subsequently, measures will be devised to mitigate anticipated environmental changes and consequential impacts during project implementation and operation, or further reduce the residual environmental changes inherent in the selected project design. They normally include technical, social, and institutional measures to be implemented as integral elements of the project. Examples are sound operating rules of a reservoir to ensure minimum impacts on downstream water users, and installation of an electrostatic precipitator to remove fly ash in a coal-fired power plant project, and adequate drainage system in an irrigation project.

For each significant adverse environmental impact, the report will carefully explain how the project plan/design minimizes the adverse effects and in addition how the project plan/design, to the extent feasible, includes provision for offsetting or compensating of adverse effects and for positive enhancement of benefits or environmental quality. Where substantial cost of mitigation measures is involved, alternative measures and costs will be explored.

Irreversible and Irretrievable Impacts: The EIA report will identify the extent to which the proposed project would irreversibly curtail the potential uses of the environment. For example, highways that cut through stream corridors, wetlands, or a natural estuary can result in irretrievable damage to those sensitive ecosystems. Other impacts that may be irreversible include alteration of historic sites, and expenditure of construction materials and fuels. Also, projects through estuaries, marshes, etc., may permanently impair the area's natural ecology; or elimination of recreation areas and parklands can precipitate drastic changes in the project area's social and economic character.

f. Economic Analysis in Environmental Assessment

Economic analysis can assist in evaluating the significance of potential environmental changes, in assessing the incidence of environmental costs and benefits, and in identifying the least cost environmental mitigation measures. All EIAs require an "Economic Assessment" section that includes

- (i) costs and benefits of environmental impacts;
- (ii) costs, benefits, and cost effectiveness of mitigation measures; and
- (iii) for environmental impacts that have not been expressed in monetary values, a discussion of such impacts, if possible in quantitative terms.

Economic analysis in environmental assessments should be consistent with *Guidelines for the Economic Analysis of Projects*. The environmental costs and benefits be measured and included in the benefit-cost analysis. Conceptually robust approaches and methodologically rigorous techniques for identifying, physically quantifying, and then valuing environmental changes in monetary terms have been developed over the last forty years (Refer to different valuation techniques). Practical experience in their application is now making economic evaluation of environmental impacts increasingly possible in the context of project level analysis.

Economic analysis of environmental impacts can be based on either primary data (for example, data collected at the site), or secondary data (for example, data from published studies). Economic analysis should be based on primary data whenever feasible, and whenever the environmental impacts are a main feature of the project. Economic analysis can

be based on secondary data whenever the environmental impacts are not a main feature of the project, or as a preliminary analysis to gauge the value of collecting primary data. Secondary data on environmental values cannot usually be used directly, but must first be adapted to better fit the time and place of the new analysis.

g. Preparing the Environmental Management Plan

The major output of environmental assessment for proposed project is an EIA report, which includes environmental management plan. Environmental management involves the implementation of environmental protection and mitigation measures and monitoring of significant environmental impacts.

Environmental protection measures are taken to

- (i) mitigate environmental impacts,
- (ii) provide in-kind compensation for lost environmental resources, or
- (iii) enhance environmental resources.

These measures are usually set out in an EMP, which covers all phases of the project from preconstruction through decommissioning, and outlines mitigation and other measures that will be undertaken to ensure compliance with environmental regulations and reduce or eliminate adverse impacts. The EMP will also cover a proposal for recommending the proposed project to use goods and products that are environmentally friendly.

Contents of an EMP

1. Summary of Potential Impacts
2. Description of Planned Mitigation Measures
3. Description of Planned Environmental Monitoring
4. Description of Planned Public Consultation Process
5. Description of the Responsibilities and Authorities for Implementation of **Mitigation Measures and Monitoring Requirements**
6. Description of Responsibilities for Reporting and Review
7. Work Plan including staffing chart, proposed schedules of participation by various members of the project team, and activities and inputs of various government agencies
8. Environmental Responsible Procurement Plan
9. Detailed Cost Estimates
10. Mechanisms for feedback and adjustment

Environmental monitoring involves

- (i) planning a survey and sampling program for systematic collection of data/information relevant to environmental assessment and project environmental management;

- (ii) conduct of the survey and sampling program;
- (iii) analysis of samples and data/information collected, and interpretation of data and information; and
- (iv) preparation of reports to support environmental management. Environmental monitoring is normally carried out before and during planning to establish baseline data needed for environmental assessment and evaluating environmental impacts during project implementation. It continues through project operation to detect changes in the key environmental quality parameters, which can be attributed to the project. The results of the monitoring program are used to evaluate the following: (i) extent and severity of the environmental impacts against the predicted impacts; (ii) performance of the environmental protection measures or compliance with pertinent rules and regulations; (iii) trends in impacts; and (iv) overall effectiveness of the project EMP.

h. Public Consultation and Information Disclosure

This section will describe the process undertaken to involve the public in project design and recommended measures for continuing public participation;

- (i) summarize major comments received from beneficiaries, local officials, community leaders, NGOs, and others, and describe how these comments were addressed;
- (ii) list milestones in public involvement (e.g., dates, attendance, topics of public meetings), and recipients of the report and other project-related documents;
- (iii) describe compliance with relevant regulatory requirements for public participation;
- (iv) if possible summarize public acceptance or opinion on the proposed project; and
- (v) describe other related materials or activities (e.g., press releases, notifications) as part of the effort to gain public participation. This section will provide of summary of information disclosed to date and procedures for future disclosure.

i. Conclusions

The EIA report will present the conclusions of the study including: (i) gains which justify project implementation; (ii) explanation of how adverse effects could be minimized or offset, and compensated to make these impacts acceptable; (iii) explanation of use of any irreplaceable resources; and (iv) provisions for follow-up surveillance and monitoring. Simple visual presentations of the type and magnitude of the impacts may aid the decision-maker.

j. Summary Environmental Impact Assessment Report

The summary EIA (SEIA) report is the executive summary of the EIA report. It describes the critical facts and significant findings of the EIA report, and their resolutions in sufficient

detail. The reader should be able to understand the issues' importance and scope, and the appropriateness of the approach taken to resolve them. The SEIA report should be presented clearly and concisely as a stand-alone document (see Table A2.4) for submission to the Board and disclosure to the public.

Outline of SEIA Report

A. Introduction (1/2 page) This section will include the purpose of the report, extent of the EIA study and brief description of any special techniques or methods used.

B. Description of the Project (1/2 page) This section will include the type of and need for project, location, size or magnitude of operation and proposed schedule for implementation.

C. Description of the Environment (2-3 pages) This section will include the physical and ecological resources, human and economic development and quality of life values in the area affected by the project. Where available, environmental standards will be used as the baseline for comparative purposes.

D. Alternatives (1-2 pages) For each alternative, a summary of the probable adverse impacts and its relation to the project, and other alternatives will be discussed determine whether the project minimizes the environmental impact over all other alternatives and is within acceptable environmental impact limits. In most cases, environmental impacts "with" and "without" project alternatives should be examined.

E. Anticipated Environmental Impacts and Mitigation Measures (4-6 pages) Environmental impacts, both direct and indirect, on different environmental resources or values due to project location, as related to design, during construction and regular operation will be discussed and mitigation, offsetting or enhancement measures will be recommended.

F. Economic Assessment (1-2 pages) This section will include: (a) costs and benefits of environmental impacts; (b) costs, benefits and cost effectiveness of mitigation measures; and (c) for environmental impacts that have not been expressed in monetary values, a discussion of such impacts, if possible, in quantitative terms (e.g. weight or volume estimates of pollutants). This information should be integrated into the overall economic analysis of the project.

G. Environmental Management Plan (1-2 pages) The EMP will describe the impacts to be mitigated, and activities to implement the mitigation measures, including how, when, and where they will be implemented. The environmental monitoring plan will describe the impacts to be monitored, and when and where monitoring activities will be carried out, and who will carry them out.

H. Public Consultation and Disclosure (1-3 pages) This section will describe the process undertaken to involve the public in project design and recommended measures for continuing public participation; summarize major comments received from beneficiaries, local officials, community leaders, NGOs, and others, and describe how these comments were addressed; list milestones in public involvement such as dates, attendance, and topics of public meetings; list recipients of this document and other project related documents; describe compliance with relevant regulatory requirements for public participation; and summarize other related materials or activities, such as press releases and notifications. This section will provide of summary of information disclosed to date and procedures for future disclosure.

I. Conclusions (1 page): This section will describe the gains which justify implementation of the project; explain how significant adverse environmental impacts will be mitigated or offset and compensated for; explain/justify use of any irreplaceable resources and; describe follow-up surveillance and monitoring.

Lecture:13. Institutional support-DIC, CED and SIDCO

District Industries Centre (DIC)

The District Industries Centre (DIC) comes under the Department of Industries and Commerce. The primary objective of the DIC is to generate employment by way of promoting Micro, Small and Medium Enterprises (MSMEs), Cottage and Handicrafts Industries. The packages of services offered by the District Industries Centre are Multidimensional and need based for facilitating industrial growth in respect of new and graduating enterprises. The DIC is headed by General Manager who is supported by functional Managers, technical and non-technical Officers.

All the schemes of the Department, especially MSMED Act 2006, MSME Policy 2008 Subsidy schemes- Capital Subsidy, LTPT Subsidy, VAT subsidy, and Back ended Interest Subsidy, Generator Subsidy Single Window clearances, Micro Small Enterprises Facilitation Council (MSEFC) etc. New Entrepreneur-cum-Enterprise Development Scheme (NEEDS), Unemployed Youth Employment Generation Programme (UYEGP), Prime Ministers Employment Generation Programme (PMEGP), Quality Control Order, EDI Training Programmes etc., are implemented through this DIC.

Functions of DIC

AS REGISTRATION AGENCY

1. Online registration.
2. Issue Acknowledgement for Entrepreneur Memorandums filed under Part I & II.
3. Issue of Cottage Industries Registration Certificate.
4. Issue of Handicrafts Registration Certificate.

AS DEVELOPMENTAL AGENCY

1. Employment Generation.
2. Motivating and Guiding the entrepreneur.
3. Rendering escort services to set up an Enterprise (effectively thru single window committee).
4. Conducting of motivation camps and dissemination meetings.
5. Implementation of Central / State Government Schemes for setting up of Enterprises.
6. Implementation of subsidy schemes.
7. Testing facilities.
8. Project Profiles.
9. Technical Feasibility report to Banks
10. Issue of Production / Capacity Certificates.
11. Export Guidance Cell.

