"The Socio-Economic Impact Of The Gusau Agricultural Development Project On The Small Farmer"

BY

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SUMMARY OF RESEARCH PURPOSE, OBJECTIVES, CRITIQUE AND ACHIEVEMENTS

I have researched into the Area of Project Planning and Implementation in the context of 1975/80 Development Plan period relative to Gusau Argicultural Development Project and how this affects on the Socio-Economic life of the ordinary/small farmer, within the Area covered by the project.

The main aim of the study is to provide the State and Federal Governments an authentic evaluation based on emperical analysis of whether or not the project has succeeded in improving and increasing the aggregate agricultural out-put and has removed small farmer/large farmer income and living standard disparities. It is also to provide the State Government some model based upon which the project approach, planning and implementation will be correctly developed and articulatedto achieve aims and objectives of Agricultural Development Projects.

THE MAJOR AIMS OF THE PROJECT AS CONCIEVED AT INCEPTION ARE:-

1. To provide improved and Increased Agricultural Aggregate out-put in contrast to project targets.
2. To remove small farmer/large farmer disparities in income and living standards.
3. To ensure even distribution of amenities and wealth in the State.
4. To improve Agricultural knowledge index of the farmer.
5. Manpower Training particularly in Technical and Professional cadres.
6. Ensure self-help orientation through communal participation.
7. Ensure self-Sustainance of the Project and the small farmer.

CRITIQUE: The Project when researched into was found to be defective in the following:-

1. Faulty approach, planning and implementation.
2. Defective farmer resource commitments.
3. Non inclusion of the small farmer in decision making and implementation stages.
4. Inadequate farmer information base upon which to build a plan of action to satisfy the socio-cultural as well as economic requirements of the farmers.
5. Over dependence on foreign aid to execute the Agricultural Development Project.

6. Lack of initiative to develop the locally available resources for effective utilisation.

7. Perception that physical and environmental conditions ensure and are condusive to the success of the project.

8. Importation of Inflation as a result of purchase of machinery and equipment from the developed World.

9. Embarking on Disjointed instead of comprehensive development planning approach as adopted by Japan. This results in lopsided development which in turn results in uneven distribution of amenities and wealth in the State.

10. Rural-Urban migration tendency which causes over concentration of population in the project Area thus creating unemployment.

ACHIEVEMENTS:

1. Growth rate rose from 1.3% — 17% per annum within the project Area.

2. Per capita Income rose from $60 — to over $150.

3. Increase in Aggregate out put by about 31%

4. Tangible assets to the tune of N20 million including Roads, Buildings, Dams, Loaned machinery and equipment.

5. Improved manpower development in the State both in terms of Technical and Agricultural Index knowledge of the small farmer and the Extension staff.

6. Improved and increased productivity in respect of maize, sorghum, cowpea, ground-nut and guinea corn.

PROPOSITIONS TO THE STATE GOVERNMENT:

1. Review the project approach, planning and execution strategies.

2. Involve small farmer in decision and implementation stages of the project programme.

3, Adopt a comprehensive Integrated Rural Development Programme to replace the disjointed Agricultural Development Project approach.

4. Secure small farmer Resource commitment.

5. Reduce reliance on foreign aids to execute such projects because of the strings attached to such aids.

6. Remove all perceptions that physical and environmental conditions are conducive to and ensure project success.

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PREFACE AND ACKNOWLEDGEMENT

The theme of this study was conceived more in a state of enthusiasm than in subject matter understanding. I have been involved in agricultural development activities of Sokoto State for nearly two decades now, first as a Leaf Instructor of the NTC project of tobacco cultivation and later on, as a Civil Servant at the local and state levels, and I believed, at the time of selecting this topic for my MPA research, that as a participant-observer I was most competent to undertake such a piece of research. My raw enthusiasm was deeply fired and sustained by the highly inspiring and well informed lectures of my lecturer, Dr. Ibrahim Abdulsalami who taught me Policy Analysis for one full session.

So after getting my topic approved by Professor P.C.A. Daudu, the then Head of Department of Administrative Studies, I started developing my theme drawing mostly upon the periodical reports and returns of the Project Administration and other Government documents supplemented by my own insights and experiences spreading over a long period. When I took the results of my endeavours to my supervisor, Professor A.R. Tyagi, he commented, thus "while your write-up reads like a good progress report, the missing gaps in an analysis seem to speak a different story altogether. Why don't you do something to fill in these gaps first, particularly those bearing upon the small farmers living in the project area?"

This comment opened my eyes and gave my research an absolutely new direction, new direction not only in terms of the objectives of my reseach but also in terms of the methodology. Uptil now I was involved only in assessing the results of the Gusau Agricultural Development Project in terms of the increase in aggregate output of crops and the building of physical infrastructure in the project area. But from then onward, I became more concerned about the impact of the project upon the people, particularly the small farmer who comprised by far the largest percentage of the state population. So I now redefined the objective of my research as "The Socio-Economic Impact of the Gusau Project upon the Small Farmers of that area".

Having redefined the objective of my research, I discovered that the method of data collection and analysis that I had so far followed would not yield any reliable results. My idea was to present to the Government an authentic survey report on the accomplishment of the Gusau Project, and the aim was to produce not only an evaluation report but a complete analysis of the project planning and implementation process. It was with this end in view that I approached my supervisor, Professor A.R. Tyagi, who had also taught us a course on Research Methodology. And it was through his untiring help and guidance that I built up the conceptual model of project success with five dependent variables. This in itself involved me in a vigorous exercise. But what followed it was something which I could not think at that time. The quantitative analysis which was involved in that research model, was in 1979, an impossibility for me. For until then my knowledge of mathematics was limited only to a simple equation, Regression analysis, multivariate equations and standard deviation were like Greek and Latin to me. However, the fact that I have been able to undergo through all these statistical exercises as well as through the tests of significance is due to the incessant promptings of my supervisor, Professor, A.R.

Tyagi, and the willing help of my colleague Mr. Dass the Chief Statistical Officer in the Sokoto State Government.

To all these persons and many others who cannot be listed here I owe a very heavy debt of gratitude. It is not only this that they have enabled me to undertake a research study based on quantitative techniques of analysis but they have also trained me into the application of these new research methods. The debt that I owe to these gentlemen can never be repaid by acknowledging it here. So let me state here that I shall ever remain obliged to them for this guidance.

I am most thankful to the following for their immense contribution and assistance for the success of this project.

Alhaji Ibrahim Usman.....Gusau Agricultural Development Project Manager.

Alhaji B.M. Audu ..... Perm. Sec. State Min. of Agric. and Nat. Resources, Sokoto.

Alhaji A.U. Kawu..... Ahmadu Bello University Zaria, Main Campus.

INTRODUCTION

RESEARCH FOCUS AND APPROACH

Economic Planners have devised two methods of programme evaluation. One is to compare the rate of increase in aggregate agricultural output and income of the project area with the targets. The other method focus more specifically on the marginal farmers and removal of income disparities (both absolute and in relative terms) as between the rich and small farmers is taken to be the major criterion for assessing of the agricultural development project.

However, both these approaches to programme evaluation ignore administration as a resource input, with the result that evaluation exercise fails to analyse the project as an on-going action programme in which the processes of programming and implementation could be evaluated as an integral part of the whole exercise. It is in view of this lacuna in the economists' evaluation that this researcher has devised a comprehensive project analysis model, in which planning and administrative resources have been included as important inputs and as such, they will be evaluated on the same creteria as the economic, financial and other material inputs of the Gusau Agricultural Development Project.

PURPOSE OF THE STUDY

The basic purpose of this study is to construct an Action Research Model which would provide objective criteria of assessing the effectiveness of an agricultural development project; This requires a focus on strategies for rural development, in terms of both project design and implementation. As such, the study would survey the entire field of project planning and implementation for the entire period of its operation from 1975 to 1980. Since the objective of the evaluation exercise is to find out the socio-economic impact of the Gusau Agricultural Project, this study will narrow down its focus to a specification of the level and type of small farmer activity required to maximize the increase in small farmer welfare and productivity so as to become self sustaining.

Thus, the main focus of the study is more on the processes of project planning and implementation rather than on the role of the various agencies involved in the Gusau Project. It would, therefore, be more appropriate for me to concentrate upon the following areas of analysis and research:--

1. The political, economic and social conditions prevailing in the project area and what impact they had on the project design and implementation.

2. The various components of the project design and what classes of the farming population did these components seek to benefit.

3. What type of technological package did the project offer to the farmers and to what extent did this package take into account the existing prices and market structures?

4. The administrative organization and procedures — to what extent did they facilitate the processes of decision-making and realistic planning and how efficient was the machinery of services and supplies?

REVIEW OF THE LITERATURE

Most of the studies in this field have followed case study method which, in its limited sphere, gives quite a realistic picture of the field, but provides very little material for scientific analysis and spells out hardly anything on operational implications of the activities studied. However, in recent years some good studies of a comprehensive nature have come out. the ones which are more relevant to our present need are the following:— RURAL DEVELOPMENT IN KENYA 1. By Judith Heyer, Dunstan Ireri, and 'CHANGE IN AGRICULTURE' 2. By A.H. Bunting are very empirical studies in which problems of the small farmers have been very nicely identified. Other books in the same category are "Attacking Rural Poverty: How Nonformal Education can help" 3. and Development Reconsidered" 4. There are other published works which have not only gone into the problems of small farmers but have also tried to assess the process of technological innovation and institutional transformation taking place in areas of agricultural development, of special significance, in this respect, are: "Small Farmer Credit: Analytical Papers" published by the U.S. Aid in Washngton D.C. in 1973, "Rural Institutions and Planned Change" brought out by UNRISD in Geneva, 1969 — '72, "Serving the Small Farmer" by Gay Hunter and Anthony F. Bothrall and published by Grown Helrun, London, 1974 and also a mimeographed study titled: "Africa Rural Development Study" sponsored by the World Bank (IBRD) in 1973. Some others going deeper in the same problems and following more or less, the same trend of analysis, are "From Peasant to Farmer" 5 "Development from Below" 6; "Policy Options for Rural Development" 7; and Comparative Analysis of processes of Agricultural Development and Modernization" 8. However, these studies raise a number of methodological questions which have not yet been satisfactorily answered. For instance, most of the case study work has not been standardized; each researcher follows his (or her) own format and terminology. Social local circumstances exist in abundance, making generalization difficult unless heavily qualified. Then, practically no attention has been given to the question of what implications the findings of these various studies have for Federal and State Governments, which constitute the Project Management Board and which are the main fund-raising authorities. Furthermore, no light has so far been thrown upon the question of long-term relationship between the international fund-granting organization and the Project Management authority. The situation is so fluid that it causes frequent tussles of inter-personal as well as inter-organizational nature. A common case in mind related to these types of tussles as that of Kaduna State Government which had outrightly rejected the World Bank offer of cooperation and fund granting/aiding.

In these circumstances, this researcher saw as his first task to synthesize the various approaches that have so far been applied to evaluate research in the field of agricultural development. Since the main purpose of this research is to elicit information out of this analysis which may be of direct operational use in project planning and implementation, I have taken a primarily inductive approach. Underlying this approach is the assumption that much can be learnt from past experiences, both successful and unsuccessful. It was also felt that a working knowledge of these experiences was needed before operationally useful recommendations could be made. It was, therefore, considered more appropriate to combine in my Research Design, these widely practised methodologies, namely:—

(i) the case study method;

(ii) the progress reports and other official documentations prepared by the evaluation unit of the Gusau Agricultural Development Project and the World Bank Team, and;

(iii) the knowledge base of those (including this researcher) involved in the work.

Inferences drawn from these three sources were, then, used to build up a systems model of action research. The findings of this scientific, empirical research were, then, pooled into the reservoir of inferences drawn from the aforesaid sources and these will, hopefully, provide answer to the questions which have been posed in my research design. 9

Conceptually, the model is based upon a very simple set of truisms. They are:—

1. An essential condition for project success is the well-being of the small farmer.

2. Another equally essential condition for project success is the overall increase in the productivity of the agricultural sector of the project area.

3. Yet another condition for project success is the capacity of the project design to be operational and practical.

4. It is unlikely that any of the above conditions will be met without the participation of the small farmers in the entire process of decision-making both at the planning and the implementation level.

5. An integrated programme of agricultural development, involving provision of seeds, fertilizers and services, has a better chance of success than separate, disjointed projects operated by different organizations and agencies.

6. The establishment of a permanent administrative machinery capable of perpetuating the project effects is another condition necessary for the success of the development programme.

The model has been developed so as to permit an attempt at statistical re-verification through the use of data collected on the Gusau project. 10 The following variables were taken as determinants of success of the project:—

1. Education
2. Income
3. Market integration and access
4. Size and nature of land holdings
5. Income Distribution
6. Technological package adequacy
7. Adequacy of production inputs.
8. Institutional Project Management
10. Small farmer involvement and resources commitment.

Of course, the above list does not exhaust the range of determinants. But I had to select only a few key variables due to the time limits. Infact, I would have liked to build this evaluation design into a two-stage model. The second stage of the model should have been based on the anticipation that various changes in small farmer behaviour, both in terms of an involvement in project decision-making and in terms of a resource commitment, would prove essential to project success. Consequently, the second stage of my model could specify a list of variables needed to effect the desired behavioural changes in the farmers in particular and the rural people in general. But I shall not be able to take up the second stage of research due to time constraints. It is, however, my hearty desire and hope that at some later stage I shall be able to undertake this exploration in a more comprehensive way and thereby, provide to the governments at the State and Federal levels more realistic and elaborate findings and incidentally, give the academic fellow-workers a comprehensive conceptual model of evaluating agricultural development programmes.

CHAPTER ONE

THE DYNAMICS OF PROJECT PLANNING AND IMPLEMENTATION

PROJECT BACKGROUND

As part of the third National Development Plan formulation, the development Planning Committee of the Federal Ministry of Agriculture and Natural Resources prepared a perspective plan of Agricultural Development in Nigeria covering a decade, 1973—1985. The Perspective Plan was, later on published under the title: Agricultural Development in Nigeria 1973—1985: 1 One of the major items of this plan was the proposal of setting up Integrated Agricultural Development Projects in different parts of the country. The projects were to be part of the National

Development Programmes in which the Federal Government was to play the major role, although there was suggestion for the Federal Government to seek international co-operation, on the one hand, and State Government on the other.

It was as part of this plan that the Federal Government sought the technical and financial assistance of the World Bank in 1972 to identify an area of the then North-Western State suitable for large scale Agricultural development. A feasibility study was conducted by an experts team provided by the World Bank. This team selected the area of development in 1973, appraised and launched the Gusau Agricultural Development Project in 1974. The project became operational on 1st April, 1975 with the inauguration of the Third National Development Plan, 1975-80. It covers an area of 4,000 square kilometres comprising a population of 600,000 constituting about 100,000 family units. The cost of the project during the five year plan was estimated originally at N24.6 million; the World Bank was to provide a loan of N12.5m (US $19 million) which was expected to meet the entire cost of the imports component and some part of internal particulars of the project.

ORIGIN OF THE PROJECT IDEA AND GROWTH OF THE PROJECT DESIGN

It may look odd to trace the origin of a N24.6 million worth of a large development project in the colonial period of Nigerian history, yet it is a fact that behind the integrated multipurpose agricultural development project there lives a history of colonial economy. The British had established the colonies in Asia, and later on, in Africa primarily with a view to having safe and sure sources of raw materials. With the establishment of a vast inter-continental empire, their industries, at home, had begun to grow into such gigantic leviathans that all the raw materials of this vast empire could not satisfy the needs of these giant industries. Hence, there started a desire on the part of the colonial rulers to increase the production of such raw materials as were generally needed in the home country. This desire gave rise to the growth of single commodity economy which most of the developing countries of Africa and Asia have inherited from their colonial masters.

It was as part of this process of increasing the output of primary raw materials that the mill owners of Liverpool discovered the Zamfara Valley which they found ideal for the production of tobacco and cotton. The area transverses the boundary between the Northern Guinea Savannah and the Sudan Savannah covering about 25% of the land area of Sokoto State and shifting across the border to neighbouring Kaduna State which under the auspices of the same World body started the Funtua Agricultural Development Project. The area is so fertile that it was already being very heavily farmed. Approximately 55% of this area was being cultivated and most of the farm holdings were very small and in most cases uneconomical. It was the British American Tobacco Company which had identified the area in 1933 for cultivation of tobacco and later on, of Egyptian cotton. However, intercession of World War II interrupted the programme and it was only in 1945 that the Nigerian subsidiary of the British American Tobacco Company started Tobacco Leaf cultivation programme in Gusau area.

This Tobacco Leaf Project, like other single commodity development projects,

brought about some agricultural development in the area and according to a socio-economic survey conducted by a U.S. Aid team in the sixties, it increased farm income in the area by about 10 to 20 percent. However, it were such types of projects which laid the foundation of a colonial economy, that is, brought about such a lop-sided development of the economy of the dependent country that one or two raw materials provided more than 90% of the foreign currency earnings of the country. Within the farming community, the result of such lop-sided development was more devastating. The foreign based company would pick up a certain number of so called "progressive" farmers, or establish its own plantations, and provide all the farm inputs and technical assistance to them with the result that a few families would acquire all the newly generated wealth and would, henceforth, join hands with the exploiting company to exploit the "less progressive" and poor farmers. It was in this way that the single commodity agricultural development programmes were a legacy of the colonial past and that they were more an instrument as well as internal exploitation rather than of development. It is really surprising that the government in Nigeria did not replace them by multi-purpose integrated development programmes earlier than seventies. During the sixties and first half of the seventies the government continued the same type of pre-independence policies of disjointed projects of tomato, cotton, maize or rice development which went on from year to year. These programmes hardly produced any impact on agricultural output or farmer's income. They were essentially budgetary window dressings which benefitted the bureaucrats more than the farmers.

However, in the post-civil war period, Federal Government's attention was focussed in the direction of agriculture due to accute shortage of food and other farm products caused partly by the drought of 1973 — 1974 and partly due to the neglect of the farmers by the government. A new Agricultural policy was formulated in 1973—1974. The important aspects of this policy were:—

1. Setting up of large scale Agricultural Development Programme in intensively cultivable areas, particularly in the Northern parts of the country where condition for farming is ideal. (Five such projects were set up, the Gusau Agricultural Development Project being one of them).

2. Farm Training Centres to be set up all over the country where Agricultural Extension Staff will be provided integrated training in agricultural technology and extension techniques.

3. Training of primary school leavers in farm institutes to become progressive farmers and be settled in their respective villages and put large scale acreage into cultivation through the credit assistance by government, of work bulls, hectares, seeds, fertilizers, ploughs and cash.

4. Fertilizer distribution and sales to farmers at various village areas. Prices to be heavily subsidized for the rural farmers to be able to buy and use the input in their farm.

GUSAU PROJECT TARGETS

The Gusau Project aims at providing the 68,000 families, farming on an average of 3.5 hectare of land each, the following type of supplies and services:—

(a) Providing farm inputs at centres convenient for the farmers; these farm inputs being fertilizers, seeds, insecticides, sprayers, farm tractors and equipment, ox-drawn equipment etc.

(b) Offering an extension service to the farmers to advise on the use of those inputs.

(c) Offering credit facilities to help them buy these inputs.

(d) Ensuring a fair market system for farm products.

To achieve these objectives, the project sought to provide in the area physical infrastructure, including 1,000 kilometres of low cost agricultural roads, 85 earth dams and 160 ponds to provide water supplies to human and livestock; a Project Administrative Centre at Gusau, 4 Development Unit Centres and 40 farm service centres to be located at different places within the project area; to develop two seed multiplication farms to produce improved yielding seed, and to expand and create new training facilities for project staff and farmers. The project further aimed at providing better support services in the form of a tenfold increase in extension staff, introduce new credit and marketing services to the farmers; and to construct associated staff houses, offices and transport facilities required to support those services. It was decided that the Project would itself arrange to sell them to the farmers at Subsidized prices either for cash or credit; depending upon the resources of the farmers.

The project would be carried out over a five-year investment period1975/76 — 1979/80; and would involve;

(a) Constructing above 1,000 km of low cost agricultural roads, 85 earth dams, 160 ponds (Tapkis), and associated soil conservation structure;

(b) Constructing an administrative centre in Gusau, 4 Development Unit Centres, and 40 farm service centres;

(c) Expanding Gusau seed multiplication farm and the new development of an additional farm at Kaura Namoda;

(d) Expanding training facilities at Gusau and construting a new project training centre at Kaura Namoda;

(e) Provision of adequate farmer extension, credit and marketing services, including staff, vehicles, and equipment;

TABLE 1: SUMMARY OF PHASING OF PROJECT DEVELOPMENT PROGRAMME

ITEM	PROJECT YEAR 1	2	3	4	5	Total
Project Admin. Hq.	1	—	—	—	—	1
Development Centres	4	—	—	—	—	4
Service Centres	10	25	40	—	—	40
ROAD DEVELOPMENT						
Surface km	10	60	60	60	60	250
Unsurfaced km	50	175	175	175	175	750
Water and Soil Conservation:						
Dams No.	5	20	20	20	20	85
Tapkis No.	—	40	40	40	40	160
Master ridges km²	—	600	600	600	600	2,4000
Complete Catchment km²	20	80	80	80	80	340
Max. Farmers using inputs	1/3,000	12,500	17,500	2,500	35,000	—
AV. No. of farmers per Village service centre using inputs 2/	300	500	430	625	875	—
AV. total Farmers in Service centre area	1700	1700	1700	1700	1700	—
Percentage farmers affected on service centre basis %)	18	29	26	37	52	—
Percentage farmers affected on project total %	4	18	26	37	52	—

1. Based on farmers expected to take up fertilizers — sorghum growers dominate.

2. Credit takers expected to be 75%

(f) Provision of seasonal and medium-term loan to farmers for the purchase of crop inputs and farm equipment;

(g) Establishing a project evaluation unit; and

(h) Preparation of plans for the continued provision of project services after the investment phase of the project is completed.

DETAILED FEATURES OF THE PROJECT

The summary of the expected scheduling of project activities is given in table 1 above; it includes the construction programme, the rate of village involvement, and the number of farmers affected by the project annually.

AGRICULTURAL ROAD DEVELOPMENT

The project would provide a network of 1,000 km of agricultural roads, of a design adequate to allow light traffic during most of the wet season, and heavy trucks during the dry season. The roads would make for the efficient evaluation of farm produce, the timely supply of inputs, the effective movement of project service staff, and much improved general access to farms and hamlets. They would also enhance other Government programmes such as the expansion of health and educational facilities to areas currently inaccessible. The project would provide, during the investment period, funds for purchase and operating required equipment, while the Local Government Authorities would be responsible for the maintenance of the roads and dams after they have been completed. The construction of these roads would be by force account through a project operated and managed field construction unit which make some use of petty contractors.

WATER DEVELOPMENT

Some 85 small and medium size earth dams, each of a minimum capacity of 100,000 m^3, equipped with simple systems to reticulate the water away from the reservoir, would be constructed. the strategically located reservoirs would supply water for human and livestock needs, as well as supply water for construction purposes during road construction. In addition, some 160 ponds (tapkis) would be developed to provide a better distribution of water for livestock for all but the last 3 months of the dry season; these would be used for the irrigation of village vegetable production where water available allows.

SOIL CONSERVATION

In association with the water development programme, soil conservation measures would be undertaken within the catchment areas of the dams (about 5km sq. each). These would include the construction of cut-off ditches, artificial water ways and contour ridging and be aimed to reduce siltation of the dams and control erosion. Further soil conservation measures would be taken in providing the farmers with marker ridges to assist in contour realignment of crop ridges. During the project investment period, some 2,700 km sq. or 70% of the project area would be so protected; these programmes should be continued beyond the investment period.

