

PN-ABS 868

AN EVALUATION OF THE CURRENT  
AND POTENTIAL ECONOMIC STATUS OF  
THE RICE CENTRES OF BOZOUH AND SAKAYE  
IN THE CENTRAL AFRICAN REPUBLIC

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August 1984

## SUMMARY

A number of problems exist both at Bozoum and Sakaye if their activities are considered with the intention of transforming the rice centres into independent self-financing institutions. While some problems are common to both projects others are specific.

The key problem at Bozoum at the present time is that the level of activities is too low to permit the centre to operate independently. The irrigated area is shrinking and plans for exploiting rainfed rice cultivation depend upon the availability of appropriate equipment. Even if these difficulties are resolved the operation still remains finely balanced with little or no margin for mis-management or natural disasters. In any event assistance will be required until 1967.

At Sakaye, once the existing irrigation system is put in good working order the centre is capable of becoming viable provided that it lightens its capital structure. The more intensive cultivation at Sakaye generates sufficient revenue to pass the break-even point. Future difficulties at Sakaye are more likely to stem from management problems than from basic economics.

It should be constantly borne in mind that both Bozoum and Sakaye are small projects and have in common many of the typical problems experienced in such circumstances. Both centres are extremely vulnerable to mechanical breakdowns which create bottlenecks inhibiting production or sales. In neither instance is there an adequate supply of spare parts or skilled mechanical expertise. This is a situation which must be remedied since, in addition it entails the under-utilization of capital equipment which is often kept in reserve.

Both centres are currently over-endowed with capital equipment given the level of their activities. This situation is particularly true of the transport vehicles. Although it may have been considered desirable to provide the centres with independent transport when the projects were initially examined, the fact that the level of activities in both cases is substantially less than that originally planned means that the transport requirements should also be modified.

At the present time both centres depend on fee income to finance the whole range of services which they offer. No other system of financing the centres, for example membership fees, appears to be considered. For the future, however, it is necessary that the management of the centres become more conscious of the need to create additional income if the centres are to evolve. Whilst the technical assistance role of the centres is obviously of key importance in increasing production, attention should also be given to the marketing role of the centres, particularly once additional production has been realised.

The financial performance of the rice centres is obviously affected by the prevailing level of rice prices. Although conservative assumptions have been made about the performance of rice prices, in the future the profitability of operations will not withstand a drastic revision downwards of the price of

rice in the Central African Republic. Should such an event occur the centres would definitely require assistance - particularly Sakaye which is less isolated than Bozoum.

Finally it should be underlined that although the project may materially assist the two centres in the last analysis it is clear that without responsible management such assistance will not bear fruit. The importance of clearly defining and institutionalizing management and its control cannot be over-emphasized. Here Bozoum has had the edge over Sakaye, which is one of the reasons why it has survived so well in spite of the drawbacks from which it suffers. Courses and training will of course make it easier for the management to fulfill its functions, but by themselves they will be insufficient.