12. Micro Small Enterprises Facilitation Council
13. Organizing & Registration of Industrial Co-Operative Societies.

AS REGULATING AGENCY

1. Implement Quality Control Order

Schemes

- Micro, Small and Medium Enterprises Development (MSMED) Act, 2006
- Micro, Small & Medium Industries Policy - 2008
Guidelines for MSME Policy, 2008.
- Single Window Clearance System.
- MSME Incentive schemes
- Industrial Infrastructure Upgradation Scheme
- Micro Small Enterprises Facilitation Council
- Unemployed Youth Employment Generation Programme (U Y E G P)
- New Entrepreneur - Cum - Enterprise Development Scheme (NEEDS)
- Credit Guarantee Fund Scheme for Micro and Small Enterprises

New Entrepreneur Cum Enterprise Development Scheme (NEEDS)

NEEDS

In accordance with the G.O Ms No 49 MSME Dept dated 29.10.2012, the educated youth will be given Entrepreneurship Development Programme training, assisted to prepare their business plans and helped to tie up with financial institutions so as to set up new Manufacturing and Service ventures. Modifications have been made in the existing norms vide G.O. (Ms) No.13 MSME (D2) Department dated 24.4.2018. The beneficiary must be a First Generation Entrepreneur. The scheme details are as follows:

Project Cost

- Project cost above Rs.10.00 Lakh and not exceeding Rs.5.00 Crore.
- Project cost includes capital expenditure and margin money for working capital
- Cost of land may be included in the project cost at Guideline Value or Market Value, prevailing as on the date of filing loan application, whichever is lower

Subsidy

- 25% of the Project Cost subject to a ceiling of Rs.30.00 lakh i.e., for projects costing more than Rs.1.20 crore, the subsidy will be restricted to Rs.30.00 lakh
- 3% Interest Subvention during the entire re-payment period

List of Documents to be enclosed in duplicate

- Proof of Age – Copy of Birth Certificate or Transfer Certificate.

- Proof of Residence – Copy of Ration Card/Smart Card or Residence Certificate from Tahsildhar.
- Copy of Degree/Diploma Certificate.
- Community Certificate.
- Certificate in Proof for Ex-Servicemen /Differently Abled /Transgenders, wherever applicable.
- Project Report with Projected sales and cash Flow statement for the next 3 years.
- Copy of Land Document, if included in the project.
- Estimate of Building obtained from the Chartered Civil Engineer.
- Quotations for the Machinery or Equipments.
- Sworn Affidavit obtained from Notary Public in Rs.20/- Stamp Paper as per format.
- Copy of Partnership Deed, in case of partnership concern.

Unemployed Youth Employment Generation Programme (UYEGP)

1.Preamble:

The Micro, Small and Medium Enterprises Department, Government of Tamil Nadu introduced the scheme “Unemployed Youth Employment Generation Programme (UYEGP)” which aims to mitigate the unemployment problems of socially and economically weaker section of the society, particularly among the educated and unemployed to become self employed in their native places itself and to prevent the mass migration from rural areas to urban areas due to unemployment by setting up Manufacturing / Service / Business enterprises by availing loan up to the maximum of Rs.10 Lakhs, Rs. 3 Lakhs and Rs. 1 Lakh respectively with subsidy assistance from the State Government up to 25% of the project cost (Maximum to a limit of Rs.1.25 Lakhs)

2. Financial Assistance:

Sl. No	Category	Project Cost		Subsidy
		Promotor's Contribution	Bank Loan	
1.	General Category	10%	90%	25%
2.	SC / ST/ BC / MBC/Minorities / Women / Ex-Servicemen / Physically Challenged / Transgender	5%	95%	25%

3. Eligibility to avail Loan under this scheme:

1. Any individual, above 18 years of age. Upper age limit for General category is 35 years and for Special category 45 years.
2. Minimum educational qualification is a pass in VIII standard.
3. The applicant shall be resident of the place for not less than 3 years.
4. The family income of the beneficiary shall not exceed Rs.1,50,000/- per annum.

4. Other Features of the scheme:

1. The District Task Force Committee headed by the General Manager, District Industries Centre, will select the beneficiaries through an interview process.
2. Entrepreneur Development Programme (EDP) training will be given to the beneficiaries for Seven days.
3. Repayment schedule and moratorium shall be as per the norms of the financial Institution.
4. For marketing support the concerned General Manager, District Industries Centre, will arrange Buyer Seller Meet, Exhibitions etc.

Prime Minister's Employment Generation Programme (PMEGP)

1. Preamble:
Government of India has approved a new credit linked subsidy programme called Prime Minister's Employment Generation Programme (PMEGP) by merging the two schemes that were in operation till 31.03.2008 namely Prime Minister's Rojgar Yojana (PMRY) and Rural Employment Generation Programme (REGP) for generation of employment opportunities through establishment of micro enterprises in rural as well as urban areas. PMEGP will be a central sector scheme to be administered by the Ministry of Micro, Small and Medium Enterprises (MoMSME). The Scheme will be implemented by Khadi and Village Industries Commission (KVIC), a statutory organization under the administrative control of the Ministry of MSME as the single nodal agency at the National level. At the State level, the Scheme will be implemented by State KVIC Directorates, State Khadi and Village Industries Boards (KVIBs) and District Industries Centres (DICs) through banks.

2. Financial Assistance:

- The maximum cost of the project/unit admissible under manufacturing sector is Rs. 25 lakh.
- The maximum cost of the project/unit admissible under business/service sector is Rs. 10 lakh.
- The balance amount of the total project cost will be provided by Banks as term loan

SIDCO

Tamilnadu Small Industries Development Corporation Limited
(TANSIDCO), an undertaking of Government of Tamilnadu, functions with the

specific objective of playing catalytic role in the promotion and development of Small Scale Industries and hastening the industrial dispersal throughout Tamilnadu.

The key areas of TANSIDCO's activities are as follows:

- Development of industrial estates with infrastructure facilities and provision of work sheds & developed plots.
- Raw Materials Supply Scheme
- Marketing Assistance Scheme
- Guidance to Entrepreneurs

SCHEMES OF TANSIDCO

1. DEVELOPMENT OF INDUSTRIAL ESTATES

TANSIDCO develops and maintains industrial estates in potential growth centres with necessary infrastructure and provides the following facilities to the entrepreneurs for setting up industries:

- a) Work sheds of standard size ranging from 600 sq.ft. to 4000 sq.ft.
- b) Developed Plots of various sizes ranging from 0.150 acre to 1.000 acre and above
- c) Tiny plots in sizes 5 cents to 15 cents for the benefit of Micro Enterprises
- d) Multistorey rCC workshop, modules of sizes of 500 sq.ft. and 1000 sq.ft. at Guindy, Chennai for Electronics, Garments and light engineering industrial units.

So far 78 Industrial Estates have been developed with 4242 Work Sheds and 4933 Developed Plots. For Micro Enterprises, 1841 Tiny Sheds in sizes ranging from 200 sq.ft to 600 sq.ft were constructed and allotted.

2. RAW MATERIAL DISTRIBUTION

The main objective of this Scheme is to supply Raw Materials to Micro and Small Enterprises through the wide network of Depots all over the State with assured quality at competitive price. The basic raw materials such as Iron & Steel, Paraffin Wax, Match Wax, Copier & Printing papers, Potassium Chlorate are being distributed by TANSIDCO.

- The Iron and Steel is procured from the main producers like SAIL & RINL.
- The Paraffin Wax and Match Wax are procured from CPCL.
- Quality of materials are assured because of the procurement from main producers.

- Quality papers from TNPL are being distributed by TANSIDCO to Universities, Educational Institutions and Government Departments.
- TANSIDCO has developed a wide network of 4 main Raw Material Depots and 2 Raw Material Sub Depots and 50 Depots attached with Branch Offices for the supply of Iron and Steel, Wax etc., to SSI units located all over the State. TANSIDCO has also opened 10 Sales Points in its Branch Offices for the supply of TNPL Copier Paper.
- The Small Enterprises can procure raw materials at fair prices as and when required in small quantities from TANSIDCO without locking up their funds.
- TANSIDCO is also supplying Iron and Steel to the requirements of Government Departments viz. TANSI, Transport Corporations, Tamilnadu Khadi & Village Industries Board, Sugar Mills, etc.
- Under this Scheme, any Micro and Small Enterprises as well as Government Departments / Undertakings who desire to procure the above said Raw Materials may get their requirements from the nearest Raw Material Depots. Raw Materials are also being supplied on credit basis against Bank Guarantee furnished by the SSI customers.

3. MARKETING ASSISTANCE SCHEME

TANSIDCO started Marketing Assistance Scheme during the year 1978 for assisting Small Enterprises to market their quality products to Government Departments / Government Undertakings at reasonable price. To familiarise the buyers with the products manufactured by Small Enterprises, Buyer – Seller meets are being organised. TANSIDCO also participates in Trade Fairs and displays the products of Small Enterprises.

The Small Enterprises having permanent Entrepreneur Memorandum can register with the concerned Branch Office of TANSIDCO for their products under Marketing Assistance Scheme by paying Rs.200/- as registration fee.

Guidelines for Preparation of Project

1. Introduction-Project Report:

The importance and imperative need for a clear cut Project Report, before setting the project on the anvil hardly needs any over emphasis. The project report must spell out in unequivocal terms the requirements of various inputs for the projects viz.

Land and Factory Space

Raw Materials

Labour (skilled and Unskilled)

Capital

Organisation

1.02 Details on the capital investment needed, expected return there on, market situation etc., should be clearly indicated and discussed in the project report. These details incorporated into the Report would enable the entrepreneur to gain an insight into various input requirements, Cost and profitability of the venture. Besides, this exercise will also give him or her sufficient self confidence in the new venture to steer through the same successfully and nothing will succeed like success.

1.03 Without obtaining financial aid from the Banks and other financial institutions, (in most of the cases) it is found to be difficult to start new industries. The project contains details of financial assistance required mentioning the quantum, mode and period of repayment, no. of installments etc. etc. It is only natural that the banks and financial institutions would like to know about the techno-economic viability of the project. It is in the interest of the entrepreneur himself to give a perfect, self explanatory, 'Blue Print' containing all essential details of the project to the banks and financial institutions.

1.04 The need for the Project Report arises not only for getting financial aid from banks etc. but also for getting other assistance like Registration Certificates, allotment scarce raw materials etc. from other agencies like the District Industries Centres.