BUILDING DEVELOPMENT:

The project would include construction of houses, offices and stores needed for project services. It would include the construction of 210 houses of various sizes, a project office, 4 development centre offices, a railhead store and other facilities. In addition, 40 farm service centres, each including a 500 ton capacity wharehouse would be constructed, and improvements made to two market depots associated with existing cotton ginneries. These houses depots buildings not required by Ministry of Agriculture after the project investment period would be taken over by other Government departments operating within the area.

SEED MULTIPLICATION FARMS:

The Gusau seed multiplication farm would be expanded and improved, and a new seed farm would be built at Kauran Namoda. Investments would include farm buildings, water supply, farm machinery and equipment. These seed farms would, in association with large farmers, provide project and other state farmers with improved seeds, act as demonstration and research centres, and provide practical training in farm management.

TRAINING FACILITIES:

The Gusau Training Centre would be expanded to accommodate 40 trainees instead of the current capacity of 20. A new centre at Kaura Namoda, to cater for another 40 residential trainees, would be constructed. Initially, the centres would be used for project staff training, but progressively emphasis would be on farmer training.

FARMER SUPPORT SERVICES:

The project would increase the farmer extension personnel ratio from the current 1:2, 430 to 1:290, which involves an increase in extension agents from 28 to 230. The extension personnel would include, besides basic extension agents, personnel specialized in livestock husbandry, seed multiplication and farm management, farmer training, and farm equipment. Project sponsored tractor hire service will be introduced while gradually phasing out the existing Ministry of Agriculture sponsored one which runs at a loss.

A credit service would be established to operate a project controlled credit revolving fund and the contingent services to farmers. A marketing service would also be established to improve market liaison, quality control, price information, produce weighing and to control traders. The credit and marketing services would employ some 220 staff of various grades; of these only about 10, mainly produce examiners are now employed by Ministry of Agriculture. Consequently, the majority of personnel employed in these services would receive in-service training from the project. Other Ministry of Agriculture services, such as veterinary, fisheries and forestry would continue to work within the project area, and would coordinate their activities with Gusau Project Management Unit.

FARM INPUTS:

The Project would produce farm inputs to sell to farmers for cash or credit. Such inputs and equipment are estimated to amount, during the project investment period, to 25,000 tons of fertilizers, 3,000 ultra improved seeds, 650 tons insecticides, 30,000 ultra low volume insecticide sprayers, 5,000 ox carts, 5,000 ox ploughs and 50 tractors and associated implements. Inputs and equipment would be sold for cash or credit at the farm service centres.

PROJECT EVALUATION:

A field evaluation unit would be established to collect relevant data necessary for the evaluation of project actions and resultant social and economic benefits. Much of the data would be processed by the evaluation section of the Agricultural Projects and Monitoring, Evaluation and Planning Unit (APMEPU) to be established by the Federal Ministry of Agriculture and Natural Resources (MANR). The field evaluation ûnit would receive technical direction from APMEPU, but would be administered by the project.

POST PROJECT DEVELOPMENT:

During the project investment period, the State Ministry of Agriculture and Gusau Project Management Unit would draw up detailed plans and arrange for the allocation of staff to allow project services to continue undisrupted to farmers within the project area after the end of the investment period. The evaluation section would consider various alternatives for the future use and operations of the revolving credit fund, and the supply of farm inputs. It is important that by 1980 credit and farm supplies should be commercially oriented, and that the institutions involved should be relatively independent of Government with control in the hands of participating farmers.

PROJECT ADMINISTRATION

A special Management Unit headed by a project Manager was constituted for administering the project. The Management Unit is responsible to an Executive Committee. Both these bodies were established by a gazetted order of the then Northern States. The committee is Chaired by the Permanent Secretary of the State Ministry of Agriculture. The Management Unit was suitably staffed through transfer of the existing government staff. Deficiencies in specialized technical skills and high level management staff, unavailable in Nigeria, were to be made up through international recruitment. An Evaluation Unit also was to be established to evaluate the operations and benefits of the proposed investment.

The World Bank provided a loan of 19 million United State dollars for a term of 20 years, including a give year grace period. This loan constituded 51% of the total project cost of N24.6 or U.S. $17.7 million and also 7 percent of the total costs equivalent to United State $1.3m. The North Western State Government was to provide 17.00 million United State dollars or 45 percent of the total cost and the remaining project cost estimated at 1.4 million United State dollars, or 4 percent, was to be contributed by the participating farmers in the form of cash payments for seasonal inputs and down payments on farm equipment.

The other items budgeted by the Bank loan were as follows:—

Procurement of heavy vehicles, plant equipment, fertilizers, insecticides, farm hectares and implements, having a value of more than US $25,000, having a total value of 11.4m dollars were planned to be procured from abroad through international borrowing. Contracts for civil works such as power supply, office buildings, and

ware-houses valued at $5.4 million were to be awarded through local tendering. Construction of roads, water supplies and soil conservation works estimated at 6.7m dollars was to be carried out on force account, although these foreign contractor firm were required to moderate this work through petty contractors. Internationally recruited staff were to be employed under terms and conditions acceptable to the World Bank. The proceeds of the Bank loan were to be disbursed to cover:—

(a) 100 percent of the international competitive building (ICB) costs of directly imported vehicles, hectares, heavy plant and equipment, or 75 percent of the cost of these items if locally procured. $2.0 million was budgeted for this bead.

(b) 100 percent of the directly imported farm hectares and equipment or ox drawn equipment etc. or 71% of these items if locally procured estimated at $3.5m.

(c) 100 percent of the cost of expatriate staff estimated at 1.6 million dollars.

(d) 60 percent of the cost of buildings, houses, furnishings and construction materials and labour for road, dams and soil conservation works estimated at 3.2m dollars.

(e) 60 percent of the cost of the field evaluation Unit estimated at 0.5m dollars.

(f) 60 percent of the local staff costs estimated at 2.8m dollars.

(g) Another 5.4m dollars to cover unallocated expenses.

All these allocations totalled up to 10 million dollars and their disbursement was drawn against import documents, contracts and certified records of expenditure and these records of expenditure were scrutinized by the Bank from time to time during their supervision mission.

DIRECT BENEFIT TO THE FARMERS

The overall return on the above mentioned investment were projected to benefit 41,000 project farmers by way of increasing their farm inputs at the rate of annual incremental production of 14,000 tons of seed cotton (64,000 bales of lint), 9,000 tons of groundnuts, 11,000 tons of sorghum, 21,000 tons maize, and 1,500 tons of cowpea. It benefits a further 27,000 farm families through provision of better communications, water supplies and markets. Including the non-farming population, a total of 620,000 people were expected to benefit in one way or another, from the project. The project was expected to provide additional employment equal to 8,000 managers per annum. Many intangible returns were also expected to accrue to the local population; these were better health services, expansion of local trade to the non-farming population and the strengthening of institutions like local government and the State Ministry of Agriculture.

The economic rate of return was estimated at sixteen percent on the investment. However, a ten percent reduction in commodity prices during the give year plan period would reduce the rate of return to nine percent. But the project was viable

even if projected. It was estimated that the farm income per farmer would increase from $266 to $360 per annum at full development and the net per capita income of the total farming population would rise from $41 to $55, thus inferring an income growth rate of six percent per annum. compared to the 1974-75 in growth situation, this increase was certainly a valid index to prove the viability of the project.

PROJECT IMPLEMENTATION:

It is against these targets that I have to evaluate the project performance. In this chapter, I shall go only into the question of the economic returns over investment. a detailed analysis of the socio-economic impact of the project will be taken up in a separate chapter.

The project completed its life span on 31st March, 1980. By that date, the project expenditure had risen to N29.6 million as against the appraisal cost of N24.6m, thus showing an increase of 20 percent which, taking into account the inflation rate of 34% over that period, is not high. According to the January — March, 1980 Quarterly Report of the project Administration, the project on that date showed tangible assets of N16.2m. In addition, they calculated the asset value of dams and roads at N4.00m thus giving a total asset value of N20.2m. The remaining N9.6 would, thus, be the cost of administering the project. In other words, the Gusau Project had an overhead cost of 31 percent.

What has been the net gain to the nation in general and the farmers of the area in particular? For monitoring the impact of the Project on farm production, the Federal Ministry of Agriculture and Rural Development had set up in 1977 the Northern Projects Monitoring and Evaluation Unit at Kaduna. The NPMEU conducts, from time to time, sample surveys in the three projects (located at Gusau, Funtua and Gombe) in order to evaluate the impact of the project activities upon the farm production and feed back its findings to the Project Management. According to the 1979-80 survey of this Unit, the production for farm crops comprising of sorghum, millet, cowpeas, maize and groundnuts (which comprise the main crops in these project area) have certainly shown an upward trend over the five year period? However, it is not so much the total increase in production that is, or should be, an important criterion for assessing the value of a development programme as the spread of the accrued benefits. Out of the 62,000 farm families identified in the project area approximately 79 percent fall in the category of marginal farmers. These are the people who, in a stagnant economy live on a semi-starvation level of existence. The criterion of success of a development project should be the level of living of these people. Sure enough, NPMEU has not been surveying the economic life of this class of people. However, some estimates have been made by individual researchers of the Institute of Agricultural Research of the Ahmadu Bello University, Zaria. This researcher has had access to those studies and on the basis of their findings, he had gone round in the project area to meet people in their houses and farms. Infact, his own family is one of the people there. Through those visits he has sensed that the project has not benefited the marginal farmer at all. The inputs and extension services provided by the project staff have gone to the larger, richer, better educated and politically more powerful farmers, many of whom are ex-bureaucrat

who were purged during the last 1975 coup period. There is no denying the fact that there has been an overall increase in farm production. However, the gain that has accrued to the marginal farmer has been more than offset by the very high rate of inflation which government spending and unhealthy practices followed in extending credit facilities have set off. What is happening in Nigerian Agriculture today is what had happened in South and South-East Asia during the early decades of the sixties under what had then been called as the Green Revolution, Miss ingrid Palmer 3 discovered that while in the early stages with quite high prices for food grains, large profits were made by rich farmers and indeed by some small farmers who have access and were prepared to take risks, in the second phase increased output resulted in falling prices, with the result that the bigger farmers, who were also efficient won through but the smaller farmers failed. Most of them have now been reduced to the position of farm hands working on the farms of large farmers or they have drifted into cities in search of jobs. The high rate of influx of rural people into the Northern cities is a very good proof of the failure of the project.

A CRITIQUE OF THE PROJECT APPROACH

In the opinion of this researcher, the fault lies not only in how the project was executed but also with how it was planned. In the remaining part of this chapter, I shall concentrate on this latter aspect since this chapter is mainly concerned with project formulation. My analysis, and more particularly my observation-participation on the project lead me to the conclusion that it is the 'project' approach of an Agricultural Development Programme that is at fault. When the government creates a separate autonomous administrative organization to bring about agricultural development, that project organization has, by nature, to show concrete results in order to justify its existence. And in this process of self justification, they miss the wood in the forest. In order to show quick results, the project staff would concentrate their attention and their supplies on these farmers who can make the efficient use of these inputs and services, And these "progressive" farmers happen to be those very people who are already rich and resourceful. Thus, the project approach works, in practise, to the neglect of those farmers who stand in greatest need of government help and protection and in the favour of the richer farmers. The result of this process is that both land and agricultural resources get concentrated in fewer and fewer hands, with the result that a much larger percentage of rural population is turned into wage-earners. Some economists tell us that there is nothing wrong in the process where idle manpower is released from farm land and is available for industiral labour. And in support of this contention, they quote the example of USA where after the civil war, rural population was reduced from 80% to 25% thereby bringing more industrialization and economic prosperity. But unfortunately, in the case of Nigeria, industrialization is not proceeding at the rate at which it was doing in U.S.A. between 1865 and 1916. So, here the release of labour rom farming does not mean acceleration in the process of industrialization. It, acally, means increase in unemployment and faster growth of urbanization than can coped with in the present rate of her economic development.

Now, the question is:- if the project approach is not appropriate to the needs of our farming population, what is the alternative? This writer strongly feels that the CRDP approach developed by Japan which has yielded wonderful results, under similar environmental conditions, would be more appropriate for Nigeria.

The main objective of the 3rd and 4th National Development Plan of Nigeria has been "balanced regional development". This is understood as equalizing development among the regions, and among people residing in the region, in terms of per capita income and industrial and agricultural growth. This ultimately means two things:

1. Dispersing growth from the developed to the lagging regions; and

2. Distributing development inputs through state agencies in such a way that the weaker sections of the population within the given region get greater attention and help.

These objectives should actually serve as the guide in formulation as well as implementation of the regional development plan. However, the project seems to have completely ignored these principles. The growth in aggregate and per capital income, which have been the sole criteria of development in the minds of the GADP Management, is no doubt a necessary condition to maximize the welfare of the society. Put development without social justice is a risky business and it may cause more harm to the political stability and economic well being of the society. So, there is need for a comprehensive regional development planning (CRDP) to be adopted by the nation. Japan has developed such a plan and we shall discuss the main features of CRDP and see how it can be adopted to Nigerian circumstances.

CRDP AS AN ALTERNATIVE TO PROJECT APPROACH

The CRDP is the short form for Comprehensive Regional Development Planning. It is a system or model of development projects of comprehensive, integrated nature based upon "Hiring indicators" as elements of development. Its main elements are as follows:-

1. Comprehensive development as objective of planning.

2. Correspondence between objectives and targets.

3. Action planning for after-care of the plan.

4. Multi-level planning.

5. Team work by professionals of various disciplines, and

6. Public participation in planning.

In CRDP model, region becomes a base where actual planning and development take place. That is, at this level the planners translate people's needs and aspirations into the objectives of the plan and relate the growth and development of the community residing in the region through programmes and projects to the resou

charateristics and the potential of the region. Development, therefore, is not and cannot be, defined in terms of per capital income or some other aggregates above. It is understood in terms of removing the basic resources which inhibit the full utilization of human and material resources of the region. Investment allocation and priority is considered in the light of the intensity of these obstacles, such as illiteracy, ill-health, disparities of income and wealth, in-adequate transport and communication, absence of institutional and organizational build-up and above all, the outdated modes of production. Growth is a more fundamental bio-chemical phenomena which enables the society to develop and be viable over along period of time. This implies a development pattern which protects the region's basic culture and environment. If the values developed during the colonial rule in the country obstruct development, then "social change" would be one of the objectives of the CRDP. There would be no scope for drifting either in the planning or in the implementation phase.

It may be pointed out here that such an approach to development, integrating economic, social, cultural and several other aspects of the society, facilitate the process of achieving higher per capital income. But CRDP approach does not stop there, nor does it mean per capital income or gross domestic product (GDP) as the main criteria of development. The CRDP planners believe that every society suffers from certain basic inhibitions of development and also that every society has certain peculiar characteristics which must be made adaptable to the development process and form of the planning lest the gap between a plan and what is actually achieved widens, resulting in the "growth paradoxes", such as rising inequalities in the society, industrial dualism of economy etc.

Japan's example illustrates that "should any development process take place, there has to be an ubiquitous motivation; a set of value judgement, 'incarnated' in a given society" 4. It is also clear that "the development process in Japan is fundamentally supported by a traditional motivation, namely asceticism" 5 and instead of adding to the GNP it has helped more in distributing services and facilities over a larger class of the population.

As against this, planning in Nigeria has been used as an instrument of running the "GNP race" aping the West, with the result that income disparities are more widespread today than what they were during the colonial period. Our planners say that it is due to lack of the base that the present system of itemized, disjointed project approach has to be adopted. But is this excessive emphasis on the economic growth rate as a single or overriding criterion of development which causes greater lack of knowledge about the nature of interrelationships between economic factors, on the one hand, and social circle is created, in the sense that comprehensive, integrated approach to development cannot be followed because there is lack of proper information and knowledge about the other aspects of the life of the society, and the abuse of integrated approach creates greater gap of knowledge, hence greater justification for following the present-day project approach.

To make matters worse, the World Bank and other aid-giving organizations follow a system of itemized "allocated" grants which works against comprehensive regional planning. Infact, it has been seen that even within the project system of planning, the World Bank and the other Western aid-giving countries lock their so-called "aid" to specific items, such as salary of foreign experts, purchase of

machinery and equipment of a certain specification and value etc. This does not leave any scope for the recepient country to plan any programmes on their own. This was one of the objectives which the former Governor of Kaduna State, Alhaji Balarabe Musa, had raised in 1980. It may be pointed out here that the Kaduna State Government had replaced the project approach to an Integrated Rural Development approach, under which the whole State had been divided into four development zones, and under which each Zone with its own Management Board, has the right and authority to prepare its own development plan under the overall objectives laid down by the State Government in its 1981-85 Four year Development Plan which had earmarked an expenditure of N234 million for the Rural Development project. However, the World Bank which had offered to meet 40% of the cost of the extended Funtua Agricultural Development Project did not agree to the State Government proposals, because the Bank's aid is always tied down to specific items and it is the Bank staff which decides what these items would be and how and when they would spend this money. But the Governor stated very clearly that the "Kaduna State Government is determined to have effective control of the project not only because it is wrong for a foreign agency like the World Bank to run such an important project in an independent country, but because the government does not want some of the policies implemented in the Funtua Project to continue"5.

I shall be dealing with the administrative and other implications of the CRDP approach in subsequent chapters. Suffice it to state here that if our plans and projects have to bring about all-round development for our people as a whole, and not just for a few sections of the population, then governments will have to adopt a system of comprehensive integrated planning in which not only all levels and all units of government get involved but even the people concerned are involved intimately from the objectives planning to the last stage of implementation of the development programme. To follow such a system, our leaders, both political and administrative should have a look upon the Japanese CRDP model.

CHAPTER TWO

ORGANIZATION AND MANAGEMENT OF THE PROJECT ORGANIZATION

As a condition of the World Bank loan agreement, the implementation of the project was entrusted to an autonomous body called the Gusau Project Management Unit (GPMU), which was headed by a World Bank expert designated as the Project Manager. Under the Project Manager there was the Chief Administrative Officer who would later on, be made the Deputy Project Manager. Under the Project Manager, there were sectional heads, and under the sectional heads were the other staff.

GUSAU PROJECT EXECUTIVE COMMITTEE:

The GPMU was kept out of the ministerial control. It was made accountable to a specially constituted Executive Committee. The Permanent Secretary of the State Ministry of Agriculture was the Chairman of the Committee. Besides the Chairman, the Committee consisted of the representatives of the Ministries of Finance, Local Government, Works and Economic Planning. It also had a representative of State

Water Board, a Representative of the Federal Ministry of Agriculture and Rural Development and the Chief Agricultural Officer for the Sokoto State. In addition, the Governor of the State appointed two members from amongst the residents of the project area. The Project Manager functioned as the Secretary to the GPMU. The inclusion of two nominated members from amongst the residents of the area was the only concession which the agreeing partner allowed to the people around. The GPMU was the Chief policy formulating authority. It was alo responsible for co-ordinating the policies and activities of the GPMU with those of the State Ministries and Departments. the budgetary and audit control also was exercised by the committee. Besides, it appointed the professional grade staff and also set salary scales and reviews for the project staff as a whole. It was required under the World Bank Agreement that the GPMU would meet, at least, once in a quarter to review project implementation and issue fresh directives, if any.

FEDERAL COORDINATING COMMITTEE:

In addition to the Gusau Project Executive Committee, the Federal Government had also constituted a Federal Coordinating Committee for reviewing the progress of the Gusau and similar projects (Funtua and Gombe) in the Northern States. The Committee was required to meet, at least, twice a year to review progress of work at the three World Bank aided (managed) projects. It comprises of the Director of the Federal Department of Agriculture (FDA) as Secretary. In addition to the Chairman and the Secretary, it had the following officers as members:-

1. Executive Committee, namely that of Gusau, Funtua and Gombe — 3
2. Project Managers of Gusau, Funtua and Gombe — 3
3. Directors of the Institute of Agriculture Research, Ahmadu Bello University, Zaria — 1
4. The Head of the Project Monitoring and Evaluation Unit — 1
5. Representatives of NAB and NPMC; and
6. Representatives of the Federal Ministry of Finance.

PROJECT MONITORING AND EVALUATION UNIT:

Besides the Federal Monitoring Committee, the Federal Government and the World Bank had also agreed to set up a Project Monitoring and Evaluation Unit in Kaduna as an autonomoous research organization having direct link with the evaluation section of each of the World Bank aided projects in the North. This Unit was headed by internationally recruited experts who employed trained researchers evaluaters and enumerators. The PMEU conducts sample surveys in the project areas in order to assess the impact of the project activities upon the farmers and other residents in the respective areas and the results of these surveys are fed back to

the project Managers and to the Federal and State Governments from time to time.

PROJECT ADMINISTRATION:

As already stated, Project Administration was the direct responsibility of the Project Manager. The GPEC, in consultation with the Project Manager, was to appoint the Deputy Project Manager. This, however, went to the Chief Administrative Officer who was a Nigerian and member of the state Administrative class. Besides the CAO, the Project Manager was assisted by the Chief Accountant, Chief Technical Officer, Chief Engineer, Chief Marketing Officer and the Credit Officer. Each one of these officers headed a section of the Project Administration. Thus, the Chief Accountant headed the Accounts Section, Chief Administrative Officer headed the Administrative Section, Chief Technical Officer headed the Technical and Extension Services Section, Chief Engineer headed the Engineering Services Section. Besides, there was a field Evaluation Section which came directly under the Project Manager and it kept a direct link with the Project Monitoring and Evaluation Unit located at Kaduna.

Each section was a self-contained Unit within the Project Administration and inter-sectional coordination was the responsibility of the Project Manager and that of his Deputy. The main functions of these sections were as follows:—

1. ADMINISTRATION SECTION:

This section was incharge of all personnel matters, transportation, registry, security and public relations. The section was divided into subsections, each headed by an officer qualified in that area of functions which were the main concern of that subsection. Thus, looking after the personnel matters there was a Personnel Officer, personnel incharge of Transportation was under a Transport Officer, Security was under the Security Officer, Public Relations was under the Public Relation Officer. thus, each activity was looked after, at least on paper, by a qualified person trained within that division of work and expert staffing remained only a theoretical proposition, mainly because of staff shortage. However, I shall come back to this problem later on. Here I am more concerned with the distribution of duties and job specification as laid down in the Project Manual.

2. FINANCE SECTION:

The Finance Section dealt with accounts, procurement, storage, internal audit and budget control. One very significant contribution of this section was the introduction of cost accounting system and in order to institutionalize the cost accounting practice in government, the Financial Controller, who headed this section and was an internationally recruited expert, prepared a Project Financial Manual. The adoption of Manual by governmental Ministries and Departments would be a very timely and progressive step. However, to the best of this researcher's knowledge, no State Ministry has uptill now adopted this Manual or even thought of its uses.

3. TECHNICAL SERVICES SECTION:

While the first two sections dealt with house-keeping activities, the Technical Services Section was the most important project services delivery mechanism. As such, we shall deal with functioning of this section in greater detail in the nex chapter. Suffice it to say here that this section was responsible for farm extension services, staff and farmer training, seed multiplication, farm Management advice to larger farms, and tractor hire services. Structurally, the section comprised of four development unit centres, based in the towns of Chafe, Kotorkoshi, Bungudu and Kaura Namoda, each headed by a Development Officer who was responsible for providing agricultural extension services in his development area. The Development Officer was assisted by Agricultural Assistants (AA) posted to the service centres in each of the 40 villages of the project area. Each Agricultural Assistant supervised an average of four field supervisors (FS) who were expected to reside with the farmers in their villages and were required to work through farmers committees.

