CHAPTER FOUR

A DESCRIPTION OF THE PROPOSED PILOT PROJECT ON CASSAVA

4.1 Introduction

This Chapter provides a detailed description of the proposed cassava project. The Chapter is composed of 7 sections and discusses the details of the project, developments which will take place under the project and issues such as organisation, activities falling under the project, project costs and financing. Most of the facts and figures presented in this Chapter are based on my own reasearch. It should be underscored that the incorporation of a pilot cassava project in the study area is as highlighted in Section 1.7 meant to facilitate the technical, financial and economic analysis.

4.2 The Planning Framework

This project is planned along the logical planning framework (Log-Frame). This is given in Annex 4. The logical framework is an analytical tool for project planning, monitoring and evaluation, and implementation guide. Planning involves defining goals, setting objectives, defining targets and putting up a programme of activities. In logical framework analysis these aspects are co-ordinated through logical linkages.

By description the logical framework is a 4 x 4 matrix comprising the narrative summary in the first column, objectively verifiable indicators in the second column, means of verification in the third column and assumptions in the fourth column. The first column has

four rows which comprise the goals to be realised through the intervention, the purpose of the project, the expected outputs and activities. Within the columns there is a vertical logic and correspondingly a horizontal logic across the rows.

The goals are broad achievements of the project. These are a measure of the contribution of the intervention to welfare. Examples include improvement in food security, balance of payments, standard of living, etc. For this specific project the goal is to increase/enhance food security. The purpose is the direct impact of the project and being what the project should realise. Thus, the purpose of the proposed project is to increase cassava production for human and livestock consumption. The outputs are the results from various activities carried out within the context of the project. These are stockfeeds and cassava. Finally, the activities are all those actions that have to be taken in order to realise the goals, purpose and get the outputs. These will be highlighted in Section 4.6. These include labour, seed, fertiliser, agrochemicals, etc.

There are three logical linkages up the column. The activities or actions are meant to organise inputs into production or outputs which is the first linkage. As per our example, all the activities highlighted in the above paragraph results in production of legumes and vegetables being the outputs. The second linkage is a continuity of the first linkage and connects the outputs to purpose. The horizontal logic links the various elements of each column. The goal, purpose, outputs and activities are linked to objectively verifiable indicators, means of verification and assumptions.

The major strengths of the log-frame are its simplicity,

comprehensiveness, flexibility and multiplicity of uses. One of the major elements in planning is the adoption of the SMART concept in objective formulation. This means that objectives should be specific, measurable, achievable, realistic and time bound. The logical framework is designed to do just that. By breaking the narrative summary into goals, purpose, outputs and inputs the main objective is to enhance focus thereby increasing specificity and realism in objective formulation. The second column of objectively verifiable indicators aims at enhancing timing, specificity, measurability, achievability. It also audits the realism of the objectives. The third column supports the second column. The column of assumption puts emphasis on achievability and realism. Without realistic assumptions chances are that the goal may not be achieved. From the foregoing the importance of the logical framework in comprehensive planning cannot be over-emphasised.

In this context the logical framework will be used for planning, monitoring and evaluation. It will also be used to assess the performance of project managers and, the accuracy and effectiveness of the cost benefit analysis.

4.3 Description of the Project

The project is oriented towards improving food security. Ideally its fundamental goal is to enhance food security. Its purpose is to increase production of cassava for human consumption and production of stockfeeds. A summary of the goals, purpose, inputs, outputs and major assumptions underlying the successful implementation of this project are given in Annex 4. It entails producing cassava for direct human consumption and stockfeed production. Under direct human consumption cassava will be consumed in various forms. Cassava meal or chips can be roasted and consumed directly. Ground

dry cassava will be blended with wheat flour and maize meal for baking of biscuits and cooking of "sadza", a traditional staple in Zimbabwe. In this respect current research findings indicate that flour or maize blends of less than 30 per cent cassava do not corrupt the taste of bread and "sadza" ,i.e. experiments have indicated that such blends are below the taste differential threshold of consumers. The other advantage of cassava is that it has a high starch and low gluten content hence improves the crumb in biscuits, and the cooking quality in bread and "sadza." With respect to "sadza" the implications are that the quantity of maize meal used in the cooking is reduced i.e mealie meal is saved. Thus, the overall cost of food is reduced whilst the usage period of a given quantity of mealie meal is extended. There is thus a double positive impact on food security. On another score, and in terms of adoption of cassava it is deemed that natural calamities such as droughts will accelerate the adoption of cassava.

