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$r = 10$ per cent of rainfall + 24 inches of seepage from well irrigated area of S_m^2

$$= 113.2 + \frac{609.6 \times 10^4}{S_m^2}$$

$$S_m = 100 \frac{906 \times 1 \times 1}{113.2 + 609 \times 10^4}$$

$$S_m^2 = \frac{104 \times 906 S_m^2}{113.25 S_m^2 + 609.6 \times 10^4}$$

$$113.25 S_m^2 = 104 (906 - 609.6)$$

$$S_m^2 = 104 (296.4/113.25)$$

$$S_m = 102 \frac{296.4}{113.25} = 161 \text{ metres or } 160 \text{ metres.}$$

FORMULATION AND APPRAISAL OF PROGRAMMES UNDER THE SFDA—A CRITICAL REVIEW

D. P. Apte*

The Small Farmers' Development Agency (hereinafter referred to as the SFDA or Agency) was set up in 1970 to devote special attention to the development of small farmers in the project area. At the districts selected under the programme an Agency (SFDA) is registered at the district level. The SFDA acts as a co-ordinator between the participant small farmers, credit institutions, agriculture, animal husbandry and other development departments and extension agencies to acquaint the farmers with know-how and arrange for the supply of the necessary inputs and credit.

Since its inception, the Agencies have identified about 146 lakh participants. About 10 per cent of the identified farmers have benefited from the minor irrigation and animal husbandry programmes. From 1970 till December 1977 the small farmers, marginal farmers and agricultural labourers have obtained from co-operative and commercial banks credit to the tune of Rs. 228 crores. Between 1970-71 and 1977-78 about 170 Agencies had utilized nearly Rs. 150 crores received from the Government of India. In the years to come the number of small farmers is bound to increase at a rapid rate due to division of land among the heirs of the small farmers. Though the SFDA has been able to reach so far only a low percentage of small farmers, it is necessary to critically examine the present procedure of project formulation and appraisal of programmes under the SFDA so as to enable the Government to introduce the necessary changes in organization and working of the SFDA so that it could operate more effectively and successfully to face the problems

* Gokhale Institute of Politics and Economics, Pune-4.

of small farmers in future. In this paper an attempt is made to consider the role and organization of the SFDA, to critically examine the process of project formulation and appraisal and to consider the ways of improving its performance in the matter for planning.

ROLE OF THE SFDA

The SFDA does not extend any credit but gives subsidy to the small farmers who participate in its programmes such as soil and water conservation measures, land levelling, minor irrigation, purchase of plough cattle, dairy, poultry, piggery, sheep-breeding etc. It also assists in laying demonstration plots in the fields of small farmers and providing certain infrastructural facilities for dairy, marketing and other programmes. The SFDA thus acts as a catalyst for promoting development of small farmers by formulating various programmes with the help of various co-ordinating agencies. The Agency has to mobilize credit by providing incentives to the financing institutions and get the work executed through the staff of the *Zilla Parishad*, the District Collector and other agencies.

SFDA Staff

The nucleus staff of the Agency consists of the Project Officer and three Assistant Project Officers (APOs) who are on deputation from the Revenue, Agriculture, Co-operation or Animal Husbandry Department. The supporting staff includes an Office Superintendent, Accountant, Statistical Assistant, Stenographer, four Clerks and four Peons. The Agency is provided with a jeep for field work. The expenditure on establishment is not expected to exceed 7.5 per cent of the total annual expenditure of the Agency.