4. CREDIT SECTION:

The credit services worked paralled to the extension services. Thus, a Credit Officer was posted to each Development Unit centre and two Credit Assistants were posted to each farm service centre. The activities of this section also will be revised in greater detail in the later chapters.

5. MARKET SERVICES SECTION:

The main job of this section was to monitor the existing marketing system in the project area and to liaise and provide market information for buyers and farmers to control the activities of Licenced Buying Agents and to supervise work of produce examiners; the role of these two later functionaries will be discussed later. The Chief Marketing Officer was assisted by a number of Marketing Officers, each Marketing Officer, in turn, was assisted by two Marketing Assistants posted in each Development Unit Centre and a Produce Examiner was posed to each market. Marketing Services were responsible for the logistics involved in procurement of farm inputs and for their distribution and handling. As such, the main function of produce examiners was mainly that of a store-keeper.

6. ENGINEERING SECTION:

This section was responsible for land use planning, construction, water development and dam construction, soil conservation, building supervision and workshop management. It handled all the tendering procedures and documentation for procurement of engineering equipment and supplies and supervised the building contractors. And whatever construction work was not handled through contractors, it was executed by this section. It also maintained project vehicles. It had a number of field units; and their functioning and organization will be dealt with in the next chapter.

7. EVALUATION SECTION:

This section performed monitoring and evaluation services for the project and functioned directly under the Project Manager. It also carried out data collection

and other field survey duties on behalf of the Project Monitoring and Evaluation Unit located in Kaduna.

STATE GOVERNMENT INSTITUTIONS;

Inspite of the administrative and financial autonomy granted to the Project Administration, the Project authorities were still involved with the State Government Ministries and Department; and in fact, even the Local Government Administration was involved in certain respects.

The State Institutions that way, in one were or the other, concerned with the Project include the Ministry of Agriculture which was the overall policy-making and finance allocating body in all matters of agriculture. As we saw earlier, its is the Permanent Secretary of this Ministry who presides over the meetings of the Gusau Project Executive Committee. Next in importance to the Ministry of Agriculture is the Ministry of Works programme; so this Ministry is ultimately involved in all types of building and construction programmes relating to the project. Also involved were the Ministry of Trade, Industry and Cooperatives; which is responsible for the development of rural cooperative societies, and the Ministry of Health which is responsible for all aspects of public health in the State. The Gusau Local Government was involved because the project areas formed part of that Local Government and local government functions include collection of taxes in respect of people and cattle (these are Haraji and Jangali) and the administration of land allocation. Besides, the Gusau and Kaura Namoda Local Governments were responsible for the provision of services such as feeder road construction and maintenance, dispensaries, and primary education as a complement to the State Government activities in these fields.

INSTITUTE OF AGRICULTURAL RESEARCH:

Another institution involved in the project was the Institute of Agricultural Researh of the Ahmadu Bello University. This Institute is an autonomous body involved in agricultural extension and research activities in the whole of Northern States ever since its inception in 1960-61 Its research staff collaborated with the Evaluation Section of the GPMU for programme evaluation purposes and with the Technical services Section for extension and demonstration work in the project area. Other institutions concerned with the marketing and processing activities of the project are the Commodity Boards, particularly the Grains Board, Cotton Board, and Groundnut Board. These Boards are the purchasing agents of the Federal Nigerian Produce Marketing Company and they are responsible for domestic purchases of these commodities through their Licensed Buying Agent (LBA). The Produce Inspection Division of these Boards are also involved with the produce examiners of the Marketing Section of the Gusau Project Management Unit.

The sponsoring and funding role of the Federal Ministry of Agriculture and Rural Development has already been pointed out earlier. The Department of Rural Development of the Ministry and its regional office in Kaduna were more intimately involved in different ways and at different stages of the project planning, Implementation and Evaluation.

STAFFING

The next important aspect of the project Administration is the staffing of these various sections and Units. Both the Federal and State Governments recognized the need for qualified and experienced staff to administer the project and thus, assure high technical and managerial standards in its field of administration. The staffing problem became acute during the course of the project implementation for two reasons. The first reason was that, in 1976 the North-Western State was divided into Sokoto and Niger States. Before the creation of more States in 1976, the staffing situation was already not very good. The creation of more States in 1976 made the staffing position more pronounced because of lack of qualified managerial/administrative and technical personnel. To put up with this internal problem was the difficulty of procuring technical staff internationally. The result was that the project administration was, at no stage of the five-year period of its implementation fully staffed. The following will make the point clear.

GPMU STAFFING, 1975-80

	1975/76		1976/77		1977/78		1978/79		1979/80	
Top Level	26	21	17	12	21	16	19	16	29	13
Middle Level	125	91	56	56	102	180	138	105	120	100
Junior Level	251	203	336	257	260	227	137	140	218	393
Others	100	74	96	98	44	139	150	q168	95	170

Five top officers were internationally recruited. They were the Project Manager, the Chief Account, Credit Manager, Chief Marketing Officer and the Chief Engineer. The rest were recruited locally either through secondment from the State Civil Service or directly from the employment market. By March, 1980, practically all these top positions came to be occupied by Nigerian Officers, either substantively or in acting capacity. My presumption is that within a period of five years, Nigerian Officers had acquired the managerial competence to manage an agricultural project of such dimensions, This was a very great achievement. The planning team of the Federal Ministry of Agriculture had emphasized the need for such an entrepreneurship in their perspective plan report. They said, "Management or entrepreneurship as a resource is in scarce supply in Nigeria economy. When one considers the decision making of the individual proprietorship of peasant farmers in respect of:—

1. What to produce
2. How to produce
3. How much to produce, and
4. Where to produce, and his risk-averting propensities. "A shrewd businessman within the limitations of the ecosystem is hard to find. But when considering the needed dimensions in agricultural modernization, a new breed of managers with sufficient training and expertise is required. The human resources and the training facilities are available. What is lacking is the reorientation of the

farmers and extension staff to the new and ever changing set up, as well as the different forms of organizational conditions such as corporate farms, plantations, cooperatives and state farms under which he may be required to work''.

HIGH LEVEL TECHNICAL STAFF:

Nigeria, and particularly the Northern part of Nigeria, has been critically short of experienced technical personnel. It was inview of this shortage that the State Government had given an assurance to the World Bank that a farm manager, a seeds manager, land use planner, a road engineer, a mechanical engineer, a water and soil conservation engineer and a senior evaluation officer would be recruited internationally, if suitable candidates were not found from within the country. It were only two posts, that is, that of the land use planner and that of the water and soil conservation engineer which had to be filled in through international recruitment. All others were filled in locally. Gradually, even these posts were occupied by the Nigerian Officers.

MEDIUM LEVEL STAFF

Professional officers in agricultural and technical areas could easily be recruited locally. However, in the beginning they were assigned only to non-productive posts. But gradually, those officers acquired sufficient experience to handle all types of technical and extension jobs. These officers were mostly state Government staff seconded to the Project Administration and they could easily go back to their parent department if they failed to measure up to the Project Management requirement.

The greatest achievement of the GPMU has been in that of training of junior and medium level staff in various sub-professional, supervisory and extension jobs. Suffice it to state here that probably the biggest achievement of the Gusau Project has been in the field of developing farm managers and technical staff. A summary of these achievements is given in chapter 3, 4 and 5. For further details of the organization and staffing activities of the project, (please see Appendix II)

CHAPTER THREE

SOCIO—ECONOMIC IMPACT OF THE PROJECT

GENERAL:

As discussed in chapter one, the main objective of the project was to provide agricultural inputs and extension services to the farmers. And to provide these services and inputs, it was necessary to build certain types of infrastructures in the form of dams, roads, markets and shops and training of staff. To achieve these objectives, the Project Management organized its work into the following services:

1. Technical (Extension) Services
2. Training

3. Commercial
4. Engineering
5. Land use planning
6. Evaluation
7. Seed Production

In this chapter, I shall study the way in which these services were provided by the Project Management and I shall also assess their achievements and failures for the plan period, 1975-80.

1. EXTENSION SERVICES

ORGANIZATION OF THE FARMERS:

There are 70,000 families in an area of 3,800 sq. km. Any attempt to reach all these farmers on an individual basis with only 120 field staff is clearly impossible. Ways of bringing farmers together had to be developed so that a single extension worker could teach a large number of farmers.

Village meetings have been first step forward in introducing farmers to new techniques. They have given the extension worker an opportunity to pick out the interested farmers and make contact with them prior to visiting them on their farms.

Extension is a step by step process and the extension worker has to see the farmer many times before any new idea is accepted. As the extension programme took off, and more farmers began to come forward each season for help. It became clear that if the extension service was to reach an increasing number of interested farmer each year, either the number of staff would need to be considerably increased, which was not practicable, or some form of grouping of farmers would have to be organized. The latter was decided on.

Farmers' Associations were set up. They were panned to be flexible so that they could evolve over a number of years into a permanent form of rural organization. They were not formed merely to buy the farmers attention in the early years of the project only to be dropped later. As long as the associations continue to function properly, repay credit and fulfil their obligations, they were to be kept going. They should be able to develop from simple associations carefully controlled by the extension staff, to associations capable of running their own farming business, and able to exert pressure on the extension service itself.

The associations, later called 'Group Farms', started off in a very simple form, and have already given considerable help to the farmers and an impetus to the success of the extension service. The arrangement is a deal between the project and the farmers. Provided that the farmers establish a group farm, undertake to use the correct inputs and grow their crops to the standards recommended by the project, the group farmers are provided with credit to buy inputs, given extension advice and later on, cash loan. In addition, the project did its best as to guarantee supplies of inputs. However, inputs purchases as in the case of Fertilizers, were not under the control of the project Administration and this lead to shortage at crucial times of the

season. The group farms have become a demonstration of the improvements attainable when inputs, credit, labour, and correct agricultural practices are co-ordinated. They also enable the extension worker to reach many farmers on a single visit to a group farm.

FORMING A GROUP FARM:

A group farm is formed when several farmers owning adjacent land agree to form a farming association and to grow only one crop or crop system on their farms. In the first year extension staff acted as a catalyst, forming the farmers' into groups, but later on, groups began to be form on the farmers' own initiative. Even when field staff were actively encouraging the formation of group farms, it was being emphasised that the farmers shoud feel that they were reaching the decision themselves and that they were not to feel forced into a group farming system.

Every year the farmers within a group decide amongst themselves which crop or crops they will all grow on their group farm and where their group farm will be. Within the area of the group farm, each member farms his own field and grow the agreed crop on it.

As many decisions as possible are now left with the farmers so that they are fully involved and will not blame the extension services for failures. The farmers decide how large their group farm will be, who should join, and elect their own leaders. However, extension staff do discourage the formation of groups with a large membership as the larger the number of farmers the more difficult it is for the leaders to maintain control. Large groups are only allowed to develop from smaller ones which have proved themselves to have good leaders and a well maintained discipline. The percentage of these later type of Group Farms came to approximately twenty.

In the first year of the inception of the project these were only four groups inherited from the Ministry of Agriculture in the project area. Three years later the number increased as follows:—

1975 — 4 Group Farms
1976 — 70 Group Farms
1977 — 400 Group Farms
1978 — 455 Group Farms
Average acreage per group is 150
Average membership per group is 20.

LARGE FARMERS SCHEME OBJECTIVES

Among the objectives of the large farmers scheme is the assistance to large farmers to obtain loans from financial institutions, in particular the Standard Bank and the provision of technical advice to successful loan applications. The table below shows the total number of tractor loan applications up to March, 1980 as 81 while 26 were successful. Twenty-one were issued with M.F. tractors and five were issued with Ford Tractors.

Year	Number of Applications	Number of Successful Applications	Brand of Tractor Issued
1976	42	12	M.F. Tractor
1977	26	9	M.F. Tractor
1978	13	5	Ford Tractor
Total	81	26	

(ii) Total farms recorded and planned by land use planning Officer (only the bigger pieces) 47

Total Hectares involved 1,641,00 ha

Average holding/individual farmers = 63 ha

Range of size of individual farmers = 3.2—21 ha

MODE OF OPERATION:

Surveys of prospective farm tractor loan applicants' farm lands were carried out to determine suitability. This involved obtaining the hectarage of the land which must be in the region of 100 acre in block or 75 acre in block and 30 acre nearby. Furthermore, gross margin analysis was worked out per farmer to determine his future credit worthiness. Farmers who satisfied these conditions were then recommended to the Standard Bank. However, repayment of loans have proved to be disappointing and the Commercial Banks have become very reluctant to issue new loans a situation regarding which I shall go into detail in my subsequent analysis (see chapter).

TECHNICAL ADVISE

Successful applicants were then advised on the best alignment of ridges to minimise adverse efforts of gully erosion. They were taught how to keep simple farm records and accounts, as an essential part of management. Farm visits were conducted on the best way to use inputs like insecticides, fungicides (seed dressing chemicals), fertilizers, maintenance of tractors and the most reliable and profitable market available for farm outputs. When farmers obtain tractors, the scheme helps in training tractor farm operators for them.

ACHIEVEMENT:

The scheme has enabled many large scale farmers achieve great/increased yield in crop production such as guineacorn, millet, maize, groundnut and cotton. Equaly, it has enabled most of them store with good chemicals all surplus harvest. Many of the farmers have frequent breakdown of tractors due to the inadequate advice being given to them on the need for continuous maintenance and repairs.

OTHER PROGRAMME:

Large farmers were helped through the scheme to secure loans for fencing, construction of small dams for livestock and dry season farming and the procurement of additional inputs like seeders, threshers and pickers for complete mechanisation. In addition, they are being helped with the construction of farm crops and headland. All these, however, can be feasible only if sufficient staff and funds are made available to them over a long term period. It is here that the existence of an agricultural mortgage bank becomes very essential.

TRACTOR HIRING UNIT AND LAND CLEARING:

This section offered the service of its 10 fleet of tractors and a caterpillar for land preparation to the farming communities at a subsidised rate. In 1977 a total of 1,412 acres were either ridged or ploughed for the farmers, totaling a revenue of N3,348.22 to the project. The rates charged are the State Government rates of:—

N2.10/acre for ridging
N2.50/acre for hallowing, and
N4.00/acre for ploughing fadama land.

Because of these fixed rates the project suffered an annual loss on the Tractor Hiring Scheme. Since the scheme is a continuous one, no final figures could be had.

Apart from farm work, training services were also offered under some exceptional circumstances to farmers that the project Management deserve such services. Up to March, 1980, more than N680.00 was realised in this way.

Stumps on the farm are obstacles to its development. Therefore, this section helps the farmers obtain the services of a D7 caterpillar for stumping as well as clearing new land for expansion purposes. This form of Tractor Hire Unit is also at a subsidised rate of N17/hour as against N25/hour the running cost of the equipment to the project. In 1977, three selected influential large scale farmers who also happened to be traditional and community leaders were offered the free service of this equipment for one week each. This was done to win their confidence in the project which expected them to influence their subjects to co-operate more with the extension staff. However, in 1978, the services were presented freely. Two smaller D4 caterpillars were made available for the land clearing at a subsidised rate of N17/hour. Eleven people benefited where a total revenue of over N6,000 was realised.

ACHIEVEMENTS:

For land preparation, the Tractor Hire Unit beneficiaries should be those who cannot afford to buy a tractor. With this heavy subsidy the money of production is considerably reduced for the farmer. The extra money that he would heave used for the land preparation can be utilized in some other farm operation. Little wonder then, that the project was not able to meet the demand of the farmers at the peak period for the Tractor Unit. In land clearing, the large scale farmers were able to develop and expand their farm cheaper than they could utilize hand labour only.

PROGRAMME FOR NEXT SEASON:

Operation for land clearing which was suspended for some time in 1977 was resumed during the second week of February 1979 till about planting time in May. Tractor Hiring Unit commenced on 1st of April, till July, 1979.

FILM UNIT:

The film unit has facilitated the diffusion of knowledge regarding agricultural innovation. These include innovation on production inputs like fertilizer application, seed dressing and the use of small farm implements and stores inputs such as actellic and lindance. Other achievements of the unit include the successful reminder to farmers on the need for early settlement of farm loans and the reaching of about 370 — 1,000 farmers in every show. As an instrument of extension service and mass enlightenment, the Film Unit has achieved remarkable success. The future programme includes the introduction of moving and entertaining films based on local interests to minimise boredom film shows. The purchase of Bell and Howel moveable projectors was under consideration of the Administration at the time of my survey. The training of staff, particularly on films to ensure regular film shows and infrequent breakdown of gadgets has become necessary.

FILM UNIT EQUIPMENT

ITEM	PARTICULARS	NUMBER
1.	Honda Generator	18
2.	Projector	5
3.	Amplifier Speaker	3
4.	Transistor Amplifier	2
5.	Public Address Car Amplifier Cassette	2

5. VEGETABLE GARDEN:

The section has established and maintained a vegetable garden at Damba Dam. This garden serves for demonstration purposes to the farmers, in view of the fact that most farmers remain idle during the dry season. Gardening could be made into a profitable revenue for extra income throughout the year. In the present garden, tomatoes, cabbage, lettues, radish, sweet papper, spinach, okro, carrot, cucumber, onion, amaranthus, etc., are grown under recommended practices. These are watered by means of a simple sprinkler irrigation system and it is hoped that it will raise the interest of farmers who can then be assisted in establishing their own gardens. Groups of farmers who are interested in gardening are brought to the Damba Garden for demonstration from time to time and their questions answered on the spot. Apart from the invited farmers, interested individuals and casual passers by do branch in to see the garden which creates awareness for the potentials of gardening. These people number about 10/day on average.

ACHIEVEMENTS:

No doubt, this garden has become a centre for attraction for gardeners. Interest has been shown by farmers for the purchase of small irrigation equipment and already demands for the type of seeds the administration uses are coming to satisfy or direct them to where the seeds and seedlings willbe obtained at a subsidised price.

POULTRY UNIT:

The unit has been taken over lately by the new senior Livestock Officer seconded from the Ministry. It was established with the view to introduce poultry farming to interested farmers as a profitable source of extra cash, meat and eggs to supplement protein. As poultry is a risky business, a careful selection of 9 farmers was made. They entered into an agreement by the project to abide with all the recommended practices of management. Each of them received a sum of N400 to construct a poultry house suitable for the level of management. This came into operation in 1977. Each farmer was supplied with the following:-

(a) N400 cash (in instalments),
(b) 50 birds (six weeks old),
(c) Feeds (layers and growers mash).

The section helps them secure the right kind of feeds at either the subsidised price or the market price, depending on the source. Twelve tons of feeds were obtained from Sokoto (this is subsidised at Zaria Commercial rate).

ACHIEVEMENTS:

With assistance in management from the project, some of the farmers are considering expanding their poultry enterprises to full time business. However, up to the end of the sunny period, extension work in poultry farming didnot show any significant results. Even then more farmers are being identified pending satisfactory evidence of management and loan repayment.

7. USE OF DEMONSTRATIONS:

All new agricultural practices being introduced to farmers are demonstrated throughout the area. Demonstration plots, large enough to attract attention (never less than 0.2 ha) are carefully looked after so that the farmers can come and see the new techniques for themselves. All demonstrations are either run by the farmers themselves or carried out in such a way that the farmers realised that the new techniques are within their capability. The impact of a demonstration can be lost on a small farmer if tractors or large gangs of Government paid labour, unavailable to a small farmer, are used.

Examples of well grown maize and cotton were unknown in the area, so that farmers had never realised the potential of these crops and did not believe that the yields could justify the large quantities of inputs being recommended. It was only when they actually saw the increased yield of these crops when they were correctly grown on the demonstration plots that the economic potential of the improved practices become evident.

ACHIEVEMENTS:

In order to justify the cost of the demonstration farms it is essential that the extension service uses them as sites for regular meetings. Farmers are transported to the demonstrations and field days are held on seed multiplication farms and on selected farmers' fields. Using successful farmers to teach other farmers has been found to be an effective method. More notice is taken of the success of a neighbour's farm than of advice from an outsider.

8. KENMORE CULTIVATORS:

This implement was introduced with the view to narrowing the gap between the hoe and the tractor. The intermediate technology and multi-purpose tool bar undertakes almost all the operations that a tractor can perform at a considerably low price. It performs the following operations:—

(i) Ridging,
(ii) Breaking of old ridges,
(iii) Planting — 2 row and fertilizer application,
(iv) Inter row weeding,
(v) Groundnuts lifting; earthening up and can be converted into an ox-cart as well.

50 sets of the tool bar were introduced in March 1977 and to date 27 sets were sold off to either individuals or organizations. The initial price was fixed at N900/set. The farmer would pay N300 cash deposit before receiving the tool bar, and the N600 balance was paid by the Standard Bank as a loan to the farmer. As part of subsidy, the price/set was slashed to either N600 cash down or N700/set on credit but the farmer has to deposit N250.

This is quite an achievement because the farmers have to pass through this intermediate stage of mechanisation. All the operations are simplified to the economic level of the farmer. the farmers are already familiar with the oxen on emcot ploughs, so there is no technical problem in handling the kenmore. It needs no constant maintenance like the tractor and is about 20 times cheaper. So far, sales have been disappointing and there are no immediate plans to order for more units until the stock is exhausted. There are Kenmore demonstrations plots all over the project area as part of the extension to propagate its advantages, especially as the labour costs are rising annually. The demonstration both at service centres and on the farmers' fields continued throughout the plan period. More demonstration plots are being sited on the farmers' farms to enable them a good visual comparison of management as well as cost of operations. Kenmore propaganda for sale is continuing to this day, although the rate of success as so far not very encouraging.

9. THRESHING MACHINES:

Four threshing machines were purchased during the second half of 1978. The machines are capable of threshing Guinea Corn, Rice, and millet. Before January, 1979, the administration undertook demonstrations with these machines both at the

headquarters and at the Development and Service Centres throughout the project area.

As of now, the machines are engaged in threshing for the farmers on hire basis — at the rate of N1.00/bag (100kg.) of either millet or guinea corn. This operation is seriously hampered by the frequency of small breakdowns and the time it takes the Engineering Section to get them operational again.

ACHIEVEMENTS:

Like the Kenmore, this is no doubt a stepping stone towards solving the problems of the small farmers. The later complained bitterly against losses due to the women when they are engaged in hand threshing for the farmers. With the tractor, Kenmore and the threshers, it is hoped that farmers' problems of hand labour will be reduced to some extent. There is decidedly greater need for more publicity for the threshers with the view to encouraging those farmers who can affort to buy them. Unfortunately, the Project Administration goes more after large farmers' interests than those of the smaller ones.

10. HOW THE PROJECT EXTENSION SERVICE COMMUNICATES WITH THE FARMER:

A variety of methods was used to communicate the project extension messages' to the farmer:

(i) Publicity vans broadcast to the people in market places.

(ii) Radio is used to bring the Project Programme carrying specific and popular messages to farming families.

(iii) Thousands of posters are displayed through the sessions to make people aware of project activities and recommendations.

(iv) Film strips are widely shown to increase awareness of project goals, objectives and recommendations.

(v) Personal meetings with farmers are conducted by the field extension workers.

(vi) Group meetings are frequently organised.

(vii) Field days and demonstrations serve as a focal point in teaching and discussion.

(viii)The farm Service Centres are natural meeting places between extension workers and farmers.

(ix) Group farms bring a number of farmers together to carry out new techniques.