2. Project Report-At a Glance:

2.01 The project report should be a self-explanatory document capable of evoking positive response from the bankers. It should contain the following items of information about the project, each of which should be delineated.

2.02 1. Name of the industry to be started.

2. Address of the unit

3. Product to be manufactured

4. Target of production-monthly-quarterly etc. (in terms of quantity and value)
5. Principal materials required
6. Covered area of work shed-sq. meter
7. Power required-HP
8. Employment
9. Cost of Project
 - A. Fixed Capital
 - a. Land & Building
 - b. Plant & Machinery
 - B. Working Capital

Carry on trade- 3 months required
 - C. Total Capital requirement
 10. Turnover-Sales expected / year Rs.
 11. Expected profit Rs.
 12. Expected profit as percentage of expected sales
 13. Expected profit as percentage of capital invested
 14. Break Even Point
 15. Quantum of assistance sought

3. General characteristic of the project:

3.01 Market Potential /Outlook

The project report should throw light on the following aspects.

- a. The demand in the local market
- b. the demand in the national markets
- c. the demand in the international markets.

It is necessary to give sufficient quantitative data covering the above aspects, to easy response from he banks. The report should bring out the gap between the present

demand for the product in the market and its present production viz the expected future demand say 5 years hence. It should spell out the extent of competition and its nature, marketing strategy proposed (whether direct sales or through selling agents / intermediaries) etc., it should also discuss the export prospects for the products giving the names of the countries to which these could be exported and the estimates of requirements therein.

3.02 Entrepreneur's Details:

the Project Report should indicate the organisational pattern proposed for the unit viz., proprietary / partnership / private limited etc., The Bio-data of the proprietor . partner directors giving their names, age, qualification and experience (technical and business) including previous experience in the line of manufacture proposed should also be given to substantiate the technical and managerial competence of the man behind the project. The Project Report should also give the Registration Certificate Number (if it is registered by DIC) and enclose an attested copy of the Registration Certificate.

Lecture 14: Estimation of Cost and benefits in forestry projects: Direct and Indirect Valuation

Approximately 1/3rd of earth's total area is covered by the forests. According to the recent forest report, the forest cover in India is 20.5% of the total geographic area. The total forest cover area in India is 675538 sq.km. Out of total forest cover, 12.67% is dense forest cover, 7.88% is open forest cover, 1.4% is scrub lands and 0.14% is mangroves.

The forests have various protective, productive, regulative and accessory functions. They generate a large variety of goods and services which are beneficial to the mankind. The economic valuation of these services is related to the individual's willingness to pay for these services. However, the willingness to pay is determined by various motivations which may range from self-interest to concern for future generations and concern for environment and other living beings. These values can be classified as

- Goods: Direct usage of services - consumptive and non-consumptive usage, e.g. timber, fuel wood, tourism;
- Services: Indirect usage - watersheds, groundwater recharge, oxygen production, carbon storage, etc

However, the economic valuation of loss of forests is hampered by following constraints:

DIRECT COSTS

- Standing trees are valued at their present market value. Since, there is a marked prizesize relationship, young trees are undervalued;
- Value of climber, creepers and medicinal plants is overlooked;
- Price of forest land is not taken into account; and
- Compensatory afforestation costs are misleading because a mixed forest cannot always be created within a 50 year accounting period.

INDIRECT COSTS

- Intangible costs and benefits are difficult to quantify;
- Undervaluation of goods consumed by poor are undervalued;

- Cost of extinction of species are disregarded;
- Costs of disregarding habitat carrying capacity are not taken into account.

The various goods and services provided by the forests and their economic importance can be discussed as below:

WOOD RESOURCE FROM FORESTS:

The forest trees play the most important role in all the functions of forests. The trees are felled on a large scale for using their wood as timber and firewood. The wood of the trees in forests is very hard, strong, durable and hence, many species of trees are preferred for their wood as it is used as timber wood. Broadly two types of timber uses are distinguished - commercial and non-commercial.

The timber wood is mainly used for construction of houses, doors, windows, planks, boats, furniture, railway sleepers, carriages, carts, cabinets, etc. Trees like *Tectona grandis* (Teak), *Shorea robusta* (Sal), *Mangifera indica* (Mango), *Cedrus deodara* (Deodar), *Swietenia mahogany* (Mahogany), *Dalbergia sisoo* (Shisham), *Azadirachta indica* (Neem) and many other trees are have lot of economic importance because of the various uses of their wood. The rural people and the tribal people are also mainly dependent upon the wood obtained from forests as a source of fuel. They collect the firewood from the forests and burn it to cook food, heating water, providing light and heat, prepare charcoal, etc. FAO (2000) statistics suggest that some 1.86 billion m³ of wood is extracted from forests for fuel wood and conversion to charcoal. The use of wood as fuel is a very old practice and almost dates back to establishment of the civilizations. Though this practice has almost died down in urban civilizations, but for people living in villages and rural areas, firewood is most easy, cheap and readily available source of energy. The benefits of using wood fuel are that it does not cause pollution and the left over wood ash can be used as fertilizer in fields. The practice of making charcoal from burning firewood and selling it in markets is also an important livelihood of rural people. The local values of fuel wood and charcoal can be highly important in terms of local economy.

NON-TIMBER FOREST PRODUCTS (NTFP):

Though the forests serve as a storehouse of wood used for various purposes, but there are also equally important non-wood products that are obtained from the forests. The botanical and other natural products, other than timber extracted from the forest system are referred to as Non-Timber Forest Products (NTFPs). These are

also referred as all the resources/products that may be extracted from forest ecosystem and are utilized within the household or are marketed or have social, cultural or religious significance (FAO, 1990). These include plants and plant materials used for food, fuel, storage and fodder, medicine, cottage and wrapping materials, biochemical, as well as animals, birds, reptiles and fishes, for food and feather. Unlike timber-based products, these products come from variety of sources like: fruits and vegetables to eat, leaves and twigs for decoration, flowers for various purposes, herbal medicines from different plant parts, wood carvings and decorations, etc. People have been using NTFPs since many years and it forms an important part of local and regional economics. The values of NTFPs per hectare when calculated might not be very high, but these products are of critical importance as source of income and employment for rural people living around the forest regions, especially when crop growing season is not there. The United Nations Food and Agriculture Organization has claimed that at least 150 non-timber product are found in the International Markets. The NTFPs can be broadly classified into following types:

§ **EDIBLES** - The fruits, nuts and berries collected from various plants are eaten widely. Fruit of *Artocarpus heterophyllus* is cooked as food while fruits of *Embllica officinalis* are used as pickles. Wild herbs and spices are also used in various food items. The mushrooms which have a large diversity form an important and integral part of edible items obtained from the forests. They are a rich source of protein and have also been found to possess health benefits. Ecosystem people collect many different wild mushrooms from the forests and use it as edible items.

§ **MEDICINAL PRODUCTS** - Plants have been exploited on a large scale for their medicinal properties since ages. The early humans were totally dependent upon the plants for healing and curing of various disorders. Today also in villages and other rural areas around the forests, the plants growing in forests serve as medicines. Every village has a 'Vaid' or a Herbal Practitioner who has knowledge of regional medicinal plants and treats the patients. The production of herbal drugs has also increased manifold in last few years. Many ethno medicinal studies have proved the importance of medicinal plants present in forests and now these plants have been explored and exploited for preparation of various medicines. The herbal drug is a multi-million industry and is totally dependent upon the plants obtained in forests for their medicinal benefits. Medicinal plants like *Adhatoda vasica*, *Ficus religiosa*,

Emblica officinalis, *Vitex negundo*, *Terminalia chebula*, *Rawolfia serpentina*, *Asparagus racemosus*, *Acorus calamus*, etc. are widely used as ethno medicine by various tribes and rural people across different parts of Western Ghats.

§ **ANIMAL PRODUCTS** - A large amount of honey is also extracted from forests by rural people from honeybees in the forests and it is sold in the market too. Honey is one of most important NTFP consumed by rural and urban people and is of great economic value. It has lots of medicinal values as well as is used in preparation of variety of food items. Besides this, many insects are also collected from forests and used as food delicacies. The collection of Lac from Lac insects is also an important NTFP and has a good price in the market. The skin of some animals is used for leather and fur. Some wild animals are also domesticated as pets like wild dogs and cats. The silkworms are collected for obtaining silk which is a highly priced NTFP in the market. The earthworms are used as bait for catching fishes and also used in agricultural fields. Lot of fishes are obtained from rivers in forests which are eaten as food and also used for obtaining some oil, making delicacies like pickles and sold in market.

§ **MISCELLANEOUS** - The wild flowers are used for decorations and some of them are offered to the Gods. The ferns are also of great ornamental importance and are cultivated for their beautiful appearance. The wood is used to make beautiful carvings and decorations and sold in market. The fibers obtained from bamboo, wild jute, coconut are used for stuffing things, preparing baskets, covering rooftops, etc. The dyes are also obtained from various plants e.g. orange colored dye is obtained from *Bute monosperma* and blue colored dye is obtained from *Indigofera sp.* Gums and resins are also obtained from bark of some trees, which are sold in markets. Research has also proved that many plants in the forests have potential of producing hydrocarbons and biodiesel which can be used as substitute for fossil fuels. Many plants are also used in rites, rituals and magico-beliefs while many animals and trees are also worshipped.

§ **ECOTOURISM AND RECREATIONAL VALUES OF FORESTS** - The Ecotourism is a much growing and popular activity and is a potential valuable usage of forests without extracting anything from it. However, care should be taken that such tourism activities are sustainable and do not harm the ecological carrying capacities of the forests. The ecotourism is also economically very useful to the local people living in and around the forest areas as they can gain net profit by

participating and assisting in such activities. The ecotourism also is a source of profit for tour organizers who do not live near the forests and yet earn lots of money from it. The forest department also gets good amount of revenue from this to maintain and upkeep the forests and wildlife in proper shape. However, the values of ecotourism vary from place to place and the extent of attraction in the forests.

§ **BIODIVERSITY:** The forests of the world harbour very large and complex biological species diversity and hence, it becomes a complex thing to assign a specific definition or explanation for it. The species diversity is an indicator for biological diversity and the species richness increases as we move from the poles to the equatorial region. The tropical forests are the richest source of biodiversity and are probably thought of containing more than half of world's biodiversity. However, there is a confusion between the values of biological resources and values of biodiversity. The values of biodiversity refer to values of the information and insurance. The existing species are results of long evolution processes that have been

occurring over several billion years. Since these evolutionary processes have occurred in different environmental conditions, the existing species contains a significant stock of information related to these processes and environment. There also occurs interactions between different species in nature. The information stored by this diversity can be used develop goods and services for benefit of mankind. However, only a part of valuable information is known and there is a lot of potential still left in forests to harness more valuable information.