ORGANIZATION FOR PLANNING, APPRAISAL AND IMPLEMENTATION

For the purposes of planning, implementation and evaluation, the SFDA has (1) a Governing Body and (2) Executive Committee or Action Committee. The Governing Body is headed by the Chief Executive Officer of the *Zilla Parishad* as its Chairman and includes representatives of the Commercial, Co-operative and Land Mortgage Banks, Senior Officers of the Departments of Dairy, Animal Husbandry, Agriculture, Irrigation and Co-operation, representatives of the Scheduled Castes and Scheduled Tribes, two non-official nominees of the State Government, a representative of the Central Government and the Project Officer of the SFDA as the Member-Secretary of the Governing Body. Since the Agency has to work in collaboration with various agencies and Government departments, the choice of the Chief Executive Officer as the Chairman of the Governing Body is considered proper as it facilitates communication and co-operation between the staff of the Agency and the *Zilla Parishad*. The presence of the senior officers of the various departments of the Government and other agencies is also considered essential and useful in the process of formulation as well as implementation of various

programmes. In practice it is found that the staff of the *Zilla Parishad* or of other agencies is so much pre-occupied with the work of the parent department that they often find it impossible to spare enough time for the work of the Agency. Besides, though the co-ordinating agencies in principle agree and are expected to extend the necessary co-operation, the staff concerned often does not have the urge to associate actively with the work of the Agency with the result that the process of project formulation is not as thorough as desired and so is implementation. Some social workers who are associated with such programmes of agricultural development have emphasized that it is essential to fix at the stage of project formulation the responsibilities and share—financial as also of personnel and inputs—, of each Government department and agency in the implementation of every programme taken up by the Agency. If the representatives of the concerned departments and agencies agree at the time of project formulation to shoulder the responsibility, then it will be easier to successfully implement the programme and in case of failure to pinpoint and hold responsible those who failed. Hence it is considered desirable that the Governing Body should insist on this procedure in its meetings where the representatives of the concerned agencies are present.

The Governing Body usually meets at an interval of three months. For the purpose of dealing with the problems which come up during the intervening period, there is a provision to appoint an Executive Committee which has four or five members including the Chairman and the Project Officer.

It may also be mentioned that the Central Government has supplied each Agency with a copy of the "Compendium of Instructions on SFDA and MFAL Projects".¹ The Compendium which runs into a few hundred pages, contains detailed guidelines, framework, procedures and instructions regarding project formulation and implementation and procedures and instructions regarding the functioning of the Agency. It contains relevant correspondence dealing with difficulties experienced during implementation of the programmes, clarifications sought by the Agencies in the matter of procedural formalities, etc.

Thus, if one takes into account the organizational pattern of the Agency, specialisation of the various co-ordinating agencies and the guidelines provided for the working of the SFDA, one will feel convinced that there is everything that is necessary to enable the Agency to work as per its objectives and carry out its programmes successfully. Yet one finds that except for a few programmes like dairying, most of the programmes fail to attain the desired level of success. We may proceed to examine the shortcomings in the organization and the process of project formulation with a view to see if the reason for failure of the project lies in its bad formulation.

In spite of the elaborate organizational structure and representation of the various specialised departments and agencies on the Governing Body, the Agency quite often does not function as effectively as it should. One reason is that the mode of functioning prescribed by the Government is not

1. Department of Rural Development, Ministry of Agriculture and Irrigation, Government of India, New Delhi.

adhered to in some cases. For instance, the Agency from Maharashtra did not call its Annual General meeting for about 20 months after its first Annual General meeting even though as per the Government's directive, "it is desired that the Annual General Meeting should be held once in a year and not more than fifteen months shall lapse between two successive Annual General Meetings". The strike of the State Government employees, the elections to the Legislature and finally the inability of the Minister concerned to find time to attend the meeting delayed the second annual meeting beyond the prescribed time limit. As regards the Executive Committee, it met only twice until May 1978 though the Government directive states that it should meet at least once a month to go into the various programmes intensively and to take the necessary decisions. The Governing Body which consists of 14 members met every three months but the average attendance was less than ten. As it had to dispose off several items at each meeting, it could not devote enough time and attention for the purpose of project formulation and appraisal. If the SFDA is to function effectively all the committees referred to above must function regularly and effectively.