(x) The farm Service Centres with their distinctive designs clearly marked signboards constantly remind farmers of the presence of the project.

SEED MULTIPLICATION SECTION:

DEVELOPMENT OF SEED FARMS:

Land development at Rawuya came to an end in March, 1979 using a Caterpillar D4 tractor and a technique and equipment developed on site. This was supported by wheeled tractors and trailers and a small labour force. Approximately 1420 acres lie within the farm boundary of which some 680 are suitable and available for arable farming. The balance consists mainly of valley bottoms, outcrops, unstable foils, roads, headlands, conservation works and waterways.

The conservation pattern was developed by surveys of catchment areas and natural drainage lines, by study of 1.20,000 serial photographs and appraisal of existing cultivations. a vertical interval of 3—3.3 ft. was chosen between contour banks and channel which fall at constant slops of approximately 1:500. Banks and channels were constructed by self-propelled road graders to a predetermined cross section. Final minor corrections and repairs remain to be executed.

Re-development at Mareri Farm was planned for next season to reduce wash and loss of tractor time at headlands. this farm has a rectangular layout and requires protective devices. Also it is necessary to abandon a block which has consistently given poor returns, thus reducing the available good arable land to 176 acres.

It is not possible to assess yield potential at Rawuya Farm at this tage since much land has been cropped by the Project Administration for two years or less. So far the land has given evidence of increased productivity.

FARMING:

A three year rotation is being operated using logumes, cereals and fibre of which some 300 acres can be grown of each.

All crops are mechanically planted, fertilized and weeded. for the first year in the season, suitable harvesting equipment was obtained and brought into action. Higtherto a shortage of skilled labour has resulted in prolonged harvests and considerable loss of crop. Unfortunately, only one season of training has been possible on these machines, and expertise in operating, care and maintenance has yet to be developed.

A stationary Alvan Blanch Thresher, suitable for large farmers grain when a combine is not justified, was successfully converted this year to pick groundnuts from the farm. The extended rainy season causing repeated wetting and drying of the crop resulted in large quantities of nut shedding and these were gleaned. This resulted in low output from the machine subsequently which nevertheless showed that it could accept crop in volume and produced an excellent sample. The Lilliston Peanut Combine did not arrive in time for the harvest. The Lilliston digger-shaker-windrowers arrived during lifting time and immediately dispensed with all labour except a few supporting the machines. The absence or scarcity of male labour is a serious drawback to groundnut harvesting by simple lifting equipment.

The Fahrtowed combine harvester with two alternative treads proved perfectly satisfactory in both maize and Kano bulk Line sorghum.

A strick U.L.V. spraying programme against pests of cotton has again been successful this year when phrethroids were introduced. The harvest potential at present would seem to be close to 1,000 bag/acre. This is encouraging since a large part of the cotton acreage was on land newly cleared this season.

EQUIPMENT:

7 wheeled tractors are sufficient to run the two farms whose headquarters are 13 miles apart. If all land were concentrated in one locality this force could be reduced to 6. However, whilst motor transport continues to be unreliable an increase to 8 would be needed.

Ancillary equipment includes disc ploughs, disc harrows tool bar equipment capable of being converted to many purposes, MF planters, rolling cultivators and the harvesting equipment already named plus a Ransomes Lion Sheller. A Turner's seed processing plant is in the course of erection and this should satisfy all Project needs. MF. tool-bars and equipment designed for raw crop work failed to arrive after two seasons and necessarily old Ransomes toolbars, far from ideal, were retained.

Additional equipment is now recommended in the form of:—

(a) John Doere 4 row disc bedder,
(b) John Deere Fertilizer spinner to allow for cheap and fast pre-planing fertilizer application.

BUILDING:

At Marori farm a Service Centre building comprising store and office has been erected, whilst the old and temporary buildings have been retained.

At Rawuya the section heaquarters consists of an enclosed courtyard where offices, stores, workshops and open working base are provided. In addition, a building houses a generating plant. Also, a Service Centre store is connected to the building housing the seed processing plant.

Staff quarters exist for Intermediate and Junior staff and await water connection from a dam construction this year, before being occupied.

OUTGROWERS:

For the first time in 1979 season, selected seed was distributed to selected outgrowers for multiplication. Two varieties of groundnut were involved — S.61 and F 452.4 — and were well received. By the end of January some 31 tons had been recovered from this source. It is planned to increase this area of seed multiplication. An extension service giving advice and demonstration would be the next logical area for development but has been avoided so far lest it produces duplication of effort in the project.

It is not possible for me now to attain firm proposals for next season. Trained staff are leaving or have left which will hamper the management training programme.

TRAINING SECTION

1. STAFF TRAINING:

170 out of 305 Agricultural Demonstrators (Field Overseers) trained at the Gusau Agricultural Development Project Training School from 1975 to 1978 were successful, Viz:—

Year	Number Trained	Number Successful	Cost
1975	68	42	N 43,413.82
1976	88	55	84,811.49
1977	44	32	80,026.51
1978	106	31	104,839.25
	305	160	N313,091.07

2. OFF—PROJECT TRAINING:

41 Project staff have been sent for training to different institutions from 1976 to date, Viz:-

Item	Insittuion	Type of	Duration	Number Sponsored	Cost to date
1.	College of Agric. Kabba	H.N.D.	2 years	2	N14,618.00
2.	College of Agric. Bakura	H.N.D.	2 years	1	3,230.00
3.	College of Agric. Samaru	H.N.D.	2 years	1	11,088.00
4.	College of Agric. Samaru	O.N.D.	2 1/2 years	11	46,138.00
5.	Sch. of Agric. Zuru	O.N.D.	2 1/2 years	16	45,758.00
6.	Polytechnic Kaduna	Dip. Mat.	2 years	2	4,760.00
7.	Polytechnic Kaduna	AEO (Gen.)	1 year	2	5,552.00
8.	Polytechnic Kaduna	C.P.	1 year	1	3,022.00
9.	S.D.C. Sokoto	C.O.	6 months	3	5,592.00
10.	S.D.C. Sokoto	C.T.	9 months	1	1,320.00
11.	M.A.T.S. Sokoto	D.A.	2 years	1	1,560.00
				Total =	N142,638.00

KEY
HND — Higher National Diploma
OND — Ordinary National Diploma
DM — Diploma in Management
A.E.O. — Assistant Executive Officer
CP — Certificate in Production
CO — Clerical Officer
CT — Copy Typist
DA — Dispensary Attendant

COMMERCIAL SECTION:

As mentioned earlier, the purpose of the Commercial is to provide inputs and services to the farming community and to participate in the marketing of produce.

INPUTS:

(i) FERTILIZERS:— Fertilizer is the main input in quantity and value. Up to 1976 small quantities were issued on credit but the bulk of the transactions have been in the form of cash sales.

Year	Superphospate	Tones Sulphate of Ammonia	C.A.N.	compund Super	Boronated
1975/76	391	82	41	—	—
1976/77	2,414	—	1,376	—	226
1977/78	4,888	—	3,241	—	4,477
1978/79	2,462	—	2,793	2,739	5,460
1979/80	—	—	—	—	—

Fertilizer sale have been on a continual increase and are now only limited by the availability of supplies and timely delivery. Sales of all types during 1978/79 totalled 13,447 tonnes. Deliveries are obtained through the Federal Government and in 1978 first supplies were not obtained until May and there is a stock carry over of 2,700 tonnes to 1979/80. An order for 15,000 tonnes was placed for delivery in 1979 and it is hoped that deliveries will be made not later than April.

(ii) EMCOT PLOUGHS AND OX—CARTS:

Sales of ox drawn equipment, on a cash basis, have progressed satisfactorily and in adequate supply of plough spares has been made available.

Year	Plough No.	Plough Spares Value N	Ox-Carts No.
1975/76	1,600	—	—
1976/77	287	1,432	18
1977/78	490	10,459	14
1978/79	211	7,099	3
1979/80	—	—	—

Stock in hand at 31st January, 1979 = 323 ploughs.

(iii) SEED DRESSING:

Aldrex T seed dressing has been made available since 1977 and cash sales have progressed well.

Year	Packets
1977/78	56,146
1978/79	

There is a stock in hand of 44,332 packets.

(iv) GRAIN STORAGE PROTECTION:

A new storage chemical introduced by I. CI. known as Atellic E.C. 25 with its sprayers have been received and distributed to ten service centres.

The chemical according to Technical Staff who conducted the demonstration and obtained farmers' reactions, is very effective in cowpea storage. Another chemical known as Ratak used for killing rats has also been received and demonstration carried out by Technical Section.

Item	Number Received	Price Per Item	Sale Made
Atellic E.C. 25	200 bottles	N7 per bottle	11 bottles
Sprayers	300	N1 per one	N77.00
			12 = N12.00
Ratak	500	N1.30/packet.	Nil

Sales are in progress and details of further sales still awaited.

If there is more response from the farmers, all the 42 Services Centres would be stocked with the chemical next year.

SERVICES:

(1) CASH LOAN:

Seasonal cash loans began to be issued in 1977 mainly as aid to farmers to meet the peak labour demands during weeding. Loans have been issued to farmers who are members of established Groups the loans being repayable within six months of the date of issue at a first rate of 5%.

Year	Total Cash Loans	Number of Farmers
1977	N393,330	7,336
1978	N288,350	5,315

In general the rate of repayment has been satisfactory of the 1978 loans 22.5% have been repaid to date and repayments are continuing at a satisfactory level.

(ii) COTTON BUYING:

Acting as an L.B.A., the Project has been participating to an increasing degree in the buying of seed cotton. Buying was begun in a small way at one market, Chafe, in 1975/76 and has since expanded. In 1976/77, 2,040 tonnes of cotton were purchased at 9 markets the project taking 23% of the total purchases. In 1977/78, the construction of the markets was seriously delayed and buying did not begin until mid January. A considerable amount of cotton had been sold outside the Project area. By this time the Project purchased 1,381 tonnes at 6 markets, taking 29% of total purchases. For 1978/79 authority was given for the Project to construct markets at 9 points adjacent to existing Service Centres and these were opened on the 1st December. Purchases to date have been satisfactory, taking into account the very much reduced acreage planted:—

MARKET	TONNAGE PURCHASED TO 8.2.79	
	Grade I	Grade II
Bela	115.85	1.40
Chafe	367.50	0.95
Dogon Kade	191.75	2.30
Kotorkoshi	223.45	3.40
Mada	233.10	0.30
Magazu	322.90	0.60
Modomawa	115.00	2.15
Nahuche	159.20	1.60
Yan Doton Daji	141.95	0.05
Total =	1,670.70	12.75

It is intended that an additional market at Kucheri be built for next season, making 10 markets in all, and this will give an adequate coverage over the whole project area.

(iii) COTTON SEED DISTRIBUTION:

Up to 1976/77 cotton seed distribution was effected through contractors authorised by the Ministry of Agriculture. This service proved unsatisfactory and the Project has since been collecting seed direct from the Ginneries and distributing

to the service centres. During 1978/79 there were considerable difficulties in obtaining supplies and stocks had to be drawn from Gusau, Funtua and Mai'inchi ginneries. Although collections began on the 14th February the total distribution of 1,540 tonnes was not completed until the 30th June, 1978.

In 1979/80, owing to the markets being opened earlier, ginning also began earlier and dressed cotton seeds began to be distributed by the 31st January. It is anticipated that up to 2,000 tonnes will be distributed.

(iv) GROUNDNUT BUYING:

The Section has obtained permission to procure Groundnuts for the Gusau Oil Mill and purchased began on 8th November, 1978. The Project began by paying the farmers N8.00 per bag which was the then current market price and receiving N10.00 per bag or N44.00 per ton. Later when the market prices increased the price paid to the farmers rose to N9.00 per bag and the Oil Mill management agreed to increase the price to project to N11.00 per bag. Towards the end of February, however, I could not get the Groundnuts at the price we offered (N9.00) per bag and purchases stopped sometime during the first week of February.

The Groundnuts were purchased in 8 Services Centres as shown in the details below:—

LATEST POSITION IN GROUNDNUT PURCHASES

Service	Cumulative Purchase to Date (in Bags)	Total Evacuated to Gusau Oil Mill (In Bags)	Stock now in HQS Store/ Service Centres (Bags)	Total Purchases
Furfuri	1,103	600	503	50.13
Wazoji	601	476	125	27.31
Rawayya	646	540	106	29.36
Kaida	385	—	385	17.50
Bela	261	120	141	11.86
D/Kade	184	184	—	8.36
G/Gagare	51	—	51	2.31
G/Kade	357	—	357	16.22
	3,588 bags 163.09 tons	1,920 bags 87.27 tons	1,668 bags 75.81 tons	163.05

The payment for 87.27 tonnes so far delivered to the Gusau Oil Mill has not yet been received but effort is being made to get the payment made before the end of the paln period. The reamaining 75.81 tonnes is being stocked at the Headquarters store for resale to other interested bodies when the price is higher and it is expected that about N12 to N13 per bag will be received when we are to sell.

Next year 1980/81 a more concrete agreement will be made with the Oil Mill on the procurement of the Groundnuts and when a decorticating machine is obtained for decortication. Another alternative arrangement could also be made to buy the Groundnuts for the Nigerian Groundnut Board if the price improves next year. In this way the Commercial Section aims at,becoming self supporting.

(v) GRAIN BUYING:

Sometime in January, 1978, the project was requested by the Nigerian Grains Board to purchase some grain on its behalf. On the consent of the Project Manager the Purchases began towards the end of January 1979 suing the first instalment of N50.000 granted to the project by the Grains Board for the purpose.

Eight Service Centres were selected and staff withdrawn from the Groundnut buying were posted to these centres for the exercise. The current market prices in these Service Centres range from N240 to N250 per ton for Guinea Corn and N270 per ton for Maize and as the project is paid N270 per ton for Maize and as the project is paid N270 per ton for Guinea Corn and N300 per tonne for Maize the highest price paid to farmers for Guinea Corn is N250 per tonne and N270 per tonne for Maize. It is impossible to get the millet at the price tonne of millet is N320 while the Nigerian Grains Board is to pay the project N300 per tonne. However, the project is making N20 gross margin per tonne on Guinea Corn and N30 per tonne on maize. Because of the late start only 24 tonnes of maize have so far been purchased as shown in details below:—

LATEST POSITION IN GRAIN PURCHASE

Service Centre	Cumulative purchases To date in tonnes	Total Evacuated to Grains Board to date	Stock in service Centre or HQS store
Gusau	193.1 tonnes G' Corn	193.1 tonnes Guinea Corn	4.00 tonnes
B/Magaji	4.0 tonnes G'Corn	—	4.00 tonnes
Mada	—	—	—
D/Kade	—	—	—
Kalda	—	—	—
Wazoji	—	—	—
Kusheri	24.00 tonnes Maize	—	—
Chafe	4.00 Guinea Corn	—	4.00 tonnes Guinea Corn

Total Purchases in Tonnes:

Guinea Corn = 201.10 tonnes

Maize = 24.00 tonnes

On the latest purchases the project has made gross profit of N4,022.00 on G/Corn
720.00 on Maize

Total = N4,742.00

It is anticipated that the Project will make a substantial margin on Grain buying if an early arrangement could be made and if allowed to participate in this exercise next year. This year, it is hoped that about 500 — 1,000 tonnes of grains will be purchased and with an early arrangement next year up to 5,000 tonnes could be purchased.

ENGINEERING SERVICES SECTION:

1. ACTIVITIES

The Engineering Services Section is primarily responsible for the implementation of the physical infrastructural programme of the project. This consists of construction and maintenance of buildings, roads and associated structures, dams tapkis, etc., in the project area. It is also responsible for the procurement of all, plant, vehicles and equipment and for their operation and maintenance. It operates the project workshop for the repairs and servicing of all vehicles, plant and equipment.

2. ORGANIZATION:

As Head of the Section, the Chief Engineer controls all engineering activities and is responsible for the efficient coordination of the different units of the project engineering services. He is assisted by the Road Engineer, the Conservation Engineer, the Mechanical Engineer and the Building Engineer for carrying out the activities of the respective units. He is also assisted by an Executive Officer and supporting clerical staff in the office administration and accounting purposes.

ACHIEVEMENTS:—

(i) All the buildings proposed for construction within the project area have all been completed. 42 numbers Farm Service Centres, 4 numbers Development Centres, Headquarters Offices, Stores, Workshop complex, 16 numbers Senior Staff houses 50 Intermediate staff houses and 141 numbers Junior Staff houses have all been completed at Gusau and various locations inside the project area. All the buildings have been constructed by indegenous contractors and supervised by project staff. A list of these buildings along with the cost of their construction is enclosed in Annexure 2.

Normal and special maintenance to these buildings are carried out by the Building Maintenance Unit which has been established in the project.

(ii) The construction of roads has been carried out by a road construction team established in the project for this purpose. Heavy earth moving machinery consisting of 4 Dozers, 5 Scrapers, 7 Graders and 4 Rollers were procured for the construction of roads, dams as well as maintenance of these works. The construction of roads was planned in such a way that alignment and clearing is done during the dry season and laterite surfacing and final shaping is carried out during the rainy season. The Local Government and the farming community in the area allowed the land to be used for construction of these roads without compensation claims. Compensation has been limited to crop damages only.

The roads have been aligned along the water sheds, as far as possible, to reduce the construction of costly cross drainage structures. The roads are generally 18ft carriage width, with 3ft wide berms on either side. They are 6'' to 12'' higher than the surrounding ground and are surfaced with 6 inches thick laterite. Longitudinal and turnout drains are provided for satisfactory drainage of rain water. Culverts are provided where ever necessary with single and multiple barrels of 18 inches and 24 inches procast cement concrete pipes. For crossing larger streams cement concrete drifts with 6 to 8 barrels of pipes are provided. Cabion crossings are provided in the large river beds.

The road construction, precasting of culverts, construction of culverts, etc., are all done by separate construction teams established for these purposes. Fencing posts needed for fencing the various Service Centres and Headquarter buildings were all manufactured by the project casting yeard team for supply to the contractor carrying out fencing work. The progress achieved by the Section so far is as follows:—

Length of roads constructed = 622 kilometres
Number of Culverts constructed = 721 Nos.
Number of drifts constructed = 24 Nos.
Number of Gabion Crossing Constructed = 3 Nos.

PRECASTING: 24 inches pipes = 13,480 Nos.
18 inches pipes = 6,061 Nos.
Fencing Posts = 14,787 Nos.

The average cost of construction of these roads comes to N4,500 per kilometre. This includes the hire charges of all vehicles, plant, equipment, cost of culverts, labour and supervision charges, etc., but excludes administration overheads.

3. MAINTENANCE OPERATIONS

The Maintenance of an earth or gravel road is a more complex operation than that of a well-constructed bituminous road. A characteristic of gravel road is the formation of corrugations. It is in general that heavy fast moving vehicles on granular soil that promote the most rapid formation of corrugations. The most effective methods of removing corrugations is by the use of the motor grader by a trained and skillful operator for spreading the loose materials along and across the road maintaining an accurate number and riding surface. After grading, the surface will have to be watered and rolled. The labourers in each sub-section will carry out routine maintenance, such as repairing and filling pot holes as and when are formed, maintenance of shoulders, grass cutting and shrub slashing on the shoulders, drains and right of way, clearing of drains and culverts, painting and minor repairs to culverts, maintenance of traffic sign and kilometre stones, if any, etc.

In addition to these routine maintenance operations, periodic maintenance by way of re-surfacing or re-gravelling in sections where the first signs of need become apparent will have to be carried out. If these re-surfacing operations are delayed for

long, further losses of the binding material as well as the contamination by the sub-grade material may render the remaining gravel quite unsuitable as a road material. It is therefore proposed that one third the length of the road will have been re-surfaced once every three years. The two tippers provided will be used for these re-surfacing operation and additional tippers would be hired on daily rates depending upn the need. Two pay loader and a dozen D-6 have also been provided for these re-surfacing operations.

4. COST OF ROAD MAINTENANCE:

Capital cost of plant and equipment required, is enclosed in annexure 1. Some of the plant, however, can be transfered from the present construction unit when the development period comes to an end. Housing is proposed for the maintenance staff. Junior staff houses will be alright for foremen while round huts with mud walls and thatched or C.G.1 sheet roofing are provided for labourers. This would be necessary in view of the non-availability of any living accommodation at most of the places where the sub-sections are proposed to be located.

The annual running expenditure for these maintenance operations is given in Annexure 2. The plant hire charges adopted are based on an annual working of 1500 hours. The total annual expenditure is expected to be N472,027 which come to about N720.00 per kilometre of road, of this 60% will be the operation cost of plant and equipment while the remaining 21% will be for labour and materials.

Annexture 4 gives the list of individual roads with their lengths included in the jurisdiction of each section.

DAMS:

Construction of dams is also carried out by the project by deploying the project machinery. plant and equipment used for road construction. Ideally, potential dam sites are identified from the aerial photographs of the project area. Survey and investigations are carried out in the field thereafter to determine the suitability of material for the construction of the embankment, including the core, suitable site for locating the spillway, etc. The construction activity on the dams is limited to only the dry season since no work can be done during the rainy season.

The dam walls consist of an earth embankment, with a width a width of 18 to 20ft at the top. The water side slope is kept at 3:1 while the far slope is 2:1. A clay core of 20ft width is provided in the centre to prevent any seepage of water. The core is taken down below the natural ground level to depths where suitable impermeable strata is met. The top as well as the slopes of the embankment are provided with a 6 inches thick top soil to facilitate planting and growth of grass cover. Depending upon the size and nature of the catchment area, spillways of adequate width are provided in each dam for maximum flood discharge. Whenever necessary protection works by way of cement concrete sills 12 inches to 18 inches width and 3ft — 0 inches depth are provided at intervals of 100ft to prevent gully erosion along the spillways. In some cases where the flow was excessive and solid highly erodible in the spillway, one or two rows of pipe spillways are provided at 2ft lower than the full supply level, to relieve the main spillway from nomal flow.

So far, 26 dams have been constructed in various locations. The height of the dams varies from 15ft to 30ft. A statment showing the salient features of these dams

is enclosed at Annexure 3. The cost of the dams constructed varies from N26,000 to N76,000 depending upon the length; height and the spillway characteristics of each Dam. This cost includes operations cost of all vehicles, plant and equipment as well as cost of materials, labour and salaries of supervisory staff. It does not include the Administrative Overheads.

Some problems in the spillway of the dams constructed in the first season were encountered during subsequent rainy seasons. Gully erosions were formed in the spillways causing collapse of cement concrete sills. Remedial measures were undertaken in these dams.

WORKSHOP:

The Mechanical Workshop in the project caters for the maintenance and repairs of all the vehicles, plant and equipment that are in use by various sections in the project. It also operates the storage and supply of fuels and lubricants for the vehicles and plant as well as for workshop use. A seperate store for custody and supply of spare parts for the repairs of all the vehicles and plant in the workshop is also operated under the overall control of the Mechnical Engineer.

The project has a fleet of over 130 vehicles consisting of Saloon cars, panel vans, Range Rovers, Land Rovers, Pick-ups Jeeps, Tippers, lorries and low loaders. Normal servicing of these vehicles is carried out once a month apart from the repairs to broken down vehicles as and when this occurs. All the heavy plant and equipment are also serviced periodically in the workshop. a field servicing unit is also established at the site where the heavy machines work, to carry out the daily servicing of the plant such as greasing, cleaning of air filters, and carrying out other routine checks to keep them operational.

The provisions in the project workshop Manual which has recently been prepared and issued are being followed.