§ **ENVIRONMENTAL AND ECOLOGICAL IMPORTANCE OF FORESTS:**

Many studies have suggested enormous potential function of forests to store carbon. However, there is also a distinguishes between the carbon stored in a standing forest

and carbon sequestered in a growing forest. The former case has a high economic value associated with it and is greatly affected if the forests get burned or are cleared for some purpose. The forests which ar preserved and not under threat have carbon storage values but are often not realized, while if a forest which is under some kind of threat in coming future, its carbon storage value can be realized through protective measures. However, when forest land conversion takes place, the entire carbon storage values are lost. A number of studies have been taken place and are going on

to record the carbon stored and sequestered in different types of forests. Today, immense potential can be observed for development of carbon trading markets in view of increasing climate change and this would be having a great economic significance.

One more important role of the forest trees is soil binding and prevention of soil erosion.

The roots of the trees bind the soil together by great force and prevent it from running – off in conditions of high rains. The roots of trees are also a preferred place for living of many important fungi and bacteria. These microbes benefit the trees as well as enrich the soil by their degradation activities. The leaves and twigs of plants and trees when they detach and fall on the ground, the micro flora of soil starts degrading it and converts it into humus which enriches the forest soil. This humus provides nutrition for germinating plants and serve as substratum for mushrooms and ferns and also give shelter to large number of insects. Forests are also the houses of large number of insects, animals, birds and plants ranging from cryptogams to angiosperms. The forests also play a key role in hydrological functions and water cycle. Large amount of trees ensures higher transpiration rates and greater aerodynamic roughness of forests compared to agriculture and pasture lands ensures

increased humidity and moisture convergence leading to increased probabilities of cloud formation and rainfall generation (André et.al., 1989). Forests have both tangible and intangible effects which should be covered in any kind of impact assessment. But, it is not easy to assign economic values to intangible effects. There have also been some attempts to quantify and evaluate the environmental costs of loss of forests. The notional values assigned to some parameters contributing to ecological balance (Das, 1980).

MANAGEMENT OF FORESTS

India sustains almost 15% of the total population of the world and the commercial and social needs of the people are met by the forests. The demand is much more than what the forests are supplying and the heavy burden comes on the forests. The forests play a crucial role not only in social and economic well-being but also in maintaining the ecological balance. The Forest Policy in India has following salient features:

- A minimum of one-third of total land area of country has to be brought under forest or tree cover
- Total protection of tropical/moist forests
- Control of introduction of exotic species
- Extent of forest use for grazing and extraction will be determined by carrying capacity
- Involvement of tribals in protection, regeneration and development of forests
- Forest based industries will raise their own requirements and practice of supplying forest produce to industries will cease

Time Value of Money

The future prices, yields and other events relevant to the production process were, so far, assumed to be known, and problems unique to the passage of time were not considered. Since such an environment is far from reality, it is necessary to study the effect of time, risk and uncertainty on production process.

i) Decision - Making over Time

A farm manager has to take decisions over varying horizons of time. Two aspects of such decisions are important, i.e., i) differences in profitability growing out of time alone and ii) differences in the desirability of investments due to risk and uncertainty factors. Time has a very significant influence on costs and returns. There are many decisions where this time comparison principle finds application, such as: soil conservation programmes which bear fruits over a long time; putting land under an orchard which may not give returns for 3 – 5 years; and so on. Two aspects of the problem are considered under such situations: a) growth of a cash outlay over time and b) discounting of future income.

ii) Growth of a Cash Outlay or Compounding Present Costs

The cash outlay grows over time due to the compounding of interest charges or opportunity costs involved in using the capital; if Rs.100 are put in a saving account with an annual interest at 12 per cent compounded, it will increase to Rs.125.44 by the end of second year. In symbolic terms, you now have the amount earned at the end of the first year. $P + Pi$, plus the interest that amount earned during the second year $(P + Pi) i$ which could be expressed as:

$(P + Pi) + (P + Pi) i$ (or) $P (1 + i) + Pi (1 + i)$ which after factorizing $(1 + i)$, results in $(P + Pi) (1 + i)$.

Factorizing P from the left term gives: $P (1 + i) (1 + i) = P (1 + i)^2$.

In general, the compounded value, F (future value), of a present sum (P) invested at an annual interest rate (i) for 'n' years is given by $F = P (1 + i)^n$. This procedure is called compounding.

Compounding the Present Value

(Amount in Rs.)

Year	Beginning Amount	Interest Earned by the End of Year	Beginning Amount + Interest
1	100.00	100.00(0.12)=12.00	112.00
2	112.00	112.00(0.12)=13.44	125.44
3	125.44	125.44(0.12)=15.05	140.49
4	140.49	140.49(0.12)=16.86	157.35
5	157.35	157.35(0.12)=18.88	176.23

iii) Discounting Future Revenues

Costs incurred at one point of time cannot be compared with validity to revenues forthcoming at a later date. The future value (FV) of the present sum / present value (PV) is estimated through:

$FV = PV (1 + i)^n$. Dividing both sides of this equation by $(1 + i)^n$, the following equation is obtained: $PV = \frac{FV}{(1 + i)^n}$

Thus, if a pay-off, FV, is due in 'n' years in future, its present value, PV, can be determined using the above expression where 'i' is the interest rate. This procedure is known as discounting future returns. The present value of Rs.176.23 that could be at the end of 5 years, if the appropriate discount rate is 12 per cent, is: $PV = \frac{176.23}{(1.12)^5}$.

Discounting can be used to determine the present value of the future income stream earned by a durable input (asset).

The interest rate used to discount or compound sums of money should be at least as large as the current or market rate of interest. How much higher it might be depends upon the manager's opportunity costs. The important variables determining present and future values of a single payment or series of payments are: i) the number of years and ii) size of interest rate. Both factors interact to determine the total effects of discounting or compounding on present or future values.

Discounting the Future Values

(Amount in Rs.)

Year	Value at the End of the Year (Rs)	Present Value, if Discount Rate is 12 Per Cent per Annum (Rs)
1	100	89.29
2	100	79.72
3	100	71.18
4	100	63.55
5	100	56.74
Total	500	360.48

Farm Investment Analysis

Investment refers to the addition of durable and income generating permanent asset to a business. Financing refers to the means of acquiring control of assets' ownership by cash purchase or borrowing, leasing and custom hiring. Clearly, an investment can be financed in several ways and each may affect its profitability and risk. The following question has to be answered in making decisions regarding investment on farms.

i) Why investment analysis is a difficult job?

Farm investment analysis is difficult because of the following reasons:

- a) Farmers are having limited resources.
- b) Resources have alternate uses.
- c) Different uses have different pay-offs.
- d) Different uses have different project lives.

There is a need to make choice before making investment. So, job is made difficult in selection of choice.

ii) Investments have four characteristics in general. They are:

- a) Point input and point output E.g.) Casurina.
- b) Point input and continuous output E.g.) Digging a well, land reclamation and development.
- c) Continuous input and point output. E.g.) Sheep/Goat rearing.
- d) Continuous input and continuous output. E.g.) Plantation crops, orchard crops, perennial crops.

Farm investment analysis is used to determine attractiveness of additional investment in the farm, while farm income analysis is generally used to evaluate the performance of a farm in a particular year. Farm investment analysis is undertaken to determine the attractiveness of a proposed investment to farmers and to other participants, including the society as a whole. It projects the effect of a particular investment on farm income and estimates the return to the capital engaged. The analysis is projected over the useful life of the investment. This analysis concentrates on how the time can be incorporated into decision-making process when compared with different periods of productive use.

iii) Steps in Investment Analysis: The following steps are involved in the investment analysis:

a) A search for profitable investment opportunities: A search for profitable investment alternatives is an important step. Some investment opportunities are obvious and require little effort for searching, such as the need to replace worn out parts of tractor or farm equipment. Farm investment opportunities generally include one of the following categories:

- 1) Maintenance and replacement of depreciated capital items.
- 2) Adoption of cost reducing technology.
- 3) Expansion of output in existing enterprises and
- 4) Expansion of output through the addition of new enterprises.

b) Determining the capital requirement: The cost of initial investment and operation and maintenance cost over economic life of capital constitute the capital requirement.

c) Computation of cost of capital, which takes into account the availability of funds: In capital budgeting or investment analysis, a discount rate, which is the cost of capital, is selected. This discount rate is a required rate of return from an investment to the farmer. As such, discount rate is the opportunity cost of the investment to the farmer. That is, the opportunity cost of capital for any investment alternative is the rate at which the capital can earn in its next best alternative use. Usually, for convenience, the interest rate offered by credit institutions (12 per out per annum) is taken as discount rate.

d) Method for recognizing future cash flows and the time value of money.

Time value of money: Interest rate serves as the pricing mechanism for the time value of money and reflects an investor's time preference for money. The rate (i) is considered an exchange price between present and future cash flows. Thus, rupee 1 today exchanges for (1+i) rupees at the end of period 1 in future. Or, alternatively, one rupee payment made in period 1 in the future exchanges for $1/(1+i)$ rupees now. Compounding is the process of finding future value of present amount.

$FV = \text{Present value} \times (1 + \text{interest rate})^{\text{number of years}}$

That is, $FV = PV (1+i)^n$, where, (1+i) is the compounding factor. Discounting is the process of finding the present value of future cash flow account.

$$\text{Present Value (PV)} = \frac{\text{Future value}}{(1 + \text{interest rate})^{\text{number of years}}} = \frac{FV}{(1+i)^n}$$

e) The effects of time and interest rate on present and future values: The important variables determining present and future values of a single payments or a series of payments are i) the number of conversion periods (project period) and ii) the size of interest rate per year. Both factors interact to determine the total effects of discounting or compounding on present or future values. At low rates of interest, the number of years has only a little effect on either present or future values.

There are two measures to assess the worthiness of an investment, viz., 1) undiscounted and 2) discounted measures.