The Agency, as stated earlier, has to function in co-ordination with several agencies and Government departments. The Block Development Officer and the Extension staff have an important role to play in the programmes of the SFDA. The financing agencies and in particular, the Lead Bank in the district have to provide the necessary finance for the projects taken up by the Agency. The Lead Bank calls a meeting once in every three months to discuss credit plans with the representatives of Land Development Bank, and commercial and co-operative banks in the district. The meeting is attended by the SFDA staff. However, for effective functioning the Project Officer and APOs will have to be in touch with these agencies and banks more frequently to find out adequate and timely supply of credit. With the limited nucleus staff and only one vehicle at their disposal the SFDA staff finds it difficult to contact these agencies from time to time. A Project Officer from Goa mentioned that the number of offices of the financial institutions and branches of banks is so large that if he were to visit every day one office of a financial institution or a branch of a bank it will take him almost the whole year to cover all of their offices.

PROJECT FORMULATION AND APPRAISAL

For the purposes of formulating various programmes for the small farmers to be taken up by an Agency, it is necessary to have information regarding the felt needs of the people in the area of operation of the Agency. It will be necessary to divide the total area into some homogeneous regions by taking into consideration topography, rainfall, soil, land utilization, cropping pattern, irrigation facilities, etc., and collate data on human resources, plough cattle, milch cattle, financial and other institutions, etc. Such information may be available with the *Zilla Parishad* if it has prepared a district plan. It will also be necessary to talk to knowledgeable people to get to know their problems

and the possibilities of taking up appropriate programmes to cater to their requirements. Bearing this in mind, we may examine the process of project formulation and appraisal in the SFDA.

In the studies carried out regarding the SFDA in different parts of the country by various agencies very scanty information is available about the process of project formulation and appraisal. This writer has drawn on reports² as well as on information gathered during his visit to an Agency in Maharashtra in May 1978.

The general framework and guidelines for certain programmes such as land improvement, minor irrigation, dairying, etc., is already provided by the Central Government to the Agency. It may be argued that due to the limitations of the nucleus staff of the Agency, it is not possible for the Agency to conduct resource and feasibility studies in a scientific manner. But in many cases no effort is made even to collate the secondary data easily obtainable from the tehsil offices for the purposes of project formulation. There are a few instances where special programmes are chalked out taking into account the special features and problems of the district but the budget allocation and expenditure on such programmes forms only a small fraction of the total programme of the Agency. On the whole, it appears that the project formulation and appraisal is governed by *ad hoc* considerations, administrative convenience, the extent of funds available to the Agency for a particular year rather than on technical or other considerations. This can be illustrated from the experience of the SFDA from Maharashtra which was registered in 1976-77 after almost half the financial year was over. It prepared an estimate of expenditure of about Rs. 42 lakhs for various programmes against which the Government sanctioned only Rs. 32 lakhs for the year 1976-77. There was no information available in the records of the Agency as to the reasons for which the grant was curtailed; presumably the Government felt that the Agency could not have spent Rs. 42 lakhs in the remaining five months of the financial year. In fact the Government released Rs. 16 lakhs and the Agency could utilize Rs. 12 lakhs only. During 1977-78 the Agency asked for Rs. 36 lakhs and was sanctioned Rs. 32 lakhs. Subsequently, it revised the estimates of expenditure to Rs. 24.5 lakhs and actually used Rs. 22.5 lakhs. The logic for demanding Rs. 45 lakhs for the year 1978-79 appeared to be that the Government had provided a sum of Rs. 1 crore to the Agency for a period of three years out of which it had utilized only Rs. 34 lakhs in the first two years. From the records of the Agency there did not appear any systematic effort and scientifically worked out exercises to justify the demand for Rs. 45 lakhs for the year 1978-79.