The non-availability of the spare parts and shortage of good mechanics have been the greatest constraints to efficient functioning of the project workshop. Also, due to non-availability of new vehicles, particularly land rovers and peugeot pick-ups, the old vehicles had to be kept, though the project had ben able to keep the majority of the vehicles and plant running. A statement showing the number of hours run so far by the heavy plant and equipment is enclosed at Annexure 4.

Already during 1975/76 it became apparent that the roads specification needed amendment, for soil and climatic conditions do not allow to build and maintain the 750km. of unsurfaced road as envisaged in the Appraisal Report. consequently, it was decided that instead of building 750km of unsurfaced and 250km of surfaced roads, a total of 750km of laterite surfaced roads would be built.

It is encouraging to note that, this target has been not only reached but surpassed. These roads are, except for short periods immediately after heavy rain when they are closed for a limited time period to heavy traffic, open throughout the year to all traffic.

At the same time, in addition to the targets of 40 service centres as per Appraisal Report, a futher two Service Centres have been built and put into operation. Further additional buildings constructed are the Central Stores, two Rural Retail Stores,

workshop complex, Seed processing shed at Rawuya Seed Farm, Project Clinic, Conference Hall and Mechanical Engineer's Office, Decorticator shed, six Domitories for the Training Centre with adjacent Dining Hall and Recreation Centre.

Dam construction started only during the 1976/77 season because of late arrival of plant and the greater need for roads during the early stages. the original Appraisal Report target was set at 85. However, difficulties were encountered right from the beginning in finding dam sites of the original specification together with safe catchment areas and spillways. Hence, the specification was lowered in 1977 when it was recognized that the target of 85 dams was too high and a new target of 45 dams was set. I am very pleased to report that this target has been more than achieved by the construction of 47 dams. The only target not achieved is the 160 "tapkis" mentioned in the Project Appraisal Report. Seven tapkis were built as an experiment but it was found that these ran out of useful water after two month of the dry season, at that time leaving behind heavily polluted water, providing a potential health hazard. Therefore, it was decided to defer action in this case.

It is encouraging to note that the effort made by the Project Staff in the Mechanical Workshop to keep plant and machinery operational in spite of the great difficulties experienced in obtaining spare parts. At the same time they have turned the workshop and stores into model for this part of the country.

Apart from the tangible aspect of development in the form of assets, we should feel gratified with the intangible achievements of the Project Extension Services. After reorganisation, the section had made a remarkable impact in the Project Area. When the average farmer before had no alternative bu to rely on traders and middlemen for crop inputs and for crop disposal, the situation has changed considerably at present where the Project has built up a reputation to advice the farming community on cultivation practices as well as on crop inputs and marketing and above all, together with their colleagues in the commercial section, it makes sure that inputs are easily available at the right time and right place to the farming community.

The Extension Services have installed 300 demonstration plots throughout the area in full co-operation with local farmers who readily give up part of their lands for this purpose. In this aspect one should bear in mind that it is of utmost importance to convince farmers rather than teach them as they form a group of people which had limited access to education and are therefore difficult to reach through systems used in more advanced societies.

The Extension Services encourage farmers to form association whose members have common goals and objectives with the result that 450 group farms have been created among 10,000 farmers. In addition, 20 Young Farmers Club with 1,000 members have been installed for shich there is an ever increasing interest among the younger rural population.

Apart from the above, 43 Councils have been formed among village farmers with the Village Head as Chairman and one of the farmers as Secretary. These councils report to the Extension workers in each service centre who, in consultation with the Chief Technical Officer, gives advice to these councils.

The Section has established a main poultry demonstration unit with 600 layers and 60 cocks. Fifteen more demonstration units each with 60 layers and 6 cocks have been erected in Service Centres which have adequate water supply. The technique followed is simple and above all not costly as to cater for the needs of the wealthy among the rural population. Improved breeds of poultry are introduced and farmers

are trained in simple poultry management. Interest in the scheme is overwhelming and more trained staff is badly needed. A demonstration vegetable garden with low cost irrigation equipment has been very successful and five similar demonstration gardens of one to two acres are being proposed along suitable project dams. A number of farmers have taken up the challenge and everything possible is being done to encourage people.

Fourteen Project dams have been stocked with fish and fish is on sale in the villages adjacent to these dams.

We may take a special note of the achievements on the Project Seed Farms. Its staff have taken up the challenge of Mechanisation and produced the largest harvest of maize, millet, cotton and groundnut seeds known in this area. In particular, it is gratifying to learn from an official document issued by the Groundnut Rehabilitation Committee of the Agricultural Extension and Research Liaison Service, Ahmadu Bello University Zaria, that the Gusau Project has produced 22,400 bags of Groundnut Seed, or 73%, out of a total of 30,700 bags produced in Nigeria. Apart from Sokoto State the Project will supply Groundnut seed to Kano, Gongola, Borno, Bauchi and Plateau States.

As the bulk of the seed is returned by outgrowers which were issued with improved seed from the Seed Farms, it reflects favourably on the efforts of the project Extension Services from which they obtain instructions and advice.

Also the Commercial Section has over the years increasingly pulled its weight. Fertilizer sales went up steadily from 1,444 tons in the 1975/76 season to 15,815 tonnes in 1978/79 season. However, although the demand during the 1979/80 season was around 20,000 tonnes, due to the late arrival of fertilizer, only 10,487 tonnes could be distributed in time for the crops to benefit. Equally, the value by sales of insecticides reached N127,639 in the 1979/80 season while a total of 1,405 ox-drawn ploughs were sold over the five year development period.

The Commercial Section of the Project played an ever increasing role in cotton buying which went up from 400 tons of cotton buying during the 1976/77 season to 2,000 tonnes with a value of N651,750 in the 1979/80 season. The total turnover of the Section during the 1979/80 season has been approximately N2m (N1 million inputs to farmers and N1 million produce buying). Loans seasonal and medium term are given to needy farmers based on the recommendation of the Technical and extension staff.

Besides, the Evaluation Unit has been firmly established and is involved regularly in collecting and evaluating various useful field data.

The Project has successfully trained extension workers not only for the requirements of the Project but also for the State Government. Training facilities have been expanded and the current intake is 150 students.

Plans have been prepared for continuation and expansion of the Project Services. Approval has already been received from Government for extension of the project to cover the remaining parts of Kaura Namoda and Gusau Local Government Areas as well as the Anka Local Government Area. For the expansion of the Project concept to cover the whole of the State is at a planning stage and a preparation report is expected to be finalized within two months.

On the finance side it may be mentioned that the total expenditure as at 31st of March 1980 is anticipated to be N29.6 million. The tangible assets are estimated at N16.2 million excluding roads and dams but not allowing for depreaciation of vehicles, plant and equipment — the system normally followed in the Annual Accounts of all Projects. The intangible assets are estimated at N13.4 muillion divided into salaries (5.0 million), vehicle and plant operating expenses (N5.0 million) and General Service Costs (N3.4 million). I reckon that N4.0 million of the intangible assets will be represented by dams and roads.

It may be seen that the cost supervision and overheads for the five year period amounts to approximately N9.4 million (16.2 million tangible assets plus N4 million for dam and roads out of a total expenditure of N29.6 million). The appraisal cost for the Project was N24.6 million which due to inflation, has increased by N5 million or 20% of the original costs spread over five years.

CHAPTER FOUR

IMPACT OF THE PROJECT ON THE SMALL FARMER

Although the main thrust of the Gusau Project has been upon increasing the total yield of good grains, particularly of seed cotton, sorghum, maize, groundnuts and cowpeas, yet the project planners did state that one of the objectives of the project was to improve the productive capacity of the small farmers. It had been assumed that, by the time of the project maturity in 1980, the farmers would fall into two categories for each of the five crops that would be influenced by the project. The first category was to comprise of those farmers who would take more advantage of the improved farming practices and inputs provided by the project staff and the other category of those farmers who would lack the capacity to take such an advantage. Since they visualized such a variation in the impact of their efforts unpon individual farmers' family, it is assumed that they might have taken certain steps to see that their services do reach the poor, illiterate and unprogressive farmers as much as they are taken advantage of by the educated and politically influential farmers.

The aim of this chapter is to make an empirical assessment of the impact of the project upon the individual farmer. The farmer will be viewed here as a socio-cultural being, and not just as an 'economic' being. From this point of view, the success of the project depends upon the Project Management's understanding of the constraints which effect the decision-making behaviour of the farmer.

To study the small farmers' behaviour, I constructed a conceptual model; the model was used to assess the projects' success. The model constructed is very simple, the statistical techniques employed are quite straightforward and therefore, the conclusion drawn can only be taken as suggestive.1 Knowing this, I have complemented the statistical findings with reflections on what lessons I was able to draw from my case study survey and also from the observations, discussions and writings and reports of the experts in the field of Agricultural Development Managements.

PROJECT DEFINITION AND SELECTION CRITERIA

In terms of detailed study, there were two possibilities. One was to focus on a limited number of the most important activities of the project. The other was to focus on all project activities in a selected number of local areas. I chose the latter approach. I selected the Chafe Development Centre, out of the four.2 From the theoretical point of view, it would have been preferable if my project data base had been more "representative" of all the development areas. But due to constraints of time and resources, that could not be possible.

While constructing the first model, my main task was to identify those factors that maximize the chances for the success of the project directed at benefitting the small farmers. After that, I had to identify the determinants of the various types of local action required on the part of the small farmers. Before constructing the models, I had to define the terms, small farmers, factors indicative of project success, and determinants of local action" operationally.

SMALL FARMER:

Defining the small farmer posed a number of problems. Starting with John Powell, I looked into his classification of the farmer.3 He puts them into the following five categories:—

1. The labour peasant (landless or less than a subsistance plot).
2. The family farm peasant (subsistance plot).
3. The small scale capitalist peasant.
4. The Latifundia resident, and
5. The capitalist resident.

Obviously, it is attractive list in terms of behavioural attributes. But unfortunately, the items on this list are not mutually exclusive and therefore, the list does not offer easy-to-work with operational definition of the small farmer.

According to the World Bank Survey, it has been suggested that the small farmer be defined as one cultivating less than 12.35 acres (that is, five hectares). Now, if I had accepted this definition, it would have posed a problem of magnitude because the average holding of a farmer in the Gusau Project Area is 3.6 hectare and in fact, most of the farmers would have fallen under the category of small farmers. In that case, the practical results of our survey would have been dissipated. I also looked into the definition offered by Bell and Duley.4 They defined small farmers as "those having access to sufficient land to provide at least a subsistance income in the farm family from its cultivations". This was not much improvement upon the earlier definitions.

What I really wanted to find out was the definition of the large farmer, so that I could eliminate from my list of small farmers all those farmers who could, on their own, take advantage of whatever facilities were anywhere in sight. So I had to go in search of a workable definition of the large farmers. So proceeding negatively I decided that a farmer is not a large farmer if:—

1. He uses a production technique differing from that used by a smallest farmer. More specifically, this ruled out farmers who use an amount of capital or outside labour that calls for a significant individual cash contribution.

2. His capacity to take a chance with a new point, crop etc. differs substantially from our smallest farmer.

3. He cultivates significantly more land than the average farmer in the area.

So, using these criteria, I worked out a definition of the small farmer. A small farmer is one who cultivates land less than the average in the project area and who has, in the first year of the project, failed to take advantage of the new production techniques offered by the Project Administration and was, thus, left behind economically and technologically. Fortunately for me, the Evaluation Unit of the GPMU was compiling such a list — that is, list of these farmers who were availed of the extension services of the project on their own. By deducting their number, from the total list of the farmers in the project area, I go the total number of my small farmers.

PROJECT SUCCESS:

My next problem was to define the term, project success. Here I agreed with Denis Goulet's definition:

Authentic development aims at the full realization of human capabilities:

> "men and women become makers of their own histories, personal and societal. They free themselves from every servitude imposed by nature or by oppressive system, they achieve wisdom in their mastery over nature and over their own wants, they create new works of solodarity based not on an dimination but on reciprocity among themselves, they achieve rich symbolis between comtemplation and transformation action, between efficiency and free expression. This total concept of development can perhaps best be expressed as the "human ascent" — the ascent of all men in their integral humanity, including social, cultural, ideological, psychological, mystical, and transcend dental dimentions".

A very good ideal, but it is rather too lebghty in terms of operationalization. so, I selected only a few well-tried measures of project success. These were:—

1. Income/Cost Ratio: An adjusted ratio of total income from the project, received by participants, to total costs of the project paid by the Government.

2. Agricultural Knowledge Index: An index of the agricultural practices adopted by small farmers as a result of their acquisition of new agricultural knowledge.

3. Self-Help Index: An index of the increased capacity of local organizations or groups to raise the income and improve the welfare of small farmers resulting from the project.

4. Self Sustaining Index: An index of the likelihood that the benefits generated by the project will become self sustaining.

These variables and the data points used to obtain the rations and indices are explained in Appendix 1. Here we shall only give an interpretation of the data and then, will form out findings.

Income/Cost Ration:

The purpose of this variable is to capture, from the beginning of the project, the relationship between income gained by project participants and cost of the project to the Government. Income is defined as the net income gained by participants, subtracting income earned through alternative production on land now used by the project. In other words, we calculated the income of the farmers by totalling up the current price of the five crops which had been taken by the GPMU for development. Income and costs of production from the newly introduced technology were compared in current prices with income and costs of production from alternative (pre-project production).

Determination of Average Net Uniform Income Increases:

In determining the total net income of the project, the following data points have been examined:—

1. Percentage yield increases in physical output for each technological package which raised yields of previously grown crops, per acre.

2. Percentage of the net income increases attributable to each new technological package per acre. This required pre-project and cost project cost of production data, as well as output data, all compared in current prices.

3. Net income increases per farm family, in my farm income as a result of all technoligical packages introduced by the project. This data point combined with current farm income allowed a calculation of the percentage increase in our farm family income as a result of the project. Data-points leading to a determination of net on farm family income increases are as follows:

Percentage Increases	Yield per acre	Percentage Income increase per acre	Increase in our farm Family income	Percentage increase in our farm family income
67	86	67	328	72.0

DETERMINATION OF TOTAL PROJECT INCOME:

If income from a total technological package can be estimated for the average

project participant, an estimate of total project income requires a determination of the number of people adopting the technology.

I looked into the credit list of the project administration and accepted those on the list as 'beneficiaries' of the technology package, since loan taken from the project could be used only for purchase of new machinery or the farm inputs. Here the average income of the adopters was multiplied by the number of adopters each year for the number of years the Project has been in operation. That gave me the total project income.

Table No.2 will show the results.

TABLE No. 2

TOTAL INCOME TO TOTAL COST RATIO

RATIO	COMPONENTS	
	TOTAL PROJECT INCOME	TOTAL PROJECT COST
6:0	29,520,000	4,500,000

Relationship of the Income/Cost Ratio and Other Variables:

Table No. 3 presents the relationships between Income/Cost Ratio and the following variables:

COLUMN:

1. Years in operation, used to calculate the income/cost ratio (XI)
2. Income/Cost ratio (XII)
3. Absolute Naira increase in income attributable to the project (XIII)
4. Percentage Increase in yield for the project's most important technological package (XIV)
5. Percentage of the administrative and management costs recaptured by the project (XV)
6. Cost per participant, 1979/80 year (XVI)
7. Replicability Index; coded 1 — low replicability and 5 = high replicability (XVII).

Table No. 3 — Relationship of the Income/Cost Ratio to other Variables:

Gusau Project:

XI	XII	XIII	XIV	XV	XVI	XVII
10.0	6.000	328.0	86	40	25.00	1

AGRICULTURAL KNOWLEDGE INDEX

313579

This index represents the acquisition and use of agricultural knowledge by project paricipants. The knowledge acquired and used are production knowledge, methods employed in the modernization or agriculture as well as supporting services needed for improved rural infrastructure. Knowledge acquisition was combined to increased output and income from individually managed small farms. No political

awareness was assumed or evaluated under this variable.

The field evaluation ended 'yes' and 'no' answers to the following behavioural change questions relating to the acquisition of agricultural knowledge. When the majority of the participants in the project made significant changes from the previous agricultural practices, answers were coded 'yes' (1). Account of the positive response produced a raw score index which ranged from one positive behaviour change to 11 positive behaviour changes. The following indicators were used:—

1. Credit use (if repaid)
2. Particiapation in an effective farm group or farmers club.
3. Use of fertilizer as recommended
4. Use of insecticides, herticides or pesticides treatment for animal diseases.
5. Use of improved seeds.
6. Use of substantially changed harvesting procedures or adoption of quality control measures for marketing.
7. Construction of on-farm insfrastructure.
8. Maintenance of on-farm infrastructure.
9. Processing of agricultural produce.
10. Diversification of agricultural cash crops.
11. Expansion of land under cash crop cultivation.
12. Storage of agricultural cash crops, and
13. Improved resources management, such as conservation grazing etc.

The raw score resulting from the coding was 9. For a discussion of standardization procedure, see Appendix 1.

SELF — HELP INDEX:

While the agricultural knowledge Index is a measure of the acquisition of production related knowledge, the self-help Index is a measure of group participation, formal or informal, which complements the projects' economic activities. Since many problems of the small farmers in Nigeria stem, directly or indirectly, from their individual powerlessness within the society, coalescing into groups may increase their social, political and economic well-being. The following codes sheet was* used to develop an Index of the self-help capability.

SELF—HELP INDEX (X372):

THE AGRICULTURAL KNOWLEDGE INDEX is a measure of the acquisition of production-related knowledge. THE SELF—HELP INDEX is a measure of group participation, formal or informal, which complements the projects' economic activities. Since many problems of small farmers in the Third World stem directly or indirectly from their individual powerlessness within the society in which they live, coalescing into groups may increase their social, political and economic well-being. The following coding sheet was used by the DAI staff most familiar with the projects to develop an index of self-help capability.

1. Creation of Group Decision-Making Capabilities (A proxy for the ability to identify local problems and work together to overcome them) (code as follows: Direct control by local groups = 2; Indirect influence on decision-making = 1: Insignificant influence on decision-making = 0)

   Planning _____

   Management of Activities _____

   Financial Resources _____

   Technical Assistance Personnel _____

2. Mobilization of Resources from the Local Population under the Auspices of a Local Group (Code as follows: Significant for the local environment + 2; Limited for the local environment = 1; Insignificant for the local environment = 0)

   Financial _____

   Labour _____

   Supplies/Materials/Animals/etc. _____

3. Mobilization of Resources from outside the Local Area (A proxy for the ability of the local organization to draw in outside assistance) (Code as follows: from the project and from other organizations or agencies = 2; From the Project only = 1; Insignificant outside support = 0)

   Financial _____

   Technical Assistance _____

   Supplies/Materials/etc. _____

4. Provision of Services by local groups, either Independently or as an Intermediary for the Project (Code as follows:

   Provision = 1; No provision = 0)

   Education _____

   Legal _____

   Housing _____

   Health _____

   Credit _____

   Extension _____

   Agricultural Inputs _____

   Marketing _____

Machinery

Farm Infrastructure

5. Creation of New (non-traditional) Leadership Position and Specializations.

   (a) Creation of Leadership Position (Code as follows: Many positions created with evidence that leadership developed can move beyond the local organizations to larger leadership opportunities = 2; Number of leadership positions in local area increased = 1;

   (b) Increase in specialization of Leaders (Code as follows:

   Management and Technical training = 2; Management or Technical training = 1; No training
   N = 0).

6. Viability of the Local Organization Systems.

   (a) Channels to the Outside (Code as follows: Multi-channel: Outside agencies, organizations and individuals, which extend beyond the project and agencies sponsoring project = 2; Channels established to agencies supporting the project = 1; Insignificant outside channels = 0)

   (b) Extent of the Organizational Activity (Code as follows:
   Multi-tired network moving beyond local organizations to regional or national = 2; Single-tired, financially sound at local level = 1; Neither of the above = 0)

   (c) Representativeness (Code as follows: Broadly based encompassing many small farmers, few restrictions = 1; Selectively based encompassing only Limited number of potentially eligible small farmers, many restrictions = 0)

   (d) Continuity (Code as follows: Local Organization is a permanent local institution = 1; local organization is a temporary local institutions = 0)

The raw scores for each of the six components were calculated and standardized according to the procedures explained in Appendix I, Table 0—6 presents the raw scores for each of the six components, ranked by the aggregate, standardized total scores.

Table 4 Self-Help, Raw Scores by Coding Components

Aggregate Scale 1+2+3+4+5+6	Group Decision Making Capabilities	Mobilization or Resources from within	Provision of Service	New Leadership
9.7052	7	6	6	4
	3 Mobilization of Resources from without	6 Local Organization System		
	6	6		

POSSIBLE DETERMINANTS OF PROJECT SUCCESS:

Project Level Data·

To test first of the model empirically, we utilized the list of success components explained on the previous pages. From our data based the following list of project-level data as possible determinants of project success was selected:

Possible Determinants	Quantitative Indicators1 and variable Numbers
Education	Literacy rates of project participants (x19)
Income	Per capita income of project participants prior to project start-up (xRAV24)
Market Integration	Percent of project participants output in cash crops prior to project start-up (x20)
Market Access	Percent of sub-projects within five kilometres of an all-weather road (x164).
Technical Assistance	Project farmers per extension worker (x34). Primary extension responsibility is crop specific rather than general (x36). Scale of small farmer provision of technical assistance (x532).
Land Tenure Status son	Percent of project participants with reasonable security over land (x4640).
Size of Landholding Under Cultivation	Average farm size in project (x57).
Measures of Local Action (Aggregated)	Overall local action scale (x619)

Measures of small Farmer involvement (Components of Local Action	Scale of small farmer involvement in idea evolution and project design (x528). Scale of small farmer involvement in project decision-making during implementation phase (x530).
Measures of Small Farmer Resource Commitment Compared to Income (Components of Local Action)	A ratio of the value of additional small farmer money commitment (cash and interest plus credit repaid) to farmers' income (x606) A ratio of the value of additional small farmer labour commitment (additional Mandays of labour at the going wage rate) to farmers income (x606) A ratio of the value of additional small farmers' money plus labour commitment to farmers income (x621)
Measures of Small Farmer Resources Commitment Compared to Project Costs (not components of Local Action)	A ratio of the value of additional small farmers' money commitmemt to cost per participant most recent year (x614) The ratio of the value of additional small farmers money plus labour commitment to cost per participant most recent year (x615).
Past history of Development Efforts in the Local Area.	Rating of past experience with development projects, local organizations, etc. (x79).
Provision of Social Services	Social Services provided prior to project implementation (x80) Early in the project (x81) Late in the project (x82).
Communications between Project and participants	Existence of an operational two-way information flow (x565).
Provision of Incentives	Scale of size of subsidy used to get a small farmer to adopt new approaches (x484).
Overall project resource Commitment.	Most recent year project cost per participants (x534)

SUBPROJECT LEVEL DATA

In addition to these project-level data, I also thought it relevant to test whether some of our subproject data would help explain differences in project success. Specifically, I could postulate that ceteris paribus, significant differences in Local (that is, subproject) conditions would make it more difficult for an individual project to achieve overall success than if local conditions were uniform. Consequently, the following variables are included as possible success determinants for the 19 projects for which data were available on two or more subprojects:

Possible Determinants from Subproject Data	Quantitative Indivators and Variable Numbers
Education	The range in literacy rates for subproject participants (RX19)
Technical Assistance	The range in the farmer-to-extension worker ratios among subprojects (RX33).
Farm Size:	The range in the average size farm of suö-project participants (RX 57).
Market Access	The range among subprojects in the average distance between participants' homes and an all-weather road (RX163).
Physical & Ecnomic Constraints.	The range among subprojects in the number of significant physical and economic constraints (RX181-216)
Social/Cultural Constraints.	The range among subprojects in the number of significant socio-cultural constraints (RX216—226).