In terms of meat supply (protein) the project will provide a cheap stockfeed which makes meat production, especially pork and poultry, very cheap. This provides scope for greater consumption of meat hence improved food security. The importance of cassava in stockfeed production was detailed in Chapter 1 where its use as a stockfeed was underscored.

The project has two main components which are field production of cassava and processing. The analysis in Chapter 5 indicates that it will be more viable from a socio-economic perspective to produce cassava as a secondary crop. This project therefore adopts the use of contour ridges, alleys and field edges for cassava production. A proposed farm plan for such a strategy is given in Annex 2. It should be born in mind that this strategy is semi-extensive and as such does not result in production of very large quantities of

cassava. However, it is very effective in promoting adoption and managing cassava diseases.

Furthermore, it should be emhasised that under the current situation which is charaterised by declining food security it would be more desirable to adopt a production strategy that increases overall food production as opposed to crop substitution. In this context the use of alleys/contour ridges is meant to minimise the displacement of maize by cassava or as it were optimise land utilisation. Thus, maize and cassava will complement each other in achieving the food security goal.

This project will concentrate on sweet varieties because they have a better taste, lower concentration of cyanogenic glucosides and shorter production cycle. The botany of cassava is given in Chapter 5 where a comparison of the two varieties is given. A match of the physical and relief features of the study area which are given in Chapter 4. This together with the botany of cassava gives sweet varieties as a better option for Zimbabwe.

The planting material will be drawn from the Research Stations under the Department of Research and Specialist Services (DR&SS), Ministry of Lands and Agriculture. There are on-going cassava multiplication and distribution activities being executed by the Department. This project will benefit from the current experience of the Department. In this context the staff of the Department which is currently working on cassava will be co-opted into this project.

The subject of planting orientation vis-a-vis yields and ease of harvesting is discussed in Chapter 6. In this discussion the advantages of horizontal orientation are highlighted. Thus, in this

pilot project a horizontal planting orientation will be adopted. This is meant to maximise yields and make it easier to harvest.

The production season will last about 7 months. The normal season of sweet varieties is about 12 months. However, in order to fit this project into the socio-economic environment of smallholder farming the 6 - 7 months period will be adopted. Planting starts just before the rain season or between August and November and harvesting starts in May. A reap and replant approach will be encouraged in order to optimise labour. Most of the field activities will be done manually.

The processing of cassava for stockfeed manufacturing involves washing of harvested cassava then cutting it into chips. These chips are then sun or machine dried. After drying the chips are ground into cassava meal. This meal is then mixed with other stockfeed ingredients in various proportions to produce various stockfeed rations or used for preparation of human feed.

The main capital items which fall under the processing sub-head include a mill, vehicles, offices, accommodation, factory building and office equipment. The mill comprises squeezers, driers, grinding mills, mixers , bulking silos, scales and packing machines. Squeezers are for squeezing out water from the tuber. Driers expedite the drying process. The mills grind the dry cassava into meal. It is important to note that most grinding meals can perform this function. The mixer is used in conjunction with stockfeed manufacturing. It mixes the various stockfeed ingredients in the prescribed ratios. The weighing and packing systems functions are by definition.

This project will procure two integrated feed manufacturing mills

each of which will service one of the two provinces. The stockfeed processing flow diagram is given in Annex 3. At the household level grinding services will be provided by existing hammermills. The project will therefore not procure additional hammermills for grinding cassava for human consumption. In each of the two provinces a factory complex comprising offices, accommodation for staff and a structure to house the mill will be built. Office equipment will comprise computers, telephones, copiers, furniture, etc.

Each of the stockfeed processing mills will be manned by a general manager, a clerk, a bookkeeper and 10 general workers. Additional requirements include the managers car, staff houses and 1 x 3,5 tonne truck for deliveries. Stockfeeds from the two factories will be sold to local farmers for use in production of pigs and poultry.

4.4 Proposed Developments

The proposed developments fall under two main categories, viz, cassava production and stockfeed processing. The developments associated with stockfeed processing were adequately covered in the previous section so this section will concentrate on the farm plan. The project area has 408 351 households of which 85 per cent or 347 098 are rural. The project will be developed over a period of four years and based on the adoption curve. The adoption curve classifies a population on the basis of adoption. It comprises five broad categories which include innovators, early adopters, early majority, late majority and laggards. The categories are delineated on the basis of rate and timing of adoption.