1) Undiscounted Measures

Here, the cash flows of the investment are not discounted to estimate the present worth of future stream of cash flow. There are four major methods in undiscounted measures as discussed below:

i) Ranking by Inspection: We can tell that by simply looking at the investment cost and stream of net value of incremental production that one project should be accepted over another. Here, we have two instances: i) with the same investment, two projects produce the same net value of incremental production for a period, but one continues to earn longer than the another (we would choose Project II rather than Project I). ii) For the same investment, the total net value of incremental production

may be the same, but one project has more of the flow earlier in the time sequence (we would choose Project IV rather than Project III). However, we cannot tell by inspection, whether Project IV would be preferred to Project II, as it requires more elaborate analysis.

Four Hypothetical Pump Irrigation Projects

(Amount in Rs.)

Year	Incremental cost				Value of Incremental Production (Gross Income)	Net Value of Incremental Production (Net Income)
	Capital Items	Operation and Mainten- ance	Produ- ction	Gross Cost		
Project I						
1	30,000	-	-	30,000	-	-
2	-	2,000	3,000	5,000	20,000	15,000
3	-	2,000	3,000	5,000	20,000	15,000
4	-	-	-	-	-	-
Total	30,000	4,000	6,000	40,000	40,000	30,000
Project II						
1	30,000	-	-	30,000	-	-
2	-	2,000	3,000	5,000	20,000	15,000
3	-	2,000	3,000	5,000	20,000	15,000
4	-	2,000	3,000	5,000	9,100	4,100
Total	30,000	6,000	9,000	45,000	49,100	34,100
Project III						
1	30,000	-	-	30,000	-	-
2	-	2,000	3,000	5,000	7,000	2,000
3	-	2,000	3,000	5,000	19,000	14,000
4	-	2,000	3,000	5,000	31,000	26,000
Total	30,000	6,000	9,000	45,000	57,000	42,000
Project IV						
1	30,000	-	-	30,000	-	-
2	-	2,000	3,000	5,000	7,000	2,000
3	-	2,000	3,000	5,000	31,000	26,000

4	-	2,000	3,000	5,000	19,000	14,000
Total	30,000	6,000	9,000	45,000	57,000	42,000

ii) Pay back period: Pay back period is the length of time from the beginning of the project until the net value of the incremental production stream reaches the total amount of the capital investment. Both Projects I and II have the same pay back period of three years, but we know by inspection that Project II will continue to return benefits in the third year, whereas Project I will not. The weakness of the pay back period as a measure of investment worth is that it does not take into consideration the timing of proceeds.

Pay back period

Project	Pay Back Period (Years)	Rank
I	3.0	1
II	3.0	1
III	3.5	4
IV	3.1	3

iii) Proceeds per Unit of Outlay: Here, the total net value of incremental production is divided by the amount of the investment. Here, we find that Projects I and II are correctly ranked. But Projects III and IV receive equal rank, although we know by simple inspection that we could choose Project IV because its returns are received earlier. Here, again, the criterion of proceeds per unit of outlay fails to consider timing; money to be received in the future weights as heavily as money in hand today.

Proceeds per Unit of Outlay

Project	Incremental Cost (Capital Items)	Total Net Value of Incremental Production	Proceeds per unit of Outlay	Rank
I	30,000	30,000	1.00	4
II	30,000	34,100	1.14	3
III	30,000	42,000	1.40	1
IV	30,000	42,000	1.40	1

iv) Average Annual Proceeds per Unit of Outlay: The total of the net value of incremental production is first divided by the number of years it will be realized and then this average of the annual proceeds is divided by the original outlay for capital items. By failing to take into consideration the length of time of the benefits stream, it automatically introduces a serious bias toward short-lived investments with high cash proceeds.

Project I ranks much better than Project II, although we know by simple inspection that Project II is the project we would choose. Similarly, the criterion cannot choose between Projects III and IV, although again by inspection, we know that we would prefer Project IV because it returns its benefits earlier. All these four measures fail to take into account adequately the timing of the benefit stream. Therefore, discounting technique is used to estimate the present worth of future returns so as to assess the financial worthiness of a project.

Average Annual Proceeds per Unit of Outlay

Project	Incremental Cost (Capital Items)	Net Value of Incremental Production	Average Net Value of Incremental Production	Average Annual Proceeds per unit of Outlay	Rank
I	30,000	30,000	15,000	0.50	1
II	30,000	34,100	11,367	0.38	4
III	30,000	42,000	14,000	0.47	2
IV	30,000	42,000	14,000	0.47	2

2) Discounting Measures

The discounting is based on the principle that the present values are better than the same values in the future, and earlier returns are better than that of the later. Discounting is essentially a technique by which one can “reduce” future benefit and cost streams to their “present worth”. The basic idea underlined in the discounted measures is that money has a time value. As the money can be put into alternative uses, it has an opportunity cost. The value per unit of money is higher today than at

any future point of time. That is why, interest is paid on borrowed funds. Thus, an individual's preference for money through time is called time preference. Once the individual decides to invest rather than spend, to become an entrepreneur rather than a consumer, he should never accept less than the market rate of interest. The interest rate used to discount or compound sums of money should be at least as large as the current market rate of interest, which can be taken as opportunity cost of capital. In order to evaluate the profitability of investment, three discounted measures are available, viz., i) Net Present Worth (NPW), ii) Benefit -Cost Ratio (BCR) and iii) Internal Rate of Return (IRR).

i) Net Present Worth: Net Present Worth is often referred as net present value. The present worth of the net benefits of a project is obtained by deducting costs from the benefits and the resulting net benefits are discounted at the opportunity cost of capital for each year. The sum of the net benefits during the life period of the project gives the net present worth. If the NPW is positive, then it is construed that the project is economically feasible. If the NPW is zero, it means that the cost of the project has been fully recovered at the rate of discounting. Mathematically, it can be represented as:

$$NPW = \sum_{t=1}^n \frac{B_t - C_t}{(1+i)^t}$$

Where, B_t = Benefits in each year; C_t = costs in each year; n = number of years (plan horizon) (Economic life is normally considered). The economic life of an investment project represents the length of the life, the investor intends to hold the assets required. It does not represent the service life of the asset or the time taken to wear-out; i = interest (discount) rate; and t = time period- 1, 2, ..., n (number of years).

ii) Benefit Cost Ratio: It is widely used as measure of social benefit. It is the ratio between the present worth of benefit and present worth of costs. In order to compute the benefit - cost ratio, the opportunity cost of capital may be used as a discounting rate. The salvage value of the asset (at the end of its life time), if any, should be treated as a benefit in the last year of the project. The ratio is computed not by discounting the gross costs and gross benefits over the life time of the project; but by discounting

costs and benefits each year. If the BC ratio is greater than one, the project is worthy of investing.

$$\text{Benefit-Cost Ratio} = \frac{\text{Present Worth of Benefits}}{\text{Present Worth of Costs}}$$

Mathematically, it can be represented as,

$$\text{Benefit-Cost Ratio} = \frac{\sum_{t=1}^n \frac{B_t}{(1+i)^t}}{\sum_{t=1}^n \frac{C_t}{(1+i)^t}}$$

3. Internal Rate of Return (IRR): The internal rate of return is defined as that rate of discount which makes the present worth of benefits and costs equal or just makes the net present worth of the cash flow equal to zero. This measure is popularly used in economic and financial analysis. All projects having an internal rate of return above the opportunity cost of capital are selected for making investment. It is a measure of the earning capacity of a project. The internal rate of return can be mathematically presented as:

$$\text{Internal Rate of Return} = r \left| \sum_{t=1}^n \frac{B_t - C_t}{(1+i)^t} = 0; \text{ i.e., NPW} = 0 \right.$$

r = internal rate of return.

$$\text{IRR} = \left\{ \begin{array}{l} \text{Lower Discount Rate (at which the NPW is Positive)} \\ \text{Difference Between the Lower and Higher Discount Rates} \end{array} \right\} + \left\{ \frac{\text{Present Worth of Cash Flow at Lower Discount Rate.}}{\text{Absolute Difference Between the Present Worth's of the Cash Flow at at the Lower and Higher Discount Rates (Signs Ignored)}} \right\}$$

The IRR is calculated generally on a trial and error basis, using alternative rates of discount, till the NPW of the project reaches zero. To start with, the cash flow is to be discounted by opportunity cost of capital. If this net present worth of the cash flow is found to be positive, then, the

cash flow has to be further discounted by raising the discount rate, till the net present worth of cash flow becomes negative.

Practically, it is very difficult to compute the real IRR and hence interpolation method is used to estimate the true value of IRR.

Problem: A farmer wants to purchase a power tiller at Rs. 60,000.

The annual cost of maintenance and returns for the power tiller are estimated at Rs. 14,200 and rs.26,300 respectively. Its junk value is Rs.6,000. Advise the farmer about the financial worthiness of the purchase of power tiller using NPW, BCR and IRR (the opportunity cost of capital is 12 per cent per annum).

Estimation of NPW, BCR and IRR

Year	Cost	Benefit	Net Benefit	Present Worth of Cost @12 % Discount Rate	Present Worth of Benefit@ 12 % Discount Rate	Present Worth of Net Benefit @12 % dis.rate	Present worth of net benefit @16% discount rate
0	60000	-	- 60000	60000.00	-	- 60000.00	- 60000.00
1	14200	26300	12100	12678.57	23482.14	10803.57	10431.03
2	14200	26300	12100	11320.15	20966.20	9646.05	8992.27
3	14200	26300	12100	10107.28	18719.82	8612.54	7751.96
4	14200	26300	12100	9024.36	16714.13	7689.77	6682.72
5	14200	26300	12100	8057.47	14923.33	6865.86	5760.97
6	14200	26300	12100	7194.16	13324.40	6130.24	4966.35
7	14200	26300	12100	6423.36	11896.78	5473.42	4281.34
8	14200	26300	12100	5735.14	10622.13	4886.99	3690.81
9	14200	26300	12100	5120.66	9484.04	4363.38	3181.73
10	14200	32300	18100	4572.02	10399.74	5827.72	4102.97
Total				140233.17	150532.7	10299.54	- 157.85

1

Net Present Worth = Rs. 10,299.54

$$\text{Benefit - Cost Ratio} = \frac{150532.71}{140233.17} = 1.07$$

$$\text{IRR} = 12 + 4 \left(\frac{10299.55}{10457.40} \right) = 15.94 \text{ per cent.}$$

Farm Financial Statements – Balance Sheet, Income Statement and Cash flow Statement - Financial Ratio Analysis.

The three basic financial documents needed for any business analysis are (1) net worth statement or balance sheet (2) Income statement and (3) Cash flow summary statement.