The above illustration is only one experience. This does not mean that

2. (a) S. S. Tyagi: Small Farmers' Development Programmes in District Ambala (Haryana)—An Evaluation of Progress and Problems, Agricultural Economics Research Centre, University of Delhi, Delhi, 1975. (b) Reserve Bank of India: Small Farmers' Development Agencies (A Field Survey) 1972-73, Economic Department, Bombay, 1975. (c) Government of Punjab: Report on the Evaluation Study of Small Farmers' Development Agencies, Marginal Farmers and Agricultural Labourers Agencies of Punjab, issued by the Economic Adviser to Government, Punjab, Publication No. 276, Economic and Statistical Organisation, Chandigarh, November, 1976.

there is no mechanism provided for by the Government in getting the proposals formulated in a systematic manner before they are considered for approval. For instance, in respect of this Agency from Maharashtra, dairying was one of the programmes to be taken up by the Agency. It appeared that the Agency did not consider it necessary to identify any particular region or groups of villages for the purpose of the programme, nor did it try to find out the number of existing milch cattle and their daily milk yield and disposal thereof and the potential for adding to their numbers. The milk supply scheme of the Milk Federation exists in this region for a number of years and has established a network to collect milk through the member co-operative societies or from non-members situated on the milk collection route. Without going about in a systematic manner to consider the physical and economic feasibility, the Agency decided to extend the benefit of the programme to any small farmer eligible for the benefit. Any eligible small farmer from any part of the five talukas covered by the SFDA can avail of the subsidy from the SFDA after fulfilling the necessary conditions. On this slipshod method of preparing programmes and its demand for financial assistance for dairying the following remark appeared in the files of the Agency. "Write-up on the scheme is very scanty inasmuch as no mention has been made of the existing infrastructure on roads and milk-routes; co-operative institutions doing dairy business, their financial position, membership, coverage and scope for increasing the same to include all listed small/MFAL; milk processing facility and adequacy thereof, and additional programme of supply of milch animals proposed, and additional routes likely to be taken up during the project period, and whether the present infrastructural facility is adequate to cope up with the proposed programme or whether additional infrastructural facility is required and if so, details and likely expenditure thereof". This remark suggests that efforts are made to see that the Agency goes about in a scientific way to formulate programmes. Unfortunately, this writer could not lay hands on the reply by the SFDA sent, if any, to this query.

The Ambala study is also concerned about the manner of project formulation and implementation and has suggestions to make for changes in the organization to enable the Agency to identify the small farmers and to formulate suitable programmes for their benefits. It states: "Under indirect programmes the programme of dairy development attained marked progress crossing the original targets by more than $2\frac{1}{2}$ times. The progress of programmes of development of piggery, poultry and help to rural artisans was very unsatisfactory. This gives an impression that targets for many programmes were laid down without having any realistic assessment of their requirements. This indicates lack of a closer association of the Agency with the rural poor. For efficient working, it seems necessary to entrust the agency's activities to the Block Development Officers who are closer to the rural masses and can study and understand their problems better than any other institution. Their association would help in proper identification of the genuine small farmers and formulation of required programmes for their benefit".³

3. Tyagi: *op. cit.*, p. 50.

In project formulation and appraisal by the SFDA, particularly to work out the economic feasibility of the programmes, certain difficulties crop up due to differences in the terms and conditions of loans regarding the maximum or average amount sanctionable, period of repayment and number of instalments and the rate of interest. The Reserve Bank's study reveals that there existed differences in the rates of interest charged by different banks as also the period and the number of instalments for repayment of the loan sanctioned for a particular purpose.⁴ For instance, in respect of loans for wells and tubewells the average amount per account varied between Rs. 400 and Rs. 6,799, the period of loan ranged from 2 to 15 years, the rate of interest varied between 4.5 and 10.5 per cent and the number of instalments from 2 to 36.⁵ "Loans by land development banks were given for a period ranging from 5 to 15 years. Commercial banks gave loans for 2 to 7 years in most of the districts". "In Pratapgarh one commercial bank charged 11% on 5-year loans for sinking tubewells whereas the LDBs charged 5% on 11-year loans. In Ujjain the commercial banks charged 10.5% on 5-year loans for sinking wells whereas LDBs charged only 9% on 10-year loans for the same purpose".⁶ Similar variations in the rate of interest and terms and conditions of repayment in respect of the loans sanctioned for milch cattle, poultry programmes, land improvement and pumpsets were observed in the Reserve Bank's study. Such variations are bound to cause difficulties in formulating and phasing a programme as well as in finding out its economic feasibility particularly on the criteria of return on investment.