It should be stressed that the results of testing these variables can only be taken as suggestive, since our subprojects are not a representative sample of different local conditions in project areas.

NATIONAL LEVEL DATA

National conditions were also postulated as playing a part in explaining project success. From a collection of national variables, five were selected as possible important independent variables:

QUANTITATIVE INDICATORS AND VARIABLE NUMBERS

Population growth rate (1965-72 (VAN2)1
GNP per capita, 1972 (VAN43)1
GNP per capita growth rate, 1972 (VAN44)1
Number of , 1967 (VAN48)2
Population density, persons per square km. (VAN58&2

SUMMARY OF THE FIRST STAGE OF THE MODEL

Four dimensions of project success (x599) consisting of x519: x567' x572 and x566 have been determined.

Twenty-five possible determinants of success were drawn from project data:

x19' xRAV24' x20' x164' x34'
x36' x352' x4640' x57' x619'
x528' x530' x608*' x606*' x621*'
x614' x613' x615' x79' x80'
x18' x82' x565' x484' x534'

Eight possible determinants of success were drawn from ranges within subproject data:

RX19' RX33' RX57' RX58-59'
RX75-79' RX163' RX181-216'
RX217-226'.

Five possible determinants of success were drawn from National level data:

VAN2' VAN43' VAN44' VAN48'
VAN58'

SELF SUSTAINING INDEX

This index attempts to capture the potential for project benefits to continue in the absence of subsidises. It is composed of three related but separate concept viz:

1. Recapturable Project Costs: The ability of the project to draw upon increased income from project participants to pay for necessary services and supplies.

2. Income increases and self-sustained benefits; the probability that it will be possible to maintain or expand the level of project benefits at reduced costs in the future.

3. Domestic support for the development project: the percentage of project costs paid for by domestic services. Table No. 5 below gives the raw scores:

Table No. 5 Self Sufficiency, Raw Data Scores and Scaled Conversion

Percentage Domestic Funding	Scale	Percentage Costs Re-tured by projects	Scale	Probability of continued benefits increase of project support	Total Score
90	2	100	10	5	17

OPERATIONAL IMPLICATIONS OF THE SURVEY

The question is: What lessons does this survey offer to the programme planner in particular and to the Government in general? The remaining part of this chapter formulates an operationally valid answer to this question.

PHYSICAL FACTORS: The first question any project planners would ask is; What physical conditions and environmental factors are more conducive to project success? No, when project success means accruel of benefits to the small farmers, then the local physical environment for agriculture is not a key determinant of project success. This has been borne out of not only my study but also by the periodical surveys of the three Northern Nigerian Projects, Viz, Gusau, Funtua and Gombe, being made by the Northern Project Monitoring and Evaluation Unit at Kaduna.6 The simple correlation between overall project success and environment quality is positive, but the variable was not significant in a multi-variate analysis? Simply stated, this survey suggests that favourable physical conditions are no guarantee that an agricultural development programme will succeed in providing any direct, tangible benefits to the small farmers. Conversely, stated, agricultural development projects can succeed even where physical conditions are quite poor.

It is, therefore, not a very rational policy on the part of the State Governments to succumb to the World Bank Experts' proposal that the project should be started only in high fertility area traditionally given to intense cultivation. That is what the World Bank did in regard to all the three projects, namely Gusau, Funtua and Gombe. The Bank, being an agent of the Western capitalist countries, is most reluctant to take any risk in making its investments, even when the proclaimed objective is to give financial and technical aid to the developing countries.

Number of Project Participants:

Another variable which did not indicate or explain success was the growth rate in the number of project participants.8 This suggests strongly that more is required of small farmers than just "participation" for a project to be successful.9

FARMERS' INVOLVEMENT

It has been borne out both by my case study as well as by this survey that most important factor in project success is the small farmers' involvement in project decision-making during the project implementation stage and the willingness of the small farmers to make a resource commitment to the project. If this commitment is in cash, then the project success is more than assured. But if the farmer's participation is limited only to the extent of investing what the project staff are keen to lead to the farmer, then a project success based on castle standing on sand. As soon as the project subsidies and credit are withdrawn, the farmers' commitment to modernization collapses. And along with this also collapses their capacity to take any more risks. It has further came out of this analysis that the overall success of the project is greater when pre-project farm income is high, a large portion of the farm income is generated by the sale of cash crops, social services are provided in the later part of the project implementation stage, and the small farmer feels his landholdings are reasonably secure.

But it does not appear certain that a high level of literacy or location mean an all-wealth road and necessary conditions for project success. Indeed, for a project sample, both variables came into an regression equations with negative signs.10 This analysis only confirms this writer's personal observation to the effect that education and closeness of motorable road drafts the younger members of the farm families into towns, thereby leaving farming into older and weaker hands and in this way, ensuring failure of the agricultural development projects.

ACQUISITION OF AGRICULTURAL KNOWLEDGE:

The acquisition of knowledge was greater for higher income farmers who sold a greater percentage of their crops for cash. Knowledge acquisition was also greater when social services were provided in the latter stages of the project. These factors, in turn, ensured greater degree of farmer participation and hence, ensured larger measure of project success.

SELF HELP CAPABILITY:

Local grouping and organizing are a more important determinant in generating a small farmer self-help capability. The overall local action variable explains 50 percent of the variation in the self-help capability index.10 In contrast to the earlier two variables (namely Income/Cost Index and Agricultural Knowledge Index), the local involvement was the drivining force. None of the resource commitment were significant in our equations; on the other hand, both involvement variables in the planning phase and in the implementation phases seem to be important in generating self-help capability. High farm income and the extent to which the farmer sells his crop for cash also appear to be significant. So, in order to increase self-help capability in the small farmer, the factors discussed earlier are very important and increase in self-help capability is a clear factor contributing towards project self sufficiency.

SELF SUFFICIENCY INDEX:

The overall local action variable explained 46 percent of the variation in project self sufficiency. Thus, local action is an important determinant of the level of self-sufficiency attainable by the Project. The correlation with the other variables, such as cash crops, provision of social services, etc. is again positive. In other words, a project having farmers' involvement in decision-making and providing cash crops and better social and educational services, stands better chances of survival after the project subsidies, have been withdrawn.

In conclusion, it can be said that those local inhabitants who are already further along the path to development, as measured by per capita income and involvement in market economy, are more likely to benefit from a project than smaller, closer-to-subsistance farmer. The overall success of a project does not depend upon favourable environmental factors, nor upon the size of landholding and therefore, there is no conflict between overall project success and small farmers benefits. These factors are complementary. Even literacy rate and market access are not very significant factors for project success.

It is, therefore, very necessary for policy makers to be specific in their policy preferences. If they really aim to improve the lot of the small farmers, and not just to provide better avenues for capitalist farmers, then they must plan development projects to that end and at the implementation stages, they have to prescribe specific techniques of extension and other services which would deliver the goods and services to the stipulated quarters. Project success should be measured on the criterion of benefits provided to small farmers and the project staff should also be assessed on the same yardstick, so that rewards and punishments are promptly and objectively meted out along side with the progress of the project.

CHAPTER FIVE

CONCLUSION

GAINS FROM THE PROJECT:

If government policy is viewed in the light of the state of our agricultural production during the 1970-75 period when the annual growth rate averaged only 1.3 percent per annum and the import bill for food and livestock had risen from N60 to N300 million, then the policy of selecting a piece of exceptionally fertile and intensively cultivated land and putting it under intensive agricultural development to be brought about by an internationally selected team of experts is a sound one. Viewed from that point of view, the Gusau Agricultural Development Project has been a remarkable success. The rate of growth in the project area shot up to 17 percent; the average GDP income, which in 1975 stood around U.S. $60 per capita rose in 1980 to more than $150. In terms of total increase in the production of the five grain crops. viz, cotton, sorghum, maize, groundnuts and cowpeas, there has been such a phenomenal growth in not only the Gusau Project area but in all the three areas that people in the government now acclaim that a Green Revolution has occured in Nigeria.

As the World Bank evaluation data shows that between 1976 and 1978, average

project farmer yields increased by about 20 percent and aggregate production grew 12 percent per annum, with particular significant production increases for sorghum and cowpeas. Under proper agronomic conditions, maize yields have been twice those of traditional sorghum and millet. Groundnut production has benefited from rosette resistant varieties made available by the GADP's seed farm. However, in the case of cotton, total production could not match the targeted figures. But in place of cotton, the farmers took to other cash crops because there is reay and better market for these cash crops.

Incidentally, that shows the flow in a rigidly planned development project when the farmers do not respond to a particular item of development as provided in the project, but instead they prefer to take to certain other remunerative crop, then the project Management should show sufficient flexibility in transferring their attention and input delivery system towards the farmers' own preferential crop.

INFRASTRUCTURAL DEVELOPMENT:

Even more important development in the project area has been the building of the infrastructure of Agricultural development. In some cases actual performance has exceeded appraisal targets. Some 760 kilometres of feeder roads have been constructed against a target of 660 kilometres. These feeder roads have had a salutory impact on marketing and input supply. What is even more important is continuing to construct feeder roads outside the project area for which it is being reimbursed by the concerned Local Government Councils.

Equally successful is the programme of constructing office and residential buildings and small dams. In all, 43 F. SC. (as against a target of 40 FSC) and numerous other buildings have been constructed. As regards dam construction, the progress has not been high, for only 42 against a target of 60 small dams have been constructed.

TRAINING OF THE EXTENSION AND TECHNICAL STAFF:

Another significant contribution of the project has been in the training of the extension and other staff. Sokoto State has been very deficient in trained manpower in all area of economic development; and therefore, any effort in the direction of trained manpower is a step in the direction of self-sustaining growth. And the work which the Gusau project has done in this direction is remarkable. Of course, there would still remain deficiency in technical and professional staff. But what would be a general feature of Nigerian economic development as a whole. So far as the agricultural development programme is concerned, there would be a steady flow of trained people at the lower and middle rings of our agricultural administration. Thus, the Gusau project has laid the foundation of a sound system of manpower training and the progress would grow in Fourth National Development Plan period.

GUSAU AS A GROWTH CENTRE:

All the above mentioned factors have made the Gusau Project area look like a Growth Centre an area which is agriculturally more developed than other areas of the State and where better job opportunities have been created. Now, the economic theory of Growth Centres is that area and people covering the Growth Centre have not only become an example of development after having received the development inputs and extension services from the project administration but that their development has reached a stage when the Administration would get automatically extended to the other parts of the country. In other words, a Growth Centre is supposed to have developed certain 'sparks' of development which begin to radiate their warmth all around. Considered from that point of view, the Gusau Project looks a moderately successful effort. For, the project has now grown into a "programme" and this programme covers up much larger area than that of the earlier project. As against the project area of 4,250 square km. of land, the extended programme would cover a total area of 11,600 square km. As against the project having served only the Gusau Local Government area with a population of 445,005 the programme would service the whole of the Gusau Zone extending over Gusau, Kaura Namoda and Anka Local Governments. The Table below would give an idea of the extent to which the development sparks of the Gusau Growth Centre would reach in the second phase, 1980-85.

Category:	Gusau Project		Kaura Namoda		Kaura Namoda	
	Sq. km.	%	Sq. km.	%	Sq. km.	%
Mainly Arable Area	4,100	96.47	7,413	62.08	10,934	99.56
Arable	2,465	58.00	4,077	34.14	5,011	22.71
Other Land within mainly arable	1,635	38.47	3,336	27.94	5,923	26.84
Unreserved Bush	150	3.53	587	4.92	4,799	21.75
Forest Reserve	0	0.00	3,942	33.01	6,331	28.69
Total Area	4,250		11,942		22,064	
Population	445,005		819,376		956,627	

The most significant fact about the programme is that while the original project was concentrated on area of intensive arable cultivation (having barely 3.50% as bush land), the extended programme will cover a larger proportion of uncultivated land. Out of the total area of 22,064 squre kilometres, only 10,934 square km. is mainly arable which makes it less than fifty percent. This is quite typical of the land area of the State as a whole, which was not true of the original Gusau Project.

THE IMPACT OF INFLATION ON PLAN TARGETS:

Although inflation in Nigeria has been endemic, yet the government does not base its planning on the projected rate of inflation. Nor do they take any effective step, during the plan period to curb inflation. There is inflation in this country not

because the money supply has been increased. The demand pull factor should be viewed against the countering shortages recorded in the price index in the Central Bank surveys conducted during the plan period. Internal shortages are playing as important a role as "imported" inflation through all sorts of consumer goods being imported from the very high price countries of Europe and America.

Although so many regulatory and price control and goods supply agencies have been established by the government, yet the irony is that none of these controls and regulation have been effective in checking price rise which follow such an eratic curve as not shown any regular co-relationship with the demand and supply laws. The result is that none of our plan targets have fractified. Ours is a detracting economy and all our programmes for the weaker sections of the population and up for the benefit of the affluent manpower. This is particularly so with regard to the agricultural and rural development programmes.

Even a cursory look on the Central Bank quarterly monetary reports would show that the savings effected in this country are fairly high and yet these increasing savings have not led to commensurate economic or industrial growth. Why is that so? The reasons are quite clear. The country has to import most of its food and other requirements, and along with goods it imports inflation from all those countries which supply its needs. The higher the rate of inflation, the lesser is the risk-taking capacity of the government in making investments in large-range development programmes; thus leaving her no option but to fall back on short-range and quick-result-yielding projects. And we saw in our analysis above, these projects benefit only the well-to-do people, leaving very little for the poor farmers or small scale investors to gain anything from the projects, thereby widening the income gap between the rich and poor sectors of the community. Thus, a vicious circle is created; well, the circle is vicious only from the point of view of the poorer sections of the people. So far as the rich people are concerned, this is real development and this is the pattern of development that they want. So, where ever a government tries to break away from this vicious circle, as the Kaduna State Government under PRP has been trying to do, by replacing projects by comprehensive Integrated Rural Development Programme involving the State as a whole, the richer farmers and middle men raise a hue and cry and even the World Bank becomes reluctant to contribute anything in such programmes.

A VIABLE PLAN OF ACTION:

It is in order to get away from this politics of development projects that I tried to devise a viable plan of action which I could suggest to the State Government. The survey analysis contained in Chapter Four gives us those factors which function as some determinants of developing the small farmers through practicable and politically viable plan of rural development.

APPENDIX I

METHODOOLOGY

INTRODUCTION:

I have already described in the Introductory Chapter, a summary of my research approach. This Appendix is included to clarify the details of the methodology used and the limitations inherent in data collection and analysis of a complex rural development project. In addition, this descriptive summary of my methodological tools and techniques has been written in the hope that it would make some contribution to research methodology and project analysis as they apply to agricultural development programmes. The outline of the Appendix is as follows:

1. General overview of the Research methodology.
2. Data collection methods.
3. Description and justification of Quantitative techniques.
4. First stage model specification:- Project success criteria.
5. Second stage model specification: Local Action criteria.
6. Description of all variables used in the Quantitative Analysis.
7. Details on the Quantitative Analysis.
8. Uses of this Research Design.

1. GENERAL OVERVIEW

Basicall, my objective has been to develop a set of findings which would help the State Government in Nigeria to improve their methods of identification, farming and implementation of agricultural development projects. In developing the tools of research and analysis, I have drawn partly upon the written literature all over the developing world and partly upon information collected through observation participation stretching over a long period of a decade of agricultural development in Sokoto State. While the above have been used primarily as supplementary documentation, my primary source of information has been drawn from an Evaluation Report of the Gusau Agricultural Development Project from 1975 to 1980.

On the basis of the tentative conclusion drawn from the above mentioned sources, I draw up a conceptual model of project success — success to be measured not only in terms of the overall improvement in agricultural production but more in terms of the benefits shown by the poor farmers who from the breakdown of the rural economy and still comprise by far the largest number of the population of the country. The project success model enabled me to qualify my variables which yielded raw data concerning the most significant determinants of project success. this raw data

was subjected to various aggregation methods, simple correlation and multiple regression techniques which has made it possible to single out relationship (or their diservice) between a number of key variables as specified in my model. for example, various quantitative and qualitative definitions of 'success' were coded; these were then, regressed on a number of possible factors that might be determinants of success.

The model constructed is very simple, and the statistical techniques employed are quite straighforward and therefore, the conclusion drawn can only be taken as a suggestion. Knowing this, I have complemented my statistical work with reflections on what lessons can be learnt from my case study and from discussions and writings of other experts.

My aim was to collect a large amount of information that could be compared across the three World Bank funded Projects and also within the different development areas of Gusau Project. For this purpose, a questionnaire was developed and revised several times. The information finally collected was coded for comparative analysis. Most of the questions were open-ended since the idea was to gather as much information as could possibly be illicited. In order to contain any vagueness arising out of the questionnaire, this researcher has himself gone round conducting interviews to make the process more simplified. When it was discovered that an accurate procedure of the project success could not be obtained from interviewing the staff of the headquarters, this researcher had to visit various areas and villages to interview the field staff as well as farmers and other ruralites.

The interviewer visits were concentrated, often consuming more than one day-and-night, in the local area/village to continue discussions in the evening with the project field staff and/or the farmers and members of their familites. The table below would give some idea of the sources of my data and my assessment of its quality.

TABLE 1 NUMBER OF PERSONS INTERVIEWED

FOREIGN DONORS	PROJECT STAFF				
	National	Project	National	Regional	Local
Funtua	2	6	4	5	10
Gombe	2	9	2	9	2
Gusau	2	8	6	49	33

	GOVT.		STAFF	SMALL FARMER	OTHERS
National	State	Local	(Partici-	(e.g. Academies etc)	
				pants)	
	5	10	5	20	11
	5	6	0	8	0
	15	27	45	150	38

3. DESCRIPTION AND JUSTIFICATION OF ANALYTICAL TECHNIQUES

My Project success model is based on very simple formulations. I have pointed that success and local action are determined by a set of other factors and that I can portray these relationships in single equations. In these formulation, success and local action are dependent variables; the factors to explain them are independent variables.

The modelling is admittedly crude and the data here is not perfect; hence the aim underlying my statistical approach is to keep it as simple and straightforward as possible. For these reasons this work is based primarily on simple correlation analysis and stepwise multiple regression analysis. In what follows, I give a brief description of these techniques and how they were used.

A number of statistical techniques were used to analyse the data collected. Laws of these techniques — factors analysis and standard scores — were used specifically as aids in scale building. I employ three techniques in the analytical works, viz, (1) differences in means were examined (ii) simple correlation measured the association between variables, (iii) stepwise multiple regression analysis was used to identify determinants of project success and local action. Some tests were, then, used as tests of significance for statistical measures cited in this thesis. Detailed description of these techniques are described below:-

Scaling Techniques:

The use of standardized scores was adopted in the construction of scales because the components of the proposed scales in raw score from had unequal variances and ranges. To eliminate the problems inherent in adding these scores together — which involves arbitrarily weighing some components of the scale more than others, I standardized each set of raw scores so that each scale had a mean of 0 and a standard deviation of 1. The equation used to standardize these scale is: $\frac{xi - \bar{x}}{}$ = Standardized score of xi where xi is the raw score of a given case, $\bar{x}$ and 0 are the means and standard deviation of the raw scores, respectively.

Standardized score can be interpreted as showing the distance of the project score from the mean in standard deviation units scores. For a formal distribution of values, about 95 percent of all items are within about two standard deviations of the mean.

Factor analysis was used to identify common deversions among the more than 50 variables on national data that I examined. In brief, factor analysis generates a correlation matrix of the variables on each factor. (1) I have used my own judgement as to what each factor is describing based on variables that load on it and then, build scale based on those factors. While these factors could have been built with scales, they were for three reasons: First, factor analysis requires subjective judgements as to what a given factor may mean in terms of the variables that were loaded on it. This is an especially risky proposition where only 36 cases are in the data set. Second, the regression analysis showed that when a national condition characteristic was an important independent variable, other variables that the factor analysis showed to be related to that variable did not come in as explanatory variables.

Third, the soft-wave computer techniques which I borrowed from Bari's and Goodnights Book was unable to generate the necessary factor coeficients for building this scale.

Analytical Techniques:

A T-test was used to test for differences in means between two sample sets. The mean (x), variance (5^2), and number of values (N) from each sample set are used in the equation:

$$T = \frac{\bar{X}1 - \bar{X}2}{\sqrt{\frac{N1\ 5^21 \times N2\ 5^22 + N1 + N2}{N1 + N2 - 2} \quad \frac{}{N1\ N2}}}$$

The significance value of resulting T-Values for various degrees of freedom was then, determined by reference to a of student's found in any standard statistical book (2).

CORRELATION COEFFICIENTS:

Correlation coefficients measure the degree of the relationships between two linear variables. They range in values from — 1 to +1. A negative correlation indicates that a high value on one variable is associated with low value on the other variable. A positive correlation indicates that the variables are directly related, i.e. when one does the same and vice versa. The higher the positive or negative values of the coefficience, the more certain one can be as the strength of the relationship. Along with any correlation coefficient, I include the associated significance level which gives the productivity that the specific correlation in question could have accrued if the variables were truely independent of the probability of a spurious correlation. Just, to illustrate this point, take up the following correlation coefficients:-

Yx599, x619 = .708
(.00001)
(33)

Yx599, x257 = .154
(,520)
(24)

The first correlation shows a significant position correlation between x599 and x619 of .708 only .001 percent of the time which a correlation of this magnitude with 33 cases occur when x599 and x619 are truely independent. The second correlation shows an insignificant correlation between x599 and x257. In this case, there is a 52 percent probability that the low variables are truly independent, when using correlation coefficients in this thesis, a level of .05 or better is used as denoting that there is a significant relationship between any variables.

I generated correlation coefficients for all the data and examined them continually in my model development. These coefficients were also used to warn us of the

danger of high correlation among independent variables in the same multiple regression equation.

MULTIVARIATE TECHNIQUES — REGRESSION ANALYSIS

Because the level of success and local action are clearly affected by more than one factor, some sort of multivariate statistical analysis was called for. I chose to use single equation stepwise multiple regression analysis on the ground that it was relevant to my needs as well as being more easily comprehensible.

Throughout this study, stepwise regression analysis was used to find the best equation for each dependent variable. This technique finds the best equation for a 1,2,3,..... in variable model and selects those equations which progressively give the largest R^2 where each variable in the model reflected increases the R^2 by a significant amount. The procedure also reports the T = ratios for each variable in the equation.

g 4 2

Multiple regression analysis generates several important statistics. The coefficient of multiple determination (R^2) measures the percentage of the variation in the dependent variable that can be explained by variations in the independent variables when the number of diservation is limited (as it is in this study) the R^2 should be adjusted for degrees of freedom, I have used R^2 to designate the adjusted R^2.2.

Each independent variable has a regression coefficient. This coefficient, when multiplied by a small change in its dependent variable, will give the "best estimate" of the resulting change in the dependent variables The t-ratio is a measure of the probability that the regression coefficient has the right numerical sign. Throughout this study, I look upon regression analysis primarily as a test of the accuracy of signs, e.g., does this variable have a positive or nagative impact on project success?