At a given point of time the net worth statement documents, the assets, liabilities and owners equity of the business. It is used to evaluate the solvency of business.

The income statement is used to measure the financial profitability of a business during a period of time. It summarizes both cash and non-cash transactions that occurred during the accounting period.

A. Balance Sheet / Net worth Statement

The net worth statement in principle is a simple document. It consists of three main parts (a) list of assets (b) list of debts (liabilities) and (c) statement of owners equity, (or net worth). To prepare a useful and correct net worth statement it is first necessary to make a complete list of the business assets and debts. Further, it is desirable to categorize assets and debts into separate groups so that more detailed analysis can be made of net worth statement. Finally net worth can be calculated once the total value of the assets and debts has been established. The balance sheet corresponds to a particular date on which the asset and debt inventory is worked out

The assets and liabilities have been divided into three sub groups, viz., current, intermediate, and long term assets and liabilities. The breakdown of the assets and liabilities into these groups allows for more thorough and meaningful business analysis.

Assets: Any owned physical object having a money value.

Current Assets: It includes items that can be liquidated or consumed in a business operation during the accounting year. The liquidation of these items will have the least effect on the business ability of the individual or firm to continue operating. Items included in this classification include the crops raised for sale, livestock in inventory, advance supplies purchased, and cash on hand and accounts receivable.

Intermediate assets: These are items that can be liquidated but generally would require more time to achieve a fair price and also would have a significant influence on ability to continue in its basic format of operation. Items of this nature include draught animal, milch animal livestock in growing stage to be sold in later years, machinery, equipments and movable farm assets. In a sense these items are basically intended to support production and are not intended for sale. Because of this, intermediate assets are somewhat more

difficult to liquidate than current assets and if liquidated, nature of farming operation would be modified to a greater extent. For e.g. liquidating the draught animal would certainly have a major impact on farming activity.

Long term Assets: The long-term assets of the business are the major assets. eg. Land, permanent buildings and improvements. If a major portion of these assets were liquidated, the business would have to be terminated. These assets are the least likely to be liquidated.

Once these assets have been listed and grouped, values must be established for each of them. For current assets the problem of valuation should be fairly straight forward, since most part of the items listed under current assets are frequently sold. Therefore, it is only necessary to determine the current market price for the item, for establishing a value, based on the inventory.

Establishing the value of intermediate assets is a more involved process. For example, values of machinery and equipments are taken at book value (cost minus accumulated depreciation). This non - cash expense, called depreciation is calculated by means of a series of equations.

Using book values (Cost less accumulated depreciation) to establish value of machinery and equipment is a common practice in the preparation of net worth statement. A business with high proportion of assets being of recent purchase and using a slow depreciation (e.g. straight line method) will tend to have an overvalued set of assets. This is because market value of the assets has declined more rapidly than what the depreciation method actually indicates.

The opposite problem often occurs with older machinery. The market value of tractor may be higher than book value. The use of market values might be appropriate method for establishing values for such cases on the net worth statement. This would give a true indication of business's solvency. For valuation of breeding stock or working livestock, market value technique is preferred, as it appreciates and depreciates over its life period. Long-term assets include land, improvements to irrigation structures, drainage structures and buildings. The value of the buildings and improvements is established using the book value. The sum of current intermediate and long term of asset is the total assets of the business. The liabilities are also grouped in to three sub groups, which allows for a more thorough analysis of the balance sheet.

Current liabilities include the accounts payable and the debt that is likely to be repaid within the current accounting year. This type of debt includes operating loans which are used to buy items of production such as, seed, fertilizer and feed. These loans are usually repaid when the commodities produced from the farm are sold. The principle amount that is due to be paid in that particular year for intermediate / long-term liabilities should be included under this.

Intermediate liabilities include debts in which the repayment schedule is within 2 to 10 years. This type of debt is used to purchase assets that are used in production process and would include items like machinery, draught animals and some types of improvement.

Long-term liabilities are debts that have repayment schedules generally in excess of 10 years. Mortgage of land are generally considered as long-term liabilities. The total liabilities are calculated by summing the current, intermediate and long-term liabilities.

The difference between the assets and liabilities is termed as net worth. Net worth is an indication of the amount of equity the owner or owners have in the business and is considered to be the balancing entry of net worth statement. In some cases liabilities exceed the assets of the business. In this situation the business have a negative net worth and the balancing entry is defined as net deficit.

The net worth statement is one of the primary documents used by lending agencies in evaluating requests for new loans or extension of existing loans. A good net worth statement is also important for correct preparation of the income statement. It can be used for tax calculation purposes. It is also used for further detailed analysis like current ratio and debt / equity ratio etc.,

B. Income Statement

The income statement or profit and loss statement is an important financial record that measures financial progress and profitability of business over time. The income statement is a summary of both the cash and non-cash financial transactions of the farm business, which occurred during the selected accounting period. This document is important because it is extensively used in analyzing the profitability, efficiency and financial stability of the business. Information from this document is also used in the preparation of cash flow summary.

The income statement is divided into two major sections namely income and expenses.

Income

(i) Cash Receipts

The accounts indicate only the sales of those items for which the manager has actually received payment.

(ii) Capital sales of the business

The sale of milch animal and equipments are major items. These types of receipts are separated from normal cash receipts. The amount reported should reflect only the actual net gain from capital sale. Net gain from milch animals that was raised on the farm would be defined as the sale value. However for the purchased milch animal the net gain would be defined as the difference between the sale price and current book value.

(iii)Change in inventory value of items produced on the farm.

The adjustments that are made in this part of the income statement are necessary for a true indication of the farm's income. All the income items included influence the

amount of cash flowing into the business. One of the management functions of the farms is choosing the best time to market and the quantity of items in the inventory vary with the marketing strategies chosen. The adjustments made in this part of the income statement will give a more accurate picture of the farm's income.

B. Expenses

The other major section of the income statement relates to the expenses of the business. The expenses section is divided into two subsections.

(i) Operating expenses are cash expenses which generally vary with size of the business operation.

(ii) Fixed expenses do not vary significantly with a change in the volume of business done under the period of reporting.

The sum of operating and fixed expenses is the total expenses of the business. This figure when subtracted from gross farm income gives the net farm profit. This gives an indication of business profitability during the accounting period.

Cash Flow Statement

The cash flow statement is the other important financial document needed to analyze the financial position of the farm business. As discussed earlier the net worth statement indicates the financial solvency of the business at a given point of time. In addition, the income statement gives an indication of the net farm profit during an accounting period. Neither of these financial documents addresses the issue whether the business can meet its various financial obligations. The cash flow statement deals with this issue. In particular it examines the amount of cash available to the farm and his family (both farm and non-farm) and how that cash is utilized in both farm and non farm activities. It identifies the problem areas that would not be apparent in examining the balance sheet and income statement. The cash flow statement can be prepared either on annual basis, or more a frequent basis such as quarterly or monthly. The cash flow summary is used to address the issue of whether the business can meet its various financial obligations. It examines the pattern of cash flowing into and out of business, during a particular period of time.

The cash flow statement consists of the following sections (1) Net cash farm income (2) Net capital expenditures (3) Net other income less expenditures and (4) Cash flow summary.

1. Net cash farm income: This relates to the net cash position of the farm business. The actual cash income and expenses are recorded under the time period in which they were actually incurred. The actual cash receipts and expenses are used and no inventory adjustments are made. Note that the net cash farm income varies significantly from one quarter to another.

2. Net capital expenditure: It indicates the sales and expenditures related to the capital items. Again these figures are the actual cash account.

3. Net other income less expenditure: It contains details on other sources of income and expenditures. Included in the other income group are hired out machineries and bullock, wages from off-farm employment and income from non farm business. The other expenses include non-farm cash business expenses, withdrawals for family living expenses, savings and principal payments on intermediate and fixed debts.

Cash flow summary: If the figure is negative additional debt will be needed to offset this deficit. In case where the cash surplus is positive the money can be used to make principal payments on post debt. The surplus can also remain in bank balance and used in later periods to set off cash flow problems that might exist in later periods.

Cash flow is an important and useful document in the analysis of cash liquidity of the business. When it is used in conjunction with the income statement and the balance sheet, the manager has a great deal of information for analyzing his business and in making management decisions. The summary of the cash flow is to find out the cash surplus. This is arrived at by adding the bank balance at the beginning of the year and the net cash income from the farm less the capital expenditure and other miscellaneous expenditures.

Financial Ratio Analysis

The balance sheet, income statement, cash flow statement supply a great deal of information on the financial structure and progress of the farm business. These records are helpful in assisting the farmer in decision making. The records must be analysed to ascertain the strengths and weaknesses of the business.

There are three types of financial tests and they are a) tests of liquidity, b) tests of solvency and c) tests of profitability.

A. TESTS OF LIQUIDITY

Tests of liquidity are usually conducted to determine the firm's ability to meet its current financial obligations. The current ratio is the most commonly recognized indicator of a firm's liquidity.

1) Current Ratio

Current assets	39,100		
Current ratio =	-----	=	----- = 2.17
Current liabilities	18,000		

Nature of current assets determines the value whether the firm is able to meet promptly the current liabilities. The reasonableness of any current ratio can be tested by comparing current ratios of similar firm in the industry.

2) Acid Test Ratio (ATR) or Quick Current Ratio

$$\begin{array}{rcl} \text{Current monetary assets} & 31,100 & \\ \text{ATR} = \frac{\text{Current monetary assets}}{\text{Current liabilities}} = \frac{31,100}{18,000} & = & 1.73 \end{array}$$

The difference between current ratio and acid test ratio is the elimination of inventories in current assets used in acid test ratio. If a firm's cash marketable securities and accounts receivable are more than sufficient to meet its current liabilities, then inventories may be viewed as a buffer to absorb any subsequent deficiency in the receivables, such as unexpected bad debt.

3) The Inventory to Receivable Ratio

$$\begin{array}{rcl} \text{Inventory} & 8,000 & \\ \frac{\text{Inventory}}{\text{Total receivables}} = \frac{8,000}{800} & = & 10.00 \end{array}$$

It also associated with the acid test ratio. Inventory represents cost items while receivables presumably include profit. Hence, a favourable change in this ratio may be due to the execution of profitability convert its inventory into liquid cash. It also has relevance in identifying a firm's current position in a business cycle since inventory generally is more subject to the value changes than the receivables are.

4) Intermediate Ratio

$$\text{Intermediate ratio (IR)} = \frac{\text{Total current assets} + \text{Total intermediate assets}}{\text{Total current liabilities} + \text{Total intermediate liabilities}}$$

A farm with CR and IR less than 1 may be facing serious financial problems.