In this context, 2,5 per cent of the population or innovators will be targeted to adopt cassava production in the first year. The

second year will target the 13,5 per cent of the population which is the early adopters category and the third year will target the early majority being 34 per cent of the total number of households. The fourth year will target the late majority being 34 per cent of the population. It is assumed that there will be no significant adoption by the 16 per cent of the households comprising the laggards hence production will reach the threshold in year four. Table 4.1 below shows the adoption rate, cumulative adoption and projected cumulative production of cassava. Adoption rates are based on the classical adoption curve, cumulative adoption is calculated from the adoption rates and census figures of the project area, and cumulative production is calculated from cumulative adoption and production estimates given in Annex 2.

Table 4.1: Adoption and cumulative production of Cassava

Year	Adoption Rate %	Cumulative adoption (Households)	Cumulative Production in MT Based on Wet Mass
Year 1	2,5	8 677	3 645
Year 2	13,5	55 535	22 325
Year 3	34,0	187 432	78 722
Year 4	34,0	319 529	134 203
Year 5	00,0	319 329	134 203

Cumulative production of cassava is calculated on a projected average yield per plant multiplied by the projected planting population and the number of households. Annex 2 provides details on the assumptions on which production is based.

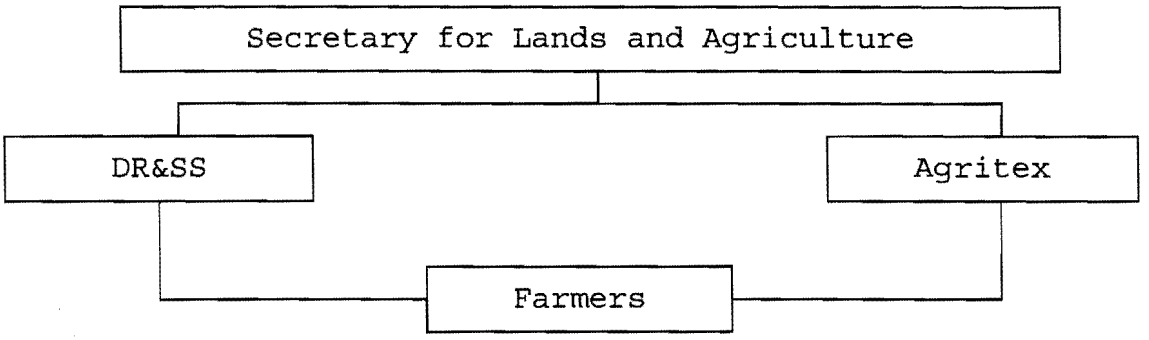
The use of the adoption curve in the development programme has two distinct advantages. Adopting this approach enables the synchronisation of the supply of inputs especially planting material with projected increase in production. Secondly, it gives a more realistic estimation of projected production.

4.5 Organization and Managerial Systems

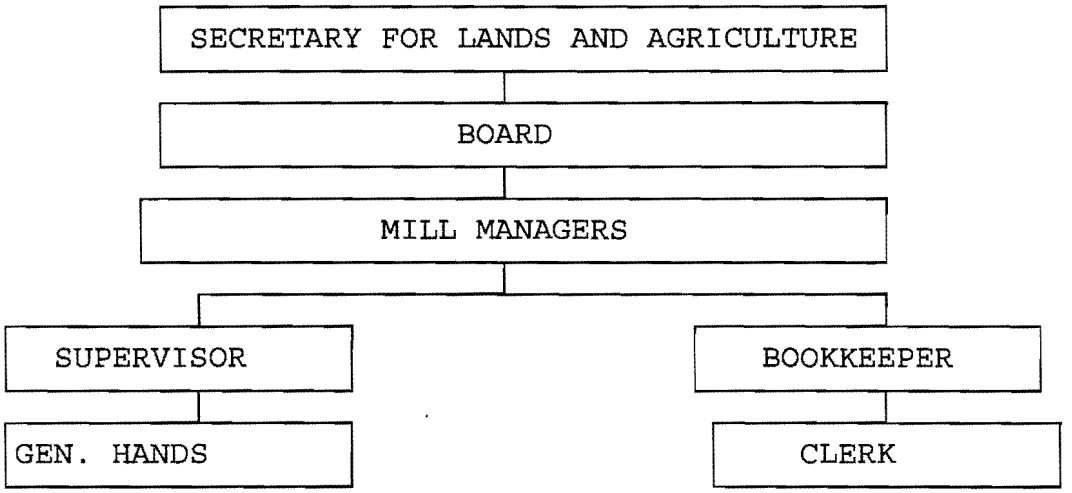
The whole project will be managed by the Secretary for Lands and Agriculture. The three Organisations involved in the implementation are Department of Research and Specialist Services(DR&SS), Agritex and the Stockfeed Factory. The main functions which falls under the project are processing, training and research. Farmers would need to be trained on production and utilisation of cassava. DR&SS will provide research services pertaining to cassava development. It will also co-ordinate the establishment of nurseries. Both DR&SS and Agritex will provide training on processing and use of cassava. Agritex will provide extension on production.