The following example will explain the techniques and interpretation of regression equations;

$$x559 = .023 = .249 \times 619 \quad (5.583)$$

$$R^2 + .485$$

The numbers preceeding the independent variables (here, there is only one independent variable, (x619) are the regression coefficients. They measure the effect of a marginal change in the respective independent variable on the dependent variable. In this case, the equation indicates that an increase of one unit in the overall local action score (x619) would increase the success score (x599) by .249. The t-ratio for the regression coefficient appears in parentheses under the coefficient. The t-ratio can be interpreted as a measure of the certainty in the sign of the regression coefficient. If it is assumed that the values of the variable are normally distributed, a t-ratio value of 2.10 measure with 10 degrees of freedom, there is only a give percent change that the sign of the regression coefficient is incorrect. In the example given above, the t-ratio is 5.585, which means that the probability that local action has a negative impact on project success is considerably less than one percent.

The R^2 is 485, meaning that 48.4 percent of the variations in project success score can be explained by variations in local action scores. My objective in this study is to identify the key determinants of project success and consequently, I have focussed my attention on the t-ratio.

Let me hasten to note here that I am quite aware of the shortcoming of such single equation formulation. Obviously, causality does not run solely from independent to dependent variables, and further, there are causal interactions among independent variables. However, with the limited number of observation, I have had to work with and the quality of my data, there is little point in developing more complex models at this point and time.

4. FIRST STAGE MODEL SPECIFICATION — SUCCESS

As has already been explained by the introductory Chapter, my first task in this study is to identify those factors that maximize the chances for the success of a project from the point of view of the small farmers; and secondly to identify the determinants of the various types of local action required on the part of the small farmers to maximize the chances for project success. I have already defined the underlined terms and hence, I need not do that again here.

For the development of my success model, I collected the following data;

INCOME/COST RATIO (x519): An adjusted ratio of total income from the project received by the farmers (and other participants in the project area), to total costs of the project paid by the sponsor — both the Government as well as the World Bank.

AGRICULTURAL KNOWLEDGE INDEX (x567): An index of the agricultural practices adopted by small farmers as a result of their acquisition of new agricultural knowledge.

SELF HELP INDEX (x572): An index of the increased capacity of local organisation or groups to raise the income and improve the welfare of small farmers resulting from the project.

SELF SUSTAINING INDEX (x566): An index of the likelihood that the benefits generated by the project will become self sustaining.

These variables and the data points used to obtain the ratio and indices have been explained in some detail in Chapter Four and need not be repeated here. However, a word of explanation is called for on the Replicability Index which was, later on, added to my success model.

6. REPLICABILITY INDEX (x527):

Since I undertook the research with a view to developing objectively, provable recommendations which would help the State and Federal Governments to improve agricultural project designs for use in different environmental conditions, a Replicability Index was added to my success indication. Qualitative judgements on replicability were made by the field and headquarter staff of the Gusau Project after they had been fully briefed about the objective and nature of the evaluation model. Two factors were of primary importance in this exercise, namely:

1. The uniqueness of the environment past history of the project and the social, cultural and economic relationships which have evolved over time and;

2. The uniqueness of the project leadership and the level of motivation and managerial administrative talent demanded by the development approach.

The purpose of the ranking was to uncover unique and specialized features which make generalization on replicability unsound. This index was intended to reveal such manual project features as the social and cultural solidarity of Hausa people in the Gusau development area where hundreds of thousands of Naira is locally generated, saved/lent locality. The index also singled out leadership requirements imposed by the highly developed and sophisticated organizational structure of the Funtua Project Administration of Kaduna State.

The rankings contain only two top-level '5' ratings, indicating case of replicability. Both projects are variation on traditional extension models of agricultural development. Neither was particularly outstanding, scoring in the below 25 percent in the concluded success measures. The correlation coefficient between overall success and Replicability for both projects was less than .01, i.e., vx599, x527 .01, suggesting that there is not relationship between the case with which a project can be replicated overall project scores. No separate raw scores were obtained, and the rankings were completed on a scale of one, for many unique features which hinder replication up to five, for no significant problems in replicating the project elsewhere as shown in Table 2 below.

TABLE 2: PROJECT SUCCESS (x599) COMPARED TO PROJECT REPLICABILITY (x527)

	OVERALL SUCCESS (x599)[1]	REPLICABILITY)[2]
Gusau Project	1.85447	4
Funtua Project	1.78411	1
Gombe Project	1.15785	3

v x599, X527 = .007

1. The sum of four standardized success components
2. Coded: Significant defficulty in Replication of of development Approach = 1. Ease of Replication of Development Approach = 5.

1	2	3	4	5
Significant Difficulty Replication	Some difficulty		Less ease in Replication	Ease in Replication

5. SECOND STAGE MODE SPECIFICATION: LOCAL ACTION CRITERIA

In the beginning when I was developing the research methodology for this study, I had constructed a two stage conceptional model. The first stage model related to

Project Success indices, while the second stage model conceptualized the Local Action indicators. The idea behind this two stage model was that a development project, which enables the small farmers to start certain developmental activities on their own, would have better chance of bringing about self sustaining growth even after the project administration has been withdrawn and the small farmers have been left to their own resources. Four components are selected as local Action indicators and these were:-

1. Small Farmers' involvement in project programming and crop selection.

2. Small Farmers' involvement in the day-to-day implementation of the project targets.

3. Small Farmers' contribution by way of free labour, e.g. in road construction etc.

4. Small Farmers' contribution by way of money, e.g. community development projects.

Data were collected under these heads from the Gusau project. Some how the whole exercise was found to be too time consuming; and therefore, this model was abandoned in order to save time and resources so that the first stage of the study could be completed as early as possible. It is, however, my belief and ambition to undertake, at some later stage a two stage-study of all the twelve agricultural development projects now operating in the country.

6. DESCRIPTION OF ALL VARIABLES USED IN THE STUDY

g 4 4

Variable No.	Definition of Variable, and when applicable coding
	INSTRUCTIONS
x19	Literacy Rate; percentage of project participants who have the ability to read a basic farm manual.
x20	Cash crop output; for project participants, percentage of output in cash crop.
xRAV24	Per capita income; for project participants, pre-project per capita income in dollars (World Bank figures).
x34	Extension workers, on project level, average number of farm units per extension worker.
x36	Primary extension responsibility; for those extension workers that interact with the farmers Code: General or combination = 1 Crop specific extension work = 2.

x4640 Land Security: Percentatge of project participants with reasonable security (those with ownership titles plus those with reasonable secure tenures over farm land).

x57 Average farm size: for project participants in areas.

x79 Past experience with organization; average score of project participants perception of similar development projects, governmental departments and other organizations.

x80, x81, x82 Level of social services, prior to project (x80) early in the first half (x81); and late in the plan period (x82). Code significant, moderation none.

x164 Market access, for the project, percentage of communities within five kilometres of all weather road.

x484 Degree of subsidization: required in getting farmers to accept technological change. Code: Significant = 4; moderate = 3 little = 2; none = 1.

x519 Adjusted ratio of total project costs to total project income over the five year period, standardized (a component of x599).

x528 Small farmer involvement in idea generating and initial project design; Code: Scale 1—5 1 for non and 5 for high involvement.

x530 Small farmer involvement in the implementation phase. Code: Scale 1 to 5: dialogue = 1 decision making and control = 5.

x531 Relative importance of individual or groups to provide small farmer inputs into the implementation phase. Code = 1 to 5 scale, Individual input = 1; Group inputs = 5.

x532 Small farmer technical inputs (extension research etc.). Code 1 to 5 Scale; None = 1; High = 5.

x534 Externally provided costs provided by the number of farm family participants over a give year period.

x537 Relative importance of individual groups to provide small farmer resource commitment Code save as x531,

x565 Importance of two way information flow in the project, Code = 1 to 5 Scale, None existence = 1; Information flow functional to change both project Design and farmer behaviour = 5.

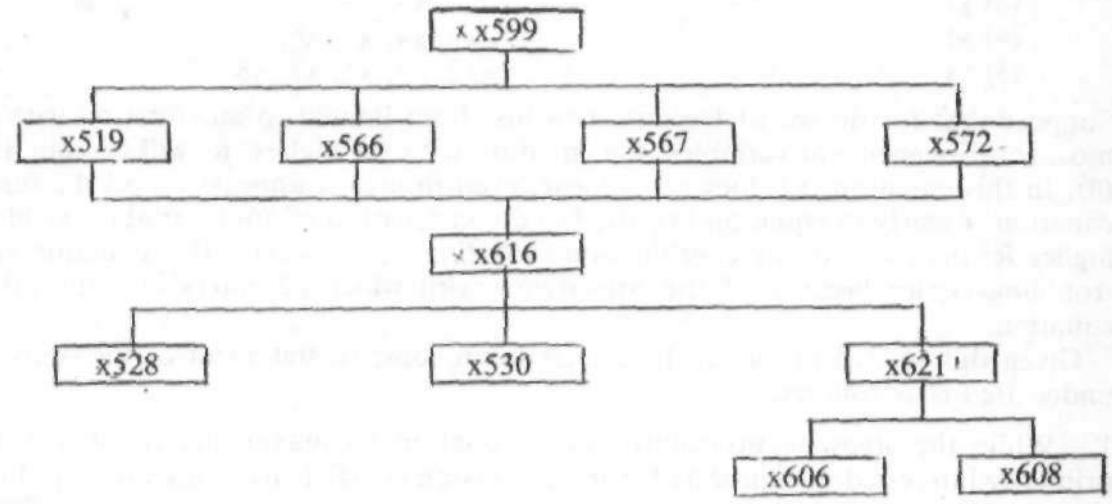
z566 Scale of self sufficiency (as component of x599) See Chapter Four.

x567	Scale of increased agricultural knowledge (a component of x599).
x572	Scale of self help capability (a component of x599).
x573	Percentage, pre-project and post-project, in on-farm faulty income.
x598	Credit commitment: that portion of small farmer resource commitment which comes from actual credit repayment. See Chapter Four.
x599	Overall success. See Chapter Four.
x602	Naira value of labour: Resource commitment increase or decrease of man-days as a result of the project times the prevailing wage rate in the area. Part of Local Action model Data not utilized.
x603	Actual Money resource commitment in Naira, increase or decrease in money commitment of small farmer. Part of Local Action model. Data not utilized.
x604	Total farmer resource commitment, addition of x602 and x603.
x606	Value of labour resource commitment (x602) divided by the average of pre-project and post-project on-farm income. Standardized. See Chapter Four.
x608	Value of money resource commitment (x603) divided by the average of pre-project and post-project, on-farm income. Standardized. Chapter Four.
x613	Value of labour resource commitment (x602) divided by project costs per participant over a five year period.
x614	Value of money resource commitment (x603) divided by project costs per participants over a five year period.
x615	Value of Total resource commitment (x604) divided by project costs per participants over a five year period.
x621	Total small farmers resource commitment (x604) divided by the average of pre-project and post-project, on-farm family income. Standardized.

7. DETAILS OF QUANTITATIVE ANALYSIS

The linkages between project success and their respective components are built as follows:-

TABLE 3. PROJECT SUCCESS, LOCAL ACTION AND THEIR COMPONENTS



The top box represents overall project success (x599); the four diversion of success are listed next (x519, x566, x567 & x572). I then come to the overall Local Action measure (x619); in the next row, the two local involvement measures (x528, x530) and total small farmer resource commitment measure (x621) are given and finally, the breakdown of farm resource commitment by type presented (x606, x608).

By this representation I do not mean to imply that other factors do not affect the chances for project success. However, because of the high degree of correlation between project success and Local Action, I consider this set as a very useful starting point of my analysis.

The simple correlation coefficients betwen all the variables included in Table 3 are given bewlow:-

	x599	x519	x566	x567	x572	x619	x528	x530	x621	x606	x608
x599	1.000										
x519	.699	1.000									
x566	.836	.354	1.000								
x567	.892	.571	.660	1.000							
x572	.801	.297	.715	.628	1.000						
x619	.708	.331	.688	.644	.719	1.000					
x528	.415	.137	.440	.266	.628	.700	1.000				
x530	.545	.093	.537	.646	.785	.837	.642	1.000			
x621	.558	.459	.502	.633	.223	.619	.067	.229	1.000		
x606	.199	.048	.289	.293	.086	.444	.012	.246	.465	1.000	
x608	.474	.476	.342	.483	.103	.357	.016	.070	.761	.220	1.000

STEPWISE REGRESSION:

As mentioned earlier, stepwise multiple regression analysis served as the primary technique in the quantitative examination of the parts of the model. Since the technique generates a succession of equation for each dependent variables studies, I followed the following sequence of equation:

DEPENDENT VARIABLES	INDEPENDENT VARIABLES
(1) x1	x2
(2) x1	x2, x3
(3) x1	x2, x3, x4
(4) x1	x3, x4, x5, x6,
(5) x1	x2, x4, x5, x7, x8.

Suppose that for degree of freedom reasons, I am limited to an equation with at most four independent variables, the equation with the highest R^2 will be equation (4). In this equation, x2 does not appear, even though it appears on all the other equation. Clearly in equation (4), the listed combination of four variables yields a higher R^2 than would any combination including x2. However, this equation is a troubling choice because of the consistency with which x2 enters into the other equation.

Given this sort of problem, the closest I can come to statement of the decision under used is as follows:-

1. While the stepwise procedure chose equation to maxmizing the R^2, I am primarily interested in sign tests for my regression coefficients. consequently, I excluded equation in which the t-ratio for the regression coefficient for any variable was less than 1.8. this means that there are no equation in which the sign of a regression coefficients is significant at less than the less percentage level.

2. Because of degree-of-freedom problems, I put an upper limit on the number of independent variables entering. When I was dealing with some project data only (3 observation), the upper limit of independent variables I allowed in was six. In cases for which I included national or sub-project data, I was always dealing with 28 observations or less, and in these cases, I allowed for independent variables at most.

The above is only an example of the regression equations I saw and the way I solved the problems arising because of degree-of-freedom. It is not possible to give a full account of the equation and analysis.

8. USES OF THIS RESEARCH DESIGN

In conclusion, let me draw a few lessons for further researchers in the field of rural development projects.

In the first place, it is my belief that the process that has been outlined in this Appendix and that I followed in this study has applicability to all those development programmes which aim at a behavioural change by some particular population, just for example, the field of family planning, housing, transporation, improved nutrition and public health. In each of these cases, whether urban or rural a considerable amount of information on local conditions is required, and much that is required is known by potential project participants. If the project is to succeed in the long run, their involvement in decision making and their resource commitments are required.

While this research design was conceived as more than a study of evaluation techniques, the nature of my methodology did call for the development of a set of success indicators that could be used in cost-project analysis. I sincerely believe that it would be worth considerating the possibility of introducing my success indicators into all other development projects undertaken at the state and even at Federal levels. Such standardized success measures based on objectively verifiable indicators, would help in cross project comparison and could, thus, improve the planning and implementation of projects using as much the same analysis as is used in this study.

APPENDIX II

NIGERIA
NORTH WESTERN STATE
GUSAU AGRICULTURAL DEVELOPMENT PROJECT
ORGANIZATION, STAFF REQUIREMENTS AND TRAINING

A. ORGANIZATION:

1. The project organization as described in Chapter VI of the main report would assume responsibility for all existing functions of Ministry of Agriculture within the project area, except for those aspects concerning animal health, fisheries, forestry, and irrigation. The project organization would follow the pattern as shown at Schedule 1 of this annex and would comprise a project executive committee, primarily controlling policy, budgets and audits, and an operational project management unit responsible for the day-to-day operations involved in implementation of project policies. The project executive committee and management unit would be established by a Government gazetted order, a proposed draft for which is at Schedule 2.

2. The Gusau Project Management Unit (GPMU) would operate through a number of sections; the head of each would be responsible to the Project Manager. The sections would be Administration, Finance, Technical Services, Credit Services, Market Services and Engineering Services.

3. The Administration Section: would be responsible for personnel administration, maintenance of records organization of project transport, office administration, project security and public relations.

4. The Finance Section woud be responsible for budgeting, budget control, Internal Audit, procurement, stores, salary payments accounting procedures, cost accounting, etc., I would help in setting up financial procedures for the revolving credit fund, and would conduct the internal audit of the fund.

5. The Technical Services Section would provide basic technical support and services to all those project actions designed to increase farmer productivity including:—

(a) Development Services would provide the coordinating link between marketing, credit and extension. The project would have 4 development centres each serving a development area and controlled by a Development Officer who would coordinate all project activities within the area. Apart from coordination, the Development Officer would be directly responsible for extension services. The latter would be organized on the basis of one Agricultural Assistant (AA) for each farm service centre. In turn each AA would supervise a number of Field Supervisors (FS) who would work the hamlet level. The AA and FS would provide basic extension advice to farmers and groups of farmers. Associated with the extension service would be a small livestock advisory unit that would (1) indentify livestock problems and make recommendations for livestock programme within the area; and (ii) provide advice on practical animal husbandry to those farmers engaged in livestock operations sponsored by the project. In this connection close liaison would be maintained with Government veterinary services.

(b) Seed Farms: Two seed farms at Gusau and Kauran Namoda would be developed to provide part of project seed requirements in conjunction with contract operations by some of the larger farmers in nearby areas. The see farms would be used for practical demonstration purposes, applied research and training. Seed farm management would also provide management advice to larger "commercial" farmers within the project area. These farmers would be directed to NAB and/or commercial banks for farm credit and the unit would asist them in this.

(c) Tractor Hire Services, now supplied by Ministry of Agriculture, would be continued under the project, but would be phased out gradually in favour of private contractors sponsored by the project.

(d) Training would be undertaken at the Gusau training centre the capacity of which would be expanded from 20 to 40 students, and at a new centre to be constructed at Kauran Namoda. The two centres would be used initially for training and retraining project staff in extension, credit, marketing and other disciplines. As the project develops, more of the available training capacity would be allocated to project area farmers.

6. The Credit Services Section, would be developed in paralled to the development services and would be structured around the Development Centres at District Level, and at the farm service centres at farmer level. The service would provide farmers with inputs in credit or for cash, assist in recovery of repayments, and keep accounts. An area Credit Officer would control credit activities within each development area, and each village service centre would have two Credit Assistant (Annex 9 gives details).

7. The Market Services Section, would be responponsible for produce inspection at produce markets, for market liaison and information, and for the control and

monotoring of Licenced Buying Agents (LBA). It would also be responsible for the development of group marketing system, and where necessary for linking producers directly with distant consumer, e.g. contracts for maize supply to southern feed mill operators. Each Development Centre would have a marketing Supervisor assisted by two market assistants. A produce examiner would be posted to each farm service cenre to service its market. Marketing services would be responsible for the logistics involved in handling and distributing farm inputs. In this respect the produce examiners would act as storekeepers during the period when markets are closed, and when the main handling and distribution of inputs would occur.

8. The Engineering Services Section, would be primarily responsible for implementation of the physical infrastructural programme for the project. It would determine design and make specifications for buildings, houses, offices, etc., prepare tender documents, evaluate bids, and supervise contractors. It would be responsible for the procurement of all plant, vehicles and equipment, and for their operation and maintenance. It would prepare designs for roads and associated structures, dams, and soil conservation works, and would ensure their construction according to plan. It would operate a project workshop. Finally it would have a special land use section to provide support for other project units as well as to provide information directly relevant to civil works construction. In all instances it would work closely with Ministry of Works Engineers.

B Staff Requirements:

9. Details of the number of staff needed for the project, their availability within the state and probable shortfalls are shown at Tables 1—5 of this Annex. Job descriptions and qualifications for the more senior positions are at Schedule.

3. In general, existing staff in the State have received inadquate trainihg and experience to permit them to effectively manage and operate the project and, therefore, internationally recruited staff would be necessary for some of the key posts. Existing staff in the project area would come under the project and additional staff would be transferred to the project from other areas of the state. Priority during the first two years would be given the project for those Agricultural Assistants completing on going courses. On this basis sufficient professional and technical staff would be available. Junior technical staff, particularly field supervisors (FS), would be recruited and trained by the project at its own training centres. Such training would initially comprise of simple short courses on specific crops and associated problems. The FS would receive further training after a period of field experience, and thereafter regular refresher courses. Inexperienced credit and marketing staff would be trained in a similar manner through a series of inservice training courses.

10. The Project Executive Committee on the advice of the Project Manager would be responsible for the appointment of all senior staff. Staff appointments at lower levels would be the responsibility of the Project Management Unit in consultation with relevant Government departments from which particular transfers might be made. Staff salaries are compatible with existing Government scales, and would from time to time be reviewed by the Project Executive Committee.

C. Staff Training:

11. Professional training is provided at Universities throughout Nigeria. The Ahmadu Bello University at Zaria in the Kaduna State caters especially for the six Northern States, although Northern Students attend both Federal and State Financed Universities elsewhere in Nigeria and abroad. A degree in Agriculture is given by ABU and the project would expect to recruit some of its professional staff as they graduate from A.B.U.

12. Diplomate (3 year course for holders of West African School Certificate) and certificate (2 years) level training is the responsibility of the Division of Agriculture and Livestock Serivce Training (DALST) of ABU. Graduates of these courses are employed by the Ministries of Agriculture and Natural Resources of the Northern States.

13. Four Schools are operated by DALST:-

(a) Samaru: (North Central State) (Kaduna State) Offering, at present, certificate courses in extension, farm mechanics, home economics and a diploma course in home economics. Expansion of this school, planned for completion by 1975, would add diploma courses in farm mechanics and extension to the syllabus.

(b) Bakura: (North Western State (Present Sokoto & Niger States) Offering a certificate course in irrigation agronomy; presently located at Samaru pending completion of the new school at Bakura.

(c) Kaduna Livestock Service Training: (North Central State) Offering certificate course in livestock and range management, and diploma courses in animal products inspection, and range management.

(d) Kabba: (Kwara State) Offering diploma courses in agriculture at present, and certificate courses in agriculture from 1974.

14. Present enrollment at these schools is as follows:-

School /1	Course	1st year Students	2nd year Students
Samaru	1st year agricultural /2	215	—
	Agricultural Assistants (AA)		
	Farm Mechanics	—	16
	AA Extension	—	59
	Home Economic Assistants (HA),		
	Home Economics	40	22
	Diploma, Home Economics	—	12
Bakura	Irrigation, Agronomy	40	25

Kaduna	Livestock Assistant /2	81	41
	Diploma, Animal Health	16	13
	Diploma, Range Management	—	12
Kabba	Diploma in Agriculture /3	198	—
	Total =	590	200

15. The output of diplomates (Agricultural Superintendents) and certificate holders (Agricultural Assistants) bonded to work through the terms of their scholarships for North Western State is forecast as follows: 1974 — 12; 1975 — 27; and 1976 — 36. These, together with intra State transfers, would meet project requirements (see Table 2).

16. The existing training of agricultural extension staff, graduates, diplomates and certificates holders is sadly lacking in practical farm management, and the availability of senior staff in the field to give advice to farmers directed at increasing profit margins needs to be greatly improved. At present extension staff tend to give blanket advice without considering economic implications. Training establishments, for both senior and junior staff, should improve the quality of their farm management training.

17. Farm training centres are operated by North Western State and graduate Field Supervisors (FS), the lowest grade of extension workers. the State also has farm institutes for training farmers and farmers' sons. Under the project is is proposed to upgrade the existing Gusau Farm Institute to a Farm Training Centre and to build a new Farm Training Centre at Kaura Namoda. These centres would be used to train, in the initial years of the project, project staff particularly FS and Credit Assistants. Later on the emphasis would be more on farmer training.

18. The recruitment of individuals for training Field Supervisors, Credit Assistants, etc. should not cause too many problems since the basic primary level of education is relatively good throughout Norther Nigeria, and there is an increasing surplus of West African School Certificate holders on the labour market.