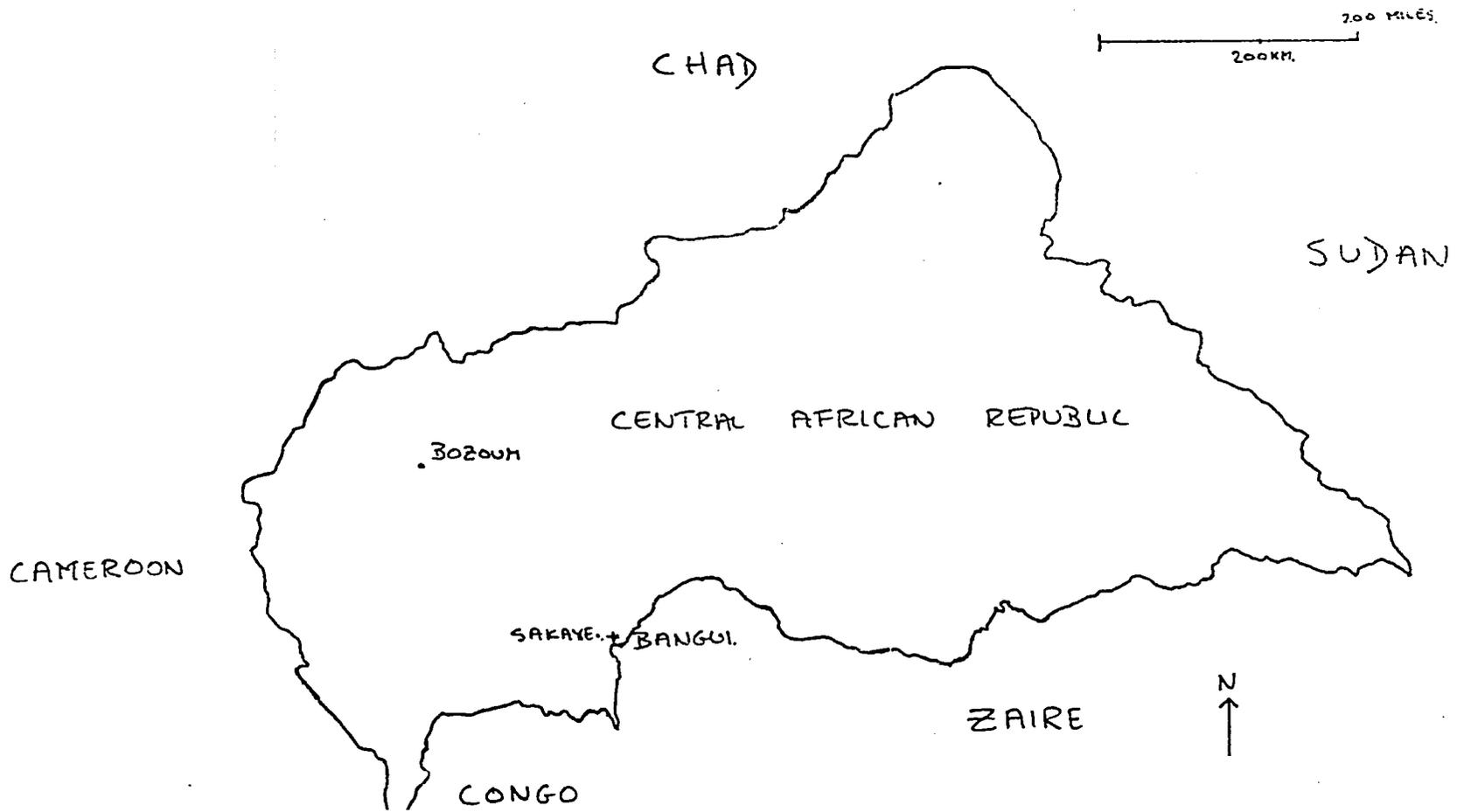


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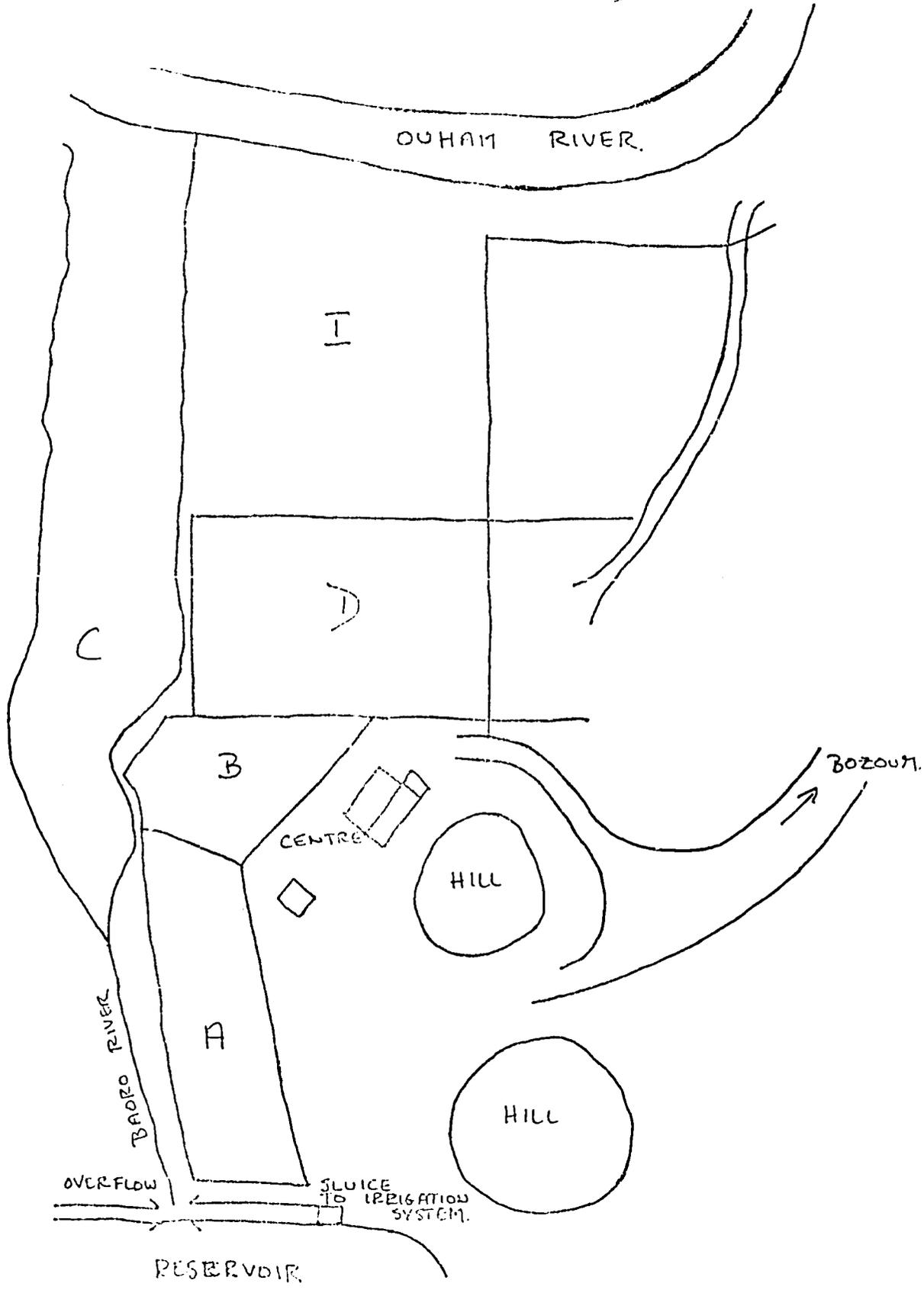
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BOZOUK

(NOT TO SCALE).



## A. INTRODUCTION