The project will be implemented through the Departments of Agricultural Technical and Extension Services (Agritex), and Research an Specialist Services(DR&SS). Agritex has an office in each of the 13 districts in the study area. At the grassroots there is at least one extension worker per ward. The district extension offices will co-ordinate with DR&SS and in turn co-ordinate with the grassroots through field extension officers. All these structures report to the Secretary for Lands and Agriculture through their respective Directors. The proposed organogram for management and implementation of the project are as shown below.

Structure Showing Relations Between Farmers and Support Institutions



Organogram for the Management of Mills



In order to enhance the effectiveness of the implementation process a Committee comprising farmers representatives, DR&SS, Agritex, the Factory and the Policy and Planning Division will be established. The main function of this Committee will be to facilitate the implementation of the project.

4.6 Activities

The previous sections described the main components of the project and this section concentrates on defining the main activities

falling within these components. These activities are summarised as below. Annex 5 provides details on the schedule of activities.

- Mobilisation of funds;
- Establishment of an Implementation Committee;
- Procurement of factory equipment and vehicles;
- Multiplication of planting material;
- Distribution of planting material;
- Identification of beneficiaries;
- Recruitment of factory staff;
- Demonstrations and training on the safe use of cassava;
- Construction of accommodation and offices

Following the completion of the project document mobilisation of funding for the project will begin. This exercise is expected to take about 3 months. Within the same period an implementation Task Force will be set up to spearhead the project. After securing funding the expansion of the multiplication and distribution exercise will commence. Thus, the procurement of distribution vehicles should take place almost at the same time or earlier. Extension on production also begins around this time. These two activities are ongoing. Furthermore, this activity will go in tandem with the identification of beneficiaries. Towards the end of the production season demonstrations and training on processing and utilisation of cassava begin.

The construction of factories should commence half way through the first year of implementation. This goes in tandem with the procurement of mills. It is then followed by the installation of mills. These activities also go along with the recruitment of factory staff.

4.7 Costs and Financing

The costs of the project are tied to the activities highlighted above. The total cost of the project is US$ 499 000. These are apportioned as listed below. The project will be financed by donors. Government of Zimbabwe will provide staff and land. The main cost sub-heads for the project are as follows:

ITEM	COST(Z$)
4 x 7 tonne trucks*	4 000 000
2 x Stockfeed Mills*	2 400 000
6 x field days	180 000
1 x twin cab pick up*	800 000
Travel and Subsistence	1 500 000
Accommodation and offices*	4 000 000
2 x Mill managers	420 000
2 x Mill clerks	120 000
2 x Bookkeepers	240 000
20 X General hands	480 000
Fertilisers, planting material, agro-chemicals, office equipment.	1 500 000
Study Tours	800 000
Maintenance	2 400 000
Fuel	400 000
TOTAL	**19 240 000**

* Denotes investment capital

The total costs of capital items is $11,2 million and the main capital items are vehicles, mills, buildings and study tours. The items falling under the recurrent costs sub-head include labour, inputs, fuel and maintenance. The total annual budget for these

items is $1.9 million. Travel and subsistence and study tours account for $2.3 million of the total budget. This project will be financed by Donors. The Government of Zimbabwe will provide the manpower to run the project, and land. The project life is 10 years.

4.8 Conclusions

In this chapter a description of the proposed project on cassava production which is one of the main elements of the study is provided. Most of the facts and figures provided are based on research conducted by the author. The project proposal is based on the logical framework. The use of cassava in the preparation of human food, confectionaries and as a stockfeed is elaborated.

A semi intensive mode cassava production is identified to be most compatible with the current farming systems and sweet varieties are deemed to be the most appropriate variety for the proposed project. This is based on taste, shorter gestation period and other factors. The processing of cassava for household use and large scale commercial production of stockfeeds are summarised.

The main developments include establishment of stockfeed mills and building up cassava production. The growth in cassava production is based on the classical adoption curve. The management of cassava production will largely be an affair of farmers, Department of Research and Specialist Services, and Agritex. Stockfeed mills will be established under a "Built Operate and Trasnfer" and as such will initially be owned by Ministry of Lands and Agriculture with an autonous management structure put in place to run the enterprises. The total cost of the project is Z$19,24 million of which capital items account for Z$11,2 million. The project life is

ten years.