B) TESTS OF SOLVENCY

Tests of solvency are designed to measure a firm's ability to meet both interest change and repayment of loans associated with its long-term financial commitments. Tests of solvency tell the manager how well his firm will survive a crisis but will provide little information as to the firm's normal operational viability.

1) Net Worth to Total Debt Ratio

$$\frac{\text{Net worth}}{\text{Total liability}} = \frac{1,89,100}{2,39,100} = 0.79$$

In general, the larger the net worth to total debt ratio, the less a firm's creditors concern themselves with thoughts of fore closure. It should be noted that some business may attempt to improve their current ratio, though not necessarily their financial health, through a simple funding operation. They decrease their current obligations by increasing long term debt and leave total debt used by the manager as a valuable supplement to the current ratio. Where a very large proportion of a firm's total debt is funded, a manager may choose to use an auxiliary ratio of net worth to current liabilities, thereby emphasizing the relative size of funded debt and its effect on solvency.

2) Net Worth to Fixed Asset Ratio

$$\frac{\text{Net worth}}{\text{Fixed assets}} = \frac{1,89,100}{1,80,000} = 1.05$$

This ratio indicates the proportion to the owner's equity invested in fixed assets. The ratio of above one, if it exists, represents the proportion of owner's equity involved in the firm's working capital. A raising net worth to fixed asset ratio indicates that management may be less concerned with insolvency. A declining ratio serves to warn management that the firm possibly may be expanding its physical plant beyond its current ability to support it financially. This would be particularly important to management during a general period of declining business.

$$3. \quad \text{Net capital ratio(NCR)} = \frac{\text{Total assets}}{\text{Total liabilities}}$$

$$4. \quad \text{Debt - equity ratio} = \frac{\text{Total liabilities}}{\text{Total assets}}$$

Net worth

Net worth

$$5. \text{ Equity - value ratio} = \frac{\text{Net worth}}{\text{Total assets}}$$

The net capital ratio, debt-equity ratio and equity-value ratio are indicators of long term solvency of the business. These ratios indicate a manager's willingness to use borrowed capital in the operation of his business.

If the net capital ratio works out to less than one, the farm is using more of borrowed funds. e.g. for the farm that has relatively stable expense and income situations, such as dairy farm, lending institutions may be willing to advance credit even with NCR as low as 1.0. In other business such as orchards where income and expense fluctuate greatly from year to year financial institutions might consider a NCR of 2 or 3 as a more appropriate value, for advancing loans.

Again direction of movement of these ratios through time is more important.

- i. NCR should be increasing over time.
- ii. Debt equity ratio should be decreasing over time.

Equity ratio approaching 1, would be making progress towards higher solvency levels.

Lower the debt, the higher degree of protection enjoyed by the creditors. The lower this ratio, the more desirable it is. It is also known as Debt to Net Worth ratio. The net worth indicates the solvency of the business. But this is the ultimate solvency rather than intermediate solvency. Ultimate solvency is meant that total resources are equal to or greater than total liability, in case the entire business is closed out and all the liabilities are met with. Net worth is greater than zero, when business is solvent. When total liabilities are not covered by total resources, the business is insolvent or bankrupt. The intermediate solvency is meant the relationship between current liabilities and liquid assets, which can be used to clear them off, if demanded.

C) TESTS OF PROFITABILITY

Two subgroups of financial ratios are generally used by management to test the profitability of a business. The first sub-group involves those ratios that measure profitability of a business. The first sub-group involves those ratios that measure profitability as related

to investment. The second is more concerned with measuring profitability as related to sales. Both sub-groups of ratios are helpful to managers in identifying performance trends over time and/ or comparing profit performance among similar business firms.

1. The Earnings to Investment Ratio

$$\frac{\text{Net income}}{\text{Net worth}} = \frac{\text{Rs.8,00,000}}{\text{Rs. 80,00,000}} = 0.1 \text{ (Hypothetical figure)}$$

This ratio is investor oriented and is of particular interest to the stock holders in so far as it has a direct impact on dividends.

2. The Earnings to Sales Ratio

$$\frac{\text{Net income}}{\text{Sales}} = \frac{\text{Rs.8,00,000}}{\text{Rs.90,00,00}} = 0.89 \text{ (Hypothetical figure)}$$

This ratio measures profit margin to sales. Higher the ratio, the more profitable the firm is. However, in comparing two or more enterprises, extreme care should be taken that net income excludes depreciation, taxes and outside earnings.

Income statement

Ratios calculated from the income statement give an indication of the relative profitability of a business and the degree of flexibility the firm has in meeting the expenses.

The operating ratio indicates the proportion of the gross income to operating expenses.

$$3. \text{ Operating ratio} = \frac{\text{Total operating expenses}}{\text{Total operating expenses}}$$

Gross farm income

Fixed ratio indicates the proportion of gross income allocated to meeting the fixed expenses.

Total fixed expenses

$$4. \quad \text{Fixed ratio} = \frac{\text{Total fixed expenses}}{\text{Gross farm income}}$$

The relationship between the fixed ratio and operating ratio is important. Farms with relatively large fixed ratio and small operating ratio generally are more vulnerable to cash flow (also called liquidity) problems.

Total expenses

$$5. \quad \text{Gross ratio (GR)} = \frac{\text{Total expenses}}{\text{Gross farm income}}$$

Gross ratio (GR) indicates the proportion of gross income needed to meet the total expenses and is the sum of fixed and operating ratios. In examining the three ratios the gross ratio is the important among the three

If $GR > 1$ the business is not covering the total expenses of operation.

$GR < 1$ the farm is generating a positive net farm income.

Balance sheet and Income statement analysis

The primary ratio calculated using both the balance sheet/net worth statement and the income statement is the Capital Turn Over Ratio. This ratio compares the use of invested capital in business in relationship to the income generated. Higher the ratio, the more efficient is the business. For a business with low capital turnover ratio to remain competitive, it needs a high level of profit per rupee of income generated.

Gross farm income + major purchase

$$\text{Capital Turn Over Ratio} = \frac{\text{Gross farm income + major purchase}}{\text{Average Capital investment}}$$

The other ratios are

$$\text{Total Assets Turn-Over Ratio} = \frac{\text{Net Sales}}{\text{Total Assets}}$$

$$\text{Net Income to Total Assets Ratio} = \frac{\text{Net Income}}{\text{Total Assets}}$$

Lecture 17: Time management in Projects- Network Techniques- PERT and CPM

Common Terms

To understand the whole concept of these techniques, we need to know some important terms that are used,

Critical Path

The longest complete path of a project.

Critical Task

A single task along a critical path

Deliverables

Something of value generated by a team or individual as scheduled often taking the form of a plan, report, procedure, product, or service.

Dependent Task

A task or subtask that cannot be initiated until a predecessor task or several predecessor tasks are finished.

Dummy Task

A link that shows an association or relationship between two otherwise parallel tasks along a PERT/CPM network.

Parallel Task

Two or more tasks that can be undertaken at the same time. This does not imply that they have the same starting and ending times.

Path

A chronological sequence of tasks, each dependant on the predecessors.

Predecessor Task

Task that must be completed before another task can be completed.

Project

The allocation of resources over a specific timeframe and the coordination of interrelated events to accomplish an overall objective while meeting both predictable and unique challenges.

Project Constraint

A critical project element such as money, time, or human resources.

Slack

Margin or extra room to accommodate anticipated potential short falls in planning

Slack Time

The time interval in which you have leeway as to when a particular task needs to be completed.

Task or Event

A divisible, definable unit of work related to a project, which may or may not include subtasks.

Timeline

The scheduled start and stop times for a subtask, task, phase or entire project.

Pre Project Activity

Before attempting to use or know about these tools, the project's information must be assembled in a certain way. It includes a basic description of the preceding steps.

1. Setting the project start date
 2. Setting the project completion date
 3. electing the project methodology or project life cycle to be used
 4. Determining the scope of the project in terms of the phases of the selected project methodology or project life cycle
 5. Identifying or selecting the project review methods to be used
 6. Identifying any predetermined interim milestone or other critical dates which must be met.
 7. Listing tasks, by project phase, in the order in which they might be accomplished.
 8. Estimating the personnel necessary to accomplish each task
 9. Estimating the personnel available to accomplish each task
 10. Determining skill level necessary to perform each task
 11. Determining task dependencies
- Which tasks can be done in parallel?

- Which tasks require the completion of other tasks before they can start?
1. Project control or review points
 2. Performing project cost estimation and cost-benefit analysis

Significance of CPM/PERT

There are many variations of CPM/PERT which have been useful in planning costs, scheduling manpower and machine time. The main significance of using CPM/PERT is that, they answer the following important questions of a project,

- How long will the entire project take to be completed? What are the risks involved?
- Which are the critical activities or tasks in the project which could delay the entire project if they were not completed on time?
- Is the project on schedule, behind schedule or ahead of schedule?
- If the project has to be finished earlier than planned, what is the best way to do this at the least cost?

Answer to these question prior to the start of project gives an in-detailed idea of the project and foreseen problems that the project will or can face in the future.

Before we know about CPM or PERT, there is an import tool or method that is used to easen the work known as GANTT CHART

Brief History of PERT and CPM

CPM was the discovery of M.R.Walker of E.I.Du Pont de Nemours & Co. and J.E.Kelly of Remington Rand, circa 1957. The computation was designed for the UNIVAC-I computer. The first test was made in 1958, when CPM was applied to the construction of a new chemical plant. Unproductive time was reduced from 125 to 93 hours.

PERT was devised in 1958 for the POLARIS missile program by the Program Evaluation Branch of the Special Projects office of the U.S.Navy, helped by the Lockheed Missile Systems division and the Consultant firm of Booz-Allen & Hamilton.

Framework for PERT and CPM

Essentially, there are six steps which are common to both the techniques. The procedure is listed below:

1. Define the Project and all of its significant activities or tasks. The Project (made up of several tasks) should have only a single start activity and a single finish activity.
2. Develop the relationships among the activities. Decide which activities must precede and which must follow others.

3. Draw the “Network” connecting all the activities. Each Activity should have unique event numbers. Dummy arrows are used where required to avoid giving the same numbering to two activities.
4. Assign time and/or cost estimates to each activity
5. Compute the longest time path through the network. This is called the critical path.
6. Use the Network to help plan, schedule, monitor and control the project.

The Key Concept used by CPM/PERT is that a small set of activities, which make up the longest path through the activity network control the entire project. If these “critical” activities could be identified and assigned to responsible persons, management resources could be optimally used by concentrating on the few activities which determine the fate of the entire project.

Non-critical activities can be replanned, rescheduled and resources for them can be reallocated flexibly, without affecting the whole project.

Five useful questions to ask when preparing an activity network are:

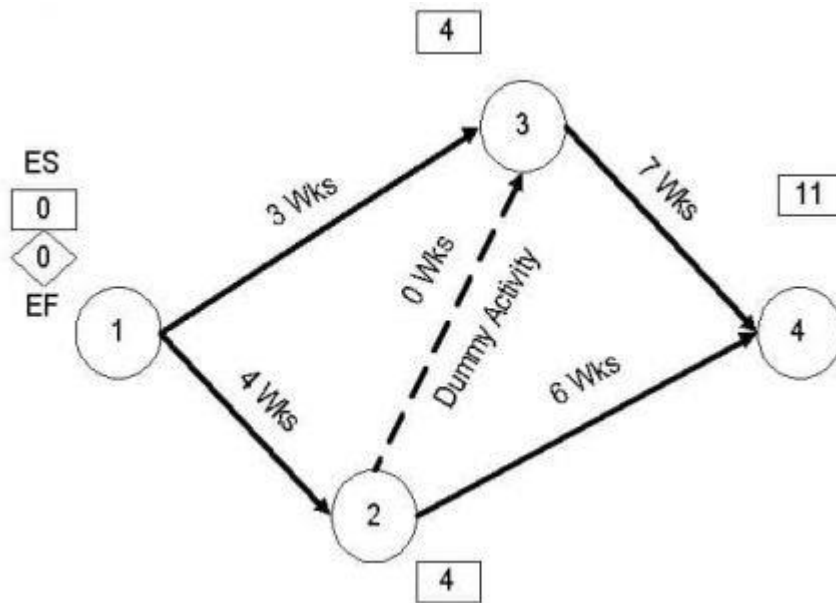
- Is this a Start Activity?
- Is this a Finish Activity?
- What Activity Precedes this?
- What Activity Follows this?
- What Activity is Concurrent with this?

Some activities are serially linked. The second activity can begin only after the first activity is completed. In certain cases, the activities are concurrent, because they are independent of each other and can start simultaneously. This is especially the case in organisations which have supervisory resources so that work can be delegated to various departments which will be responsible for the activities and their completion as planned.

When work is delegated like this, the need for constant feedback and co-ordination becomes an important senior management pre-occupation.

Drawing the CPM/PERT Network

Each activity (or sub-project) in a PERT/CPM Network is represented by an arrow symbol. Each activity is preceded and succeeded by an event, represented as a circle and numbered.



CPM/PERT Framework

At Event 3, we have to evaluate two predecessor activities – Activity 1-3 and Activity 2-3, both of which are predecessor activities. Activity 1-3 gives us an Earliest Start of 3 weeks at Event 3. However, Activity 2-3 also has to be completed before Event 3 can begin. Along this route, the Earliest Start would be $4+0=4$. The rule is to take the longer (bigger) of the two Earliest Starts. So the Earliest Start at event 3 is 4.

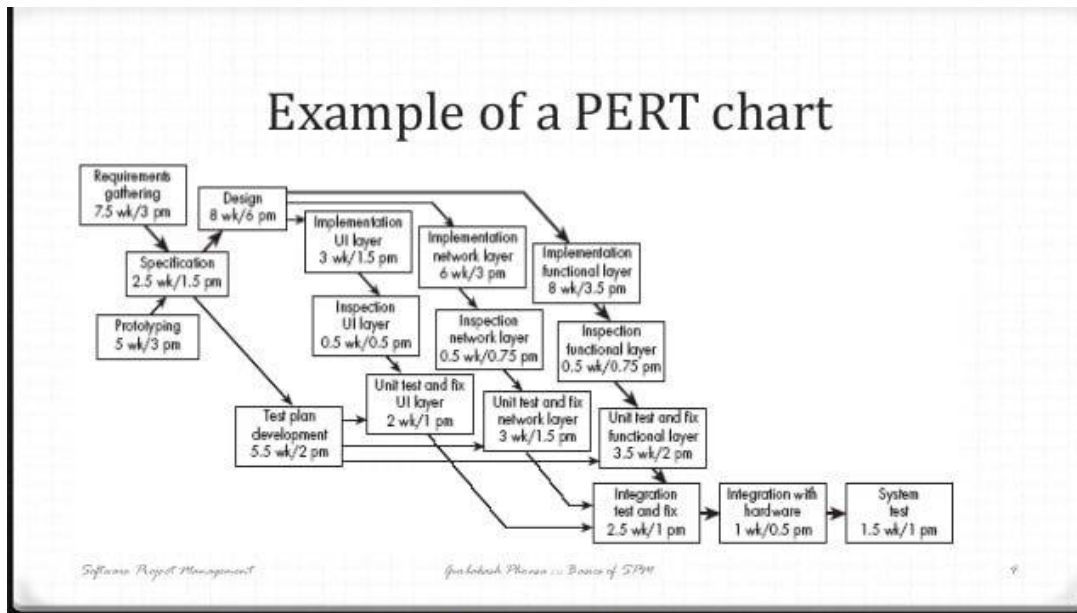
Similarly, at Event 4, we find we have to evaluate two predecessor activities – Activity 2-4 and Activity 3-4. Along Activity 2-4, the Earliest Start at Event 4 would be 10 wks, but along Activity 3-4, the Earliest Start at Event 4 would be 11 wks. Since 11 wks is larger than 10 wks, we select it as the Earliest Start at Event 4.

We have now found the longest path through the network. It will take 11 weeks along activities 1-2, 2-3 and 3-4. This is the Critical Path.

PERT

A manageable task is one in which the expected results can be easily identified; success, failure, or completion of the task can be easily ascertained; the time to complete the task can be easily estimated; and the resource requirements of the task can be easily determined.

Example of a PERT chart



PERT Chart

Program evaluation and review technique (PERT) charts depict task, duration, and dependency information. Each chart starts with an initiation node from which the first task, or tasks, originates. If multiple tasks begin at the same time, they are all started from the node or branch, or fork out from the starting point. Each task is represented by a line, which states its name or other identifier, its duration, the number of people assigned to it, and in some cases the initials of the personnel assigned. The other end of the task line is terminated by another node, which identifies the start of another task, or the beginning of any slack time, that is, waiting time between tasks.

Each task is connected to its successor tasks in this manner forming a network of nodes and connecting lines. The chart is complete when all final tasks come together at the completion node. When slack time exists between the end of one task and the start of another, the usual method is to draw a broken or dotted line between the end of the first task and the start of the next dependent task.

A PERT chart may have multiple parallel or interconnecting networks of tasks. If the scheduled project has milestones, checkpoints, or review points (all of which are highly recommended in any project schedule), the PERT chart will note that all tasks up to that point terminate at the review node. It should be noted at this point that the project review, approvals, user reviews, and so forth all take time. This time should never be underestimated when drawing up the project plan. It is not unusual for a review to take 1 or 2 weeks. Obtaining management and user approvals may take even longer.

When drawing up the plan, be sure to include tasks for documentation writing, documentation editing, project report writing and editing, and report reproduction. These tasks are usually time-consuming; so don't underestimate how long it will take to complete them.

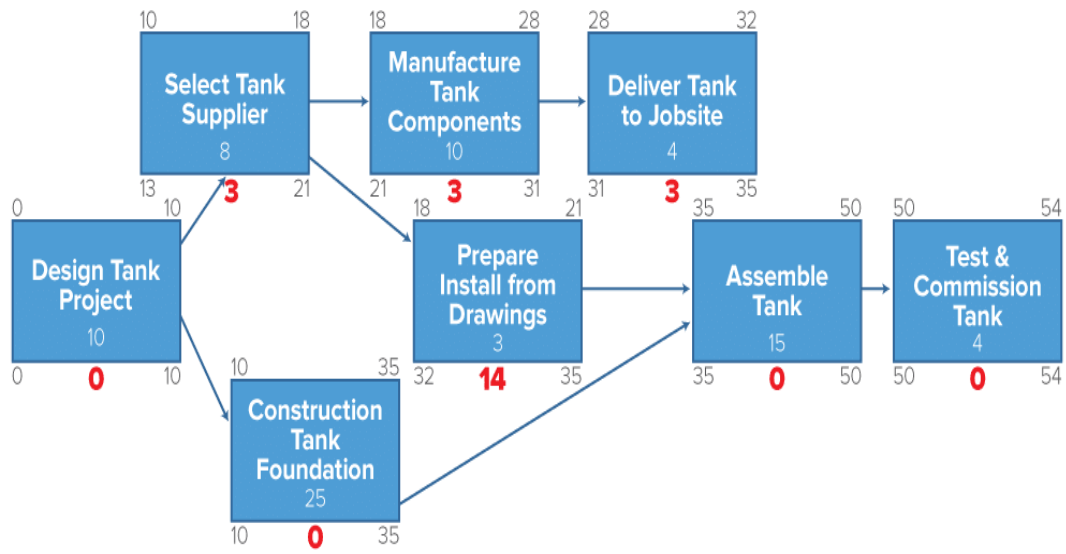
PERT charts are usually drawn on ruled paper with the horizontal axis indicating time period divisions in days, weeks, months, and so on. Although it is possible to draw a PERT chart for an entire project, the usual practice is to break the plans into smaller, more meaningful parts. This is very helpful if the chart has to be redrawn for any reason, such as skipped or incorrectly estimated tasks.

Many PERT charts terminate at the major review points, such as at the end of the analysis. Many organizations include funding reviews in the projects life cycle. Where this is the case, each chart terminates in the funding review node.

Funding reviews can affect a project in that they may either increase funding, in which case more people have to be made available, or they may decrease funding, in which case fewer people may be available. Obviously more or less people will affect the length of time it takes to complete the project.

CPM

Critical Path Method (CPM) charts are similar to PERT charts and are sometimes known as PERT/CPM. In a CPM chart, the critical path is indicated. A critical path consists of that set of dependent tasks (each dependent on the preceding one), which together take the longest time to complete. Although it is not normally done, a CPM chart can define multiple, equally critical paths. Tasks, which fall on the critical path, should be noted in some way, so that they may be given special attention. One way is to draw critical path tasks with a double line instead of a single line.



CPM Chart