19. Staff recruited by the project would be expected to have certain minimum qualifications: Agricultural Officers — degree in Agriculture; Agricultural Superintendents — diploma or upgraded from lower level; Agricultural Assistant — Certificate; Field Supervisor — Primary Seven Credit Officer — degree or diploma, or certificate in accountancy preferably with some commercial bank experience; Credit Assistants — West African School Certificate; Market Supervisor; — degree holder or relevant experience in market organization; Marketing Assistant — West African School Certificate; Produce Inspector — Primary Seven; Rural Engineer — Engineering degree.

20. The terms and conditions of the employment of project personnel would conform with those established for all employees of the State Government except that professional and technical grade staff would be provided housing as an incentive to

live and work in remote areas, and that new terms would be made for both expatriate and Nigerian contract staff. For expatriate staff contract terms would take into account the international market for such staff and the benefits that normally accrue to such appointments. For Nigerian Staff contract terms would provide similar benefits as normal pensionable Government Staff but would also provide for a gratuity (to be determined by GPEC) in lieu of a pension.

21. Management Training: In addition to technical staff, training project management would play an important role in training staff to fill managerial positions. In this respect internationally recruited staff would, as one of their responsibilities, ensure the adequate training of their subordinates and would be required to submit to GPEC, through the project manager, quarterly reports on the training aspects of their section. The project manager would have the overall responsibility for ensuring that an adequate management training programme is maintained and would report regularly on its progress. There are sufficient funds available for the recruitment of training specialist if the project manager so requires.

NIGERIA

SOKOTO STATE
GUSAU AGRICULTURAL DEVELOPMENT PROJECT

Establishment of Project Management Unit

1. As a condition of loan effectiveness, the Sokoto State Executive Council would be required to publish an order in the State Government Gazette establishing the Gusau Project Management Unit (GPMU). The order would set out the objectives and responsibilities of GPMU and GPEC and would include the following:

2. The GPMU would be managed by a Project Manager and its objectives should be:—

(a) development of the project area with a view to increasing production of agriculture and raising the living standards of the rural population;

(b) construction of roads, water supplies and soil conservation works associated with agricultural development;

(c) development and management of seed multiplication farms;

(d) training of project staff and farmers;

(e) provision of village service centres and stores;

(f) provision of extension, credit and marketing services;

(g) procurement of farm inputs; and

(h) development of supporting infrastructues such as houses, buildings, offices, etc., for the above services.

3. The GPMU would be controlled by the Gusau Project Executive Committee (GPEC) which would be made up as follows:-

(a) Permanent Secretary	—	Ministry of Agriculture.
(b) Representative	—	Ministry of Finance.
(c) Representative	—	Ministry for Local Government.
(d) Representative	—	Ministry of Trans. and Works.
(e) Representative	—	Ministry of Economic Planning.
(f) Representative	—	North-Western State Water Board.

(g) Director of Federal Agricultural Development or representative.

(h) Chief Agricultural Officer for the North Western State.

(i) Two members from the project area to be appointed by the Military Governor.

4. GPEC would be responsible to the Commissioner of Agriculture and would have the following responsibilities:

(a) Policy: GPEC would determine agricultural and development policy, and would consult with the Federal Government and the World Bank when any major changes in policy may be required;

(b) Finance:

(i) GPEC would approve the annual budget and would ensure that sufficient Government funds are readily available to the project;

(ii) GPEC would appoint independent auditors;

(iii) GPEC would submit audited project statements of accounts to the Commissioner of Agriculture within four months of the closure of each financial year;

(iv) GPEC would approve the opening of project bank accounts;

(v) the chairman of GPEC would approve the monthly cash flow statements submitted by the manager of GPMU;

(vi) approve annually the terms of lending to project farmers on the basis of recommendations made by GPMU.

(c) Staff and Personnel Matters: In consultation with the Manager of GPMU, GPEC would be responsible for the appointment of all senior project staff and employees, their terms and conditions of employment and annual review of salaries and allowances;

(d) Award of Contracts: GPEC would, on the advice of the Manager of GPMU, be responsible for approval of any single contract valued at more than N30,000;

(e) Inter-Departmental Coordination: The GPEC, through its members, would be responsible for the coordination at Ministry level for those issues that may affect the proper development of the project.

5. Meetings of GPEC:

(a) The Chairman would preside over all the meetings of the GPEC which he attends, and in his absence the present members would appoint one of their number to preside over such meeting.

(b) The Chairman of the GPEC would invite the GPEC to meet at such time and place as he may think suitable; provided that no more than three months would elapse between any meeting and the next. In absence of the Chairman, the Manager would call the GPEC to meet whenever he deems this necessary.

(c) Six members of the GPEC would constitute a quorum of any meeting of the GPEC. The GPEC would pass its decisions by the Majority of the votes of its members present and voting, and in case of equality of votes the Chairman would have a casting vote.

(d) The GPEC may call any person to attend any of its meetings without that person having a counted vote.

6. GPMU would be responsible to GPEC for the day-to-day operations of the project. In particular it would be responsible for the carrying out of the objectives as stated in para 2 above. GPMU would be managed by a Project Manager who would report directly to the Chairman of GPEC. The main duties of GPMU would be:-

(a) the implementation of an agricultural development programme in the Gusau Project Area following the policy guidelines of the GPEC;

(b) the control and operation of the project revolving credit fund;

(c) the preparation of annual budgets and cash flows for approval by GPEC. In particular GPMU would submit to the Chairman of the GPEC monthly cash flow statements indicating any changes in requirements for State Government funds due to changes in project expenditures and inflow anticipated from the Federal Government. Unless informed to the contrary within 5 days of despatch of such statements to the Chairman of the GPEC, the Manager would be authorised to make the proposed expenditures;

(d) the recruitment of project staff, in consultation, when necessary, with other Government Departments, and for senior staff with approval of GPEC;

(e) the advertising, negotiating, calling for tenders, and after approval by GPEC, for concluding such contracts with persons and organizations either inside or outside the state for the erection of buildings, the construction of civil works and the supply of goods, services and materials as may seem to be requisite for the proper discharge of its duties;

(f) the operation of reimbursement claims, against project expenditure for submission to the Federal Military Government and the World Bank.

7. GPMU would administer a field evaluation unti that would be technically directed by a Federal Military Government controlled Project Monitoring and Evaluation Unit (PMEU).

8. GPMU would prepare quarterly and annual reports for the simultaneous submission to GPEC, North Western State Executive Council, Federal Military Government of Nigeria and the World Bank.

9. GPMU would be delegated any additional duties and powers by GPEC to the attainment of the objectives as set out in this order.

NIGERIA
NORTH WESTERN STATE
GUSAU AGRICULTURAL DEVELOPMENT PROJECT

Job Descriptions and Qualifications of Senior Staff

Project Manager:

Of the two main criteria (experience and qualification) for the selection of a Project Manager, experience carries a much greater weight.

At least 10 years' experience in successful agricultural development work in the field, including development-oriented projects, preferably in Africa, would be required. A high degree of administrative ability, an experience in dealing with the highest level of Government, especially in committee work, and previous involvement in extension small farmer communities would all be necessary.

The responsibilities of the Project Manager would be the overall and complete control of all project activities and the coordination of all project activities with

those of other Federal and State Government agencies and Local Authorities. His duties would include:-

(a) control of all project funds with the assistance of the Chief Accountant;

(b) establishment of a cost analysis and record keeping system which would enable project progress and achievement to be monitored and a meaningful evaluation of the project's impact possible;

(c) responsibility for project personnel matters with the assistance of the Chief Administrative Officer;

(d) coordination of all project activities;

(e) reporting project progress to Government through written reports and through the various project committee; and

(f) training project staff and ensuring a proper management training programme is successfully implemented.

The Project Manager would be responsible to the Chairman of the Gusau Project Executive Committee (the Chairman being the Permanent Secretary of the Ministry of Agriculture).

Chief Administrative Officer:

The Chief Administrative Officer would be a very senior civil servant; or have had equavalent experience in a major public corporation or private company. In previous employment he would have undertaken senior administrative responsibility and have gained a thorough understanding of government procedures:

(a) responsibility for all project personnel;

(b) project transportation;

(c) maintenance of a project registry;

(d) the physical control and checking of project stores;

(e) the general project security;

(f) the public relations aspect of the project; and

(g) training administration staff.

He would be directly responsible to the Project Manager.

Chief Accountant:

The Chief Accountant would be a professionally qualified accountant with additional training in business management. He should have had at least 10 years' experience in a senior position in a large public corporation or commercial company. If possible, he would have a knowledge of banking and credit procedures. Previous employment involving working with high ranking government officials would be an advantage.

His main responsibility would be the control of all project finances on behalf of the Project Manager. His duties would include:-

(a) preparation of budgets, cash flows and estimates of expenditure for the project;

(b) ensuring correct application for project fund;

(c) assisting the Credit Manager in establishing an efficient and meaningful system of recording agricultural credit transactions;

(d) the responsibilities for project stores and requisities with the assistance of the section and department heads and for stores' control and audit procedures;

(e) Internal auditing of project accounts; and

(f) training accounting staff.

Chief Technical Officer:

The Chief Technical Officer would be a qualified agriculturalist. He would have thorough knowledge of tropical crop production and related problems.

he would have had at least 5 years' experience in extension work with small farmers where cotton, groundnuts and cereals were part of the cropping system.

He would be responsible for all technical aspects of the project and his duties specifically would include:

(a) organizing research, and seed multiplication and distribution, with the assistance of the Seeds Officer and Farm Managers;

(b) supervision of the training programme for all extension staff;

(c) organizing and ensuring the effectiveness of extension services in the project area;

(d) supervising the Livestock Advisor, the Farm Machinery Section and the Farm Management Advisor; and

(e) liaisoning with and assisting the Market Section to ensure it meets the project's requirements in marketing.

He would be directly responsible to the Project Manager and would assist the Project Manager in his dealings with other government and local authority agencies in matters related to the Technical Services.

Chief Engineer:

The Chief Engineer should be a qualified civil engineer. Some training in mechanical engineering would be an added advantage.

He would have had at least 5 years' experience in the problems of rural engineering in developing countries. A sound knowledge and experience in road, water, and soil conservation engineering would be considered essential. He would have had senior administrative responsibility in the engineering field and would be accustomed to working with government agencies.

His duties include:-

(a) control of all project engineering activities;

(b) budgetary control;

(c) the preparation of all tenders, contracts, and quantity surveys;

(d) supervision of land use planning, and the design of project roads, building dams; and

(e) for the efficient coordination of the different units of the project engineering services, and close liaison with those other Government departments, such as the Ministry of Works and the Ministry of Local Government, who may be associated with the project.

He would be directly responsible to the Project Manager.

CREDIT MANAGER:

The Credit Manager would be a professionally qualified accountant with a demonstrable sound working knowledge of the establishment and corporation of rural credit institutions. He would have at least 5 years' of experience in responsible positions in smallholder rural credit administration, and have a record of sound administrative ability. Experience in the formation of farmers' credit groups or societies and working with these organizations, and/or cooperatives, would be an advantage. His prime responsibility would be the control of project farmer credit operation, which would involve initially the disbursement of loans in kind and their recovery.

His duties would include:-

(a) formation of a Revolving credit Fund as outlined in the project appraisal report;

(b) establishing an efficient accounting and recording system for farmers' loans;

(c) requisitioning of funds and other required inputs for timely disbursement and supply to farmers;

(d) liaison with the Evaluation Unit to provide data and information needed in project evaluation; and

(e) training of credit staff.

The Credit Manager would be responsible to the Project Manager.

Chief Marketing Officer:

Senior management responsibility in a large marketing organization would be the principal qualification of the Chief Marketing Officer.

He would have experience in the production, primary marketing and selling of tropical crops, particularly cotton, groundnuts and maize.

He would be responsible for the project's Marketing Services, and his duties would include:-

(a) monitoring and controlling the operations of all licensed buying agents operating in the project area;

(b) establishing a market information service;

(c) liaison with the statutory marketing boards and other organizations, private and public, to ensure the effective marketing and smooth flow of produce from the project area;

(d) coordinating with the Credit Manager to establish a system of credit collection at time of crop marketing.

He would be directly responsible to the Project Manager.

Senior Farm Manager:

The Senior Farm Manager would have some formal training in agriculture, but more importantly would have had at least 10 years' successful experience in managing large commercially oriented farms in the tropics. A specific experience in cotton, groundnuts, sorghum and maize production, or at least two of these crops would be required. Previous experience in growing these and other crops for seed production would be helpful. A sound knowledge of farm recording and accounting procedures would be essential.

The Senior Farm Manager would manage one of the project farms and would, through another manager, be responsible for the second project farm. In total he would be responsible for the efficient operation of a 400ha unit growing cotton, groundnuts and cereals for seed.

His duties would include:-

(a) budget preparation and cash flow control for the farm;

(b) preparation and implementation of a cropping plan for the farm;

(c) establishment, maintenance and operation of a suitable seed dressing and cleaning unit for the farm;

(d) procuring, maintaining, and operating appropriate farm machinery;

(e) control of farm labour;

(f) assisting the Farm Management Advisor in providing advice and assisting the large privately owned farm units of the project area, especially those growing seed on contract;

(g) liaison with the Seeds Officer on technical seed production matters; and

(h) training junior staff in practical large-scale farming.

He would be responsible to the Chief Technical Officer.

Seeds Officer:

The Seeds Officer would have had formal training in agriculture or agricultural botany. He would have had specific experience in commerical large-scale seed production, preferably with at least two of the following: cotton, groundnuts, maize, and sorghum. He would advise the Managers of the Seed Multiplication Farms on seed production and would be responsible for ensuring the distribution of improved seeds to farmers in the project area.

His duties would include:

(a) advising and assisting the Farm Managers in producing and operating suitable seed cleaning and dressing units;

(b) sponsoring progressive farmers in seed production and thereafter for advising them in seed production techniques;

(c) the building up of a viable seed industry in the project area; and

(d) the training of technical and professional project personnel in seed production and distribution.

He would be responsible to the Chief Technical Officer.

Land Use Planning Officer:

The Land Use Planning Officer would have had formal training in agricultural, soil science or land resource use; land surveying and photogrammetry. Previous experience in Land Resource Work and associated land and agricultural development planning would be essential.

Duties of the Land Use Planning Officer would be to:-

(a) prepare specifications for the production of aerial photographs and uncontrolled mosaics of the project area;

(b) undertake a complete photo analysis of the project area and prepare land use resource maps and inventory of the area;

(c) plan, in conjunction with the Chief Technical Officer, the location of roads and dams to be constructed under the project;

(d) prepare all drawings, etc., of dam, soil conservation and road designs that may be submitted by the engineering sections of the project;

(e) undertake photo-analytical work that may be required by the evaluation unit or Chief Technical Officer;

(f) undertake any such other mapping and surveying considered necessary by the Chief Engineer;

(g) give general guidance on Land Resource use to Engineering and Technical Services staff; and

(h) train Nigerian staff in land use and associated techniques.

He would be directly responsible to the Chief Engineer.

Soil and Water Conservation Engineer:

The soil and water Conservation Engineer would have had formal training in engineering, preferably related to dam construction and soil conservation. He would have had at least 5 years' experience in earth dam construction and soil conservation in Africa. He would be responsible for the overall supervision of the dam construction and soil conservation component of the project. His responsibilites would include:-

(a) survey and design of water catchment areas and dams;

(b) design and planning, and supervision of construction of all soil conservation work;

(c) liaison with the Road Engineer and Land Use Planning Officer in integrating dam construction and soil conservation works into a general land use plan and the road building programme; and

(d) training project staff in dam construction and soil conservation work.

The Soil and Water Conservation Engineer would be responsible to the Chief Engineer.

Mechanical Engineer:

The Mechanical Engineer would be a professionally qualified engineer with specific experience in operating and maintaining heavy earth machinery. His principal duties and responsibilities would be supervising the operation and maintenance of all project plant, equipment, and vehicles.

His duties would include:-

(a) establishment of a workshop capable of maintaining project plant, equipment and vehicles;

(b) ordering and maintaining an appropriate supply of stores and spare parts;

(c) ordering and maintaining an adequate and suitable fuel supply, and

(d) training of Nigerian mechanical engineers.

He would be directly responsible to the Chief Engineer.

Road Engineer:

Successful experience in the design, construction and maintenance of earth roads in tropical climates would be the main qualification of Road Engineer. The Road Engineer would be responsible for implementing the project road programme. His duties would include:-

(a) advising the Chief Engineer on road design, drainage and water disposal, culverts and river crossing designs;

(b) the direction of all machinery and equipment put at his disposal for construction purposes;

(c) the preparation and maintenance of records adequate to enable unit costs to be established;

(d) evaluation of road construction programme and techniques used; and

(e) training Nigerian engineers in road design and construction methods.

He would be directly responsible to the Chief Engineer.

Senior Evaluation Officer:

A Senior Evaluation Officer would be required to direct the field enumeration units attached to the project. His job would be essenitally to supervise enumerators, implement programmes set out by the Head of the Project Monitoring and Evaluation Unit (PMEU) evaluation section, and feed back the required information for analysis. His views and suggestions would be taken into account during the programming of the enumeration process and any subsequent amendments to it. The senior evaluation officer would be technically responsible to the Head of PMEU evaluation section and administratively responsible to the Project Manager. He would also control and direct the field enumeration units.

The Senior Evaluation Officer would have post graduate training in Agricultural Economics or Rural Economics.

Footnots on Introduction — Research Focus and Approach.

1. Published by East African Publicing House Nairobi, 1971.
2. Published by Gerald Duckworth and Co. Ltd., London, 1970 are very good empirical studies in which problems of the small farmers have been very nicely identified.
3. Philip H. Coombs and Manzoor Ahmed (co-authors), the John Hophins University Press, Baltimore, 1979.
4. Eodger Owens and Robert show (co-authors); Lexington Books, Lexington, Massachusettes, 1972.
5. Reanan Weitz (author), Published by Colombia University Press, New York, 1971.
6. U.S.A. Aid Workshop Repost, Addis Ababa, Ethiopia, Oct., 1973.
7. Keith Griffin (author) and sponsored by Ford Foundation. The study is mineographed.
8. M. Lissak (author). The Hebrew University, Jerusalem, Israel, 1973.
9. This researcher has had a very long association with agricultural devevelopment programmes in the Sokoto State going on to the early seventies when he was a Chief Inspector in the N.T.C. Project of Tobacco Production in the then North Western State of Nigeria.
10. For details, please see Appendix I
11. Ibid.

Foot Notes on Chapter One

1. Published by the Ministry of Agriculture and Natural Resources and provided by the Coxton Press (West Africa) Limited, Ibadan 1974.
2. Morss, Elliot R., Hatch, John K., etal: Strategies for small Farmers Development: An Empirical study of Rural Development Projects (Mimeo), I.S. AID. Washington D.C. May, 1975.
3. Gusau Agricultural Development Project Report, January— March, 1980 (Mimeo) P.3
4. Agricultural and Rural Development in Nigeria, 1980 Five year Progress Development of Rural Development, Federal Ministry of Agriculture.
5. How Revolutionary is the Green Revolution, published by the Voluntary Committee on Overseas Aid and Development 69 Victoria Street, London, April, 1972.
6. Haruo Nagamire: Evaluation of the Progress in Intergrated Development: ECAFE, United Nations, Bangkok. 30th November, 1970 (Mimeo).
7. Ibid.
8. Nobody is destined to be a beggar: Extracts from the speeches of Alhaji Abdulkadir Balarabe Musa, Governor of Kaduna State, Ministry of Internal Affairs and Information, Kaduna, 1981 P.23.

Footnotes on Chapter Two

1. Agriculturl Development in Nigeria, 1973 — 1985; Federal Ministry of Agriculture, Lagos, 1975.

Footnotes on Chapter Three

No notes.

Footnotes on Chapter Four

1. For details about the models and Methodology, see Appendix 1.
2. Chafe, Kotorkoshi, Bungudu and Kauran Namoda.
3. Powell: "Agriculturl Enterprise and Peasant political Behaviour". Purshe University, Lafayette, Indiana, 1972.
4. C.L.G. Bell and John H. Duloy: "Formulating a Strategy" Chapter V in Redistribution with Growth, op. cit, pp. 91—92.
5. See section G, P. 421, for a complete description of the Variables and coding Instructions.
6. See, for instance, the Federal Ministry of Agriculture Progress Report for 1978/79.
7. See Appendix I
8. Refer to Table No. 2.
9. This writer has had quite a hot argument with the Project Officers on this count, because they equate farmers' drawing of Credit and other Services offered by the GPMU with Project Success.
10. Table No. 1 (income/cost Ratio).

Footnotes on chapter Five.

1. "The monitoring and Evaluation of the Funtua, Gusau and Gombe Agricultural Development Project", 1980 IBRD.

Footnotes on Appendix I

For this suggestion I am indebted to the Chief Statistical Officer of the Sokoto State Ministry of Economic Planning who came to my help at a time when I was very baffled with the problem of standardazation of scores.

1. These computer soft wave techniques were borrowed from STATISTICAL ANALYSIS SYSTEM: By Bari, A.J. and Goodnight, J.M. and published by North Carobira State University press, 1972.
2. For instance, Statistics: An Introduction to Quantitative Economic Research, by Daniel Suits, Rand McNally, Chicago 1973.

But I do have in mind to continue this research after my Master's Degree and probably register the same subject for my Doctrate Degree (PH.D.).

BIBLIOGRAPHY

1. East African Magazine on Green Revolution Published in 1971 in Nairobi.
2. Gerald Duckworth and Co. Ltd., Empirical study on Agricultural Development. — London 1970.
3. Philips H. Coombs and Manzoor Ahmed John Hopkins University Press, Baltimore 1979.
4. Eodger Owens and Robert Show, Lexington Books, Lexington, Massachusettes, 1972.
5. Reanan Weitz, Publiched by Colombia University Press, New York, 1971.
6. U.A. AID Workshop Repost, Addis Ababa, Ethiopia, Oct. 1973.
7. Keith Griffin, sponsored by Ford Foundation. The study is mineographed.
8. M. Lissak. the Hebrew University, Jerusalem, Israel, 1973.
9. Published by the Ministry of Agriculture and Natural Resources and Provided by the Coxton Press (West Africa) Limited, Ibadan, 1974.
10. Morss, Elliot R., Hatch, John K., etal: Strategies for Small Farmer Development: An Empirical study of Rural Development Projects (Mimeo), U.S. AID. Washington D.C. May, 1975.
11. Gusau Agricultural Development Project Report, January — March, 1980 (Mimeo) P.3.
12. Agricultural and Rural Development in Nigeria, 1980 Five year Progress Department of Rural Development, Federal Ministry of Agriculture.
13. How Revolutionary is the Green Revolution, published by the voluntary Committee on Overseas Aid and Development 69 Victoria Street, London, April, 1972.
14. Haruo Nagamire: Evaluation of the Progress In Integrated Development: ECAFE, United Nations, Bangkok. 30th November, 1970 (Mimeo).
15. Speeches of Alhaji Abdulkadir Balarabe Musa, Governor of Kaduna State; Ministry of Internal Affairs and Information, Kaduna, 1981. P.23
16. Agricultural Development in Nigeria, 1973-1985; Federal Ministry of Agriculture, Lagos, 1975.
17. Powell: "Agricultural Enterprise and Peasant Political Behaviour". Purshe University, Lafayette, Indiana, 1972.
18. C.L.G. Bell and John H. Duloy: "Formulting a Strategy" Chapter V in Redistribution with Growth, op. cit, pp. 91-92.
19. Various publications including Pamphlets, Magazines and Files from State Ministries and the Gusau Agricultural Development Project.