We may next consider some of the other reasons which have hindered the SFDA in achieving the expected success. One reason is that it has no superiority over the other co-ordinating agencies. In some of the Agencies the District Collector is the Chairman of the Agency. Apart from the routine administration, he heads in some cases as many as 100 committees and is hardly able to devote the necessary time for the work of the SFDA. The alternatives suggested are to dedicate a major part of his responsibilities in the matter of the SFDA to his subordinate, or to give the Project Officer a higher status in the hierarchy so that when dealing with the co-ordinating agencies his voice will carry adequate weight.

The Project Officer and the APOs play an important role in project planning, appraisal and implementation. It is understood that though the Government of India has issued instructions to the State Governments not to transfer as far as possible these officers, in practice these instructions are not strictly adhered to. In the process the functioning of the Agency suffers. The Punjab study observes that "Project Officers in almost all the projects were subject to frequent transfers, ranging from an average of two to four times in a span of four years. This led to the slackening of developmental activities. It is, therefore, suggested that a project officer may not be trans-

4. Reserve Bank of India: *op. cit.*, refer Section 7·5, Inter-bank variations in terms and conditions, pp. 193-197.

5. *ibid*, refer Table 7·15, p. 194.

6. *ibid*, p. 195.

ferred before the completion of a tenure of at least three years".⁷ Apart from the need to keep the Project Officer and the APOs at the SFDA for the duration of the Agency, it is necessary to consider methods of compensating this staff if they put in sufficient efforts to successfully carry out the programmes of the Agency.

The SFDA has so far touched only a small fraction of the problem. However, the number of small farmers will increase at a faster rate in the years to come. Hence, the Government will have to take steps to increase the efficiency of the SFDA to enable it to cater to the growing number of small farmers. The choice of appropriate programmes and their planning and appraisal is very important for the success of the Agency. As adequate information is not available on planning and appraisal it is necessary to take up specific studies to throw more light on the process of project formulation and appraisal of the SFDA.

STATISTICAL RISK ANALYSIS IN PROJECT APPRAISAL

V. N. Saksena*

With the present Government's emphasis on rural development, an increasing number of agricultural projects are being undertaken. The Sixth Plan document envisages an investment of Rs. 1,825 million on agricultural development. Therefore, it is imperative that the scarce resources are utilized in an optimum manner in agricultural projects. This calls for a scientific approach to proper identification, appraisal and evaluation of agricultural projects. This paper, therefore, utilizes the concept of probability theory in measuring the risk at the time of project appraisal. Most projects, at present, are being appraised on the basis of single estimate of project return, *viz.*, rate of return, benefit-cost ratio or net present worth. For the purpose of this paper, we would measure the project benefits in terms of financial rate of return. In arriving at this estimate, the most likely (average) value of input variables, *viz.*, yield, prices, cost of cultivation, etc., are assumed. No consideration is given to the variations around these most likely values of input variables. Thus, for the most part, there is a difference between the rate of returns estimated at appraisal and that obtained at evaluation. This difference is due to two reasons: one, due to sampling errors and the other due to uncertainties involved in the values of input variables. The difference due to sampling errors can be tested for its significance by tests of hypotheses,

7. Government of Punjab: *op. cit.*, p. 19.

* Deputy Director, Agricultural Refinance and Development Corporation, Worli, Bombay-18. The views expressed in this paper are the author's own and does not represent the ARDC's views or policies.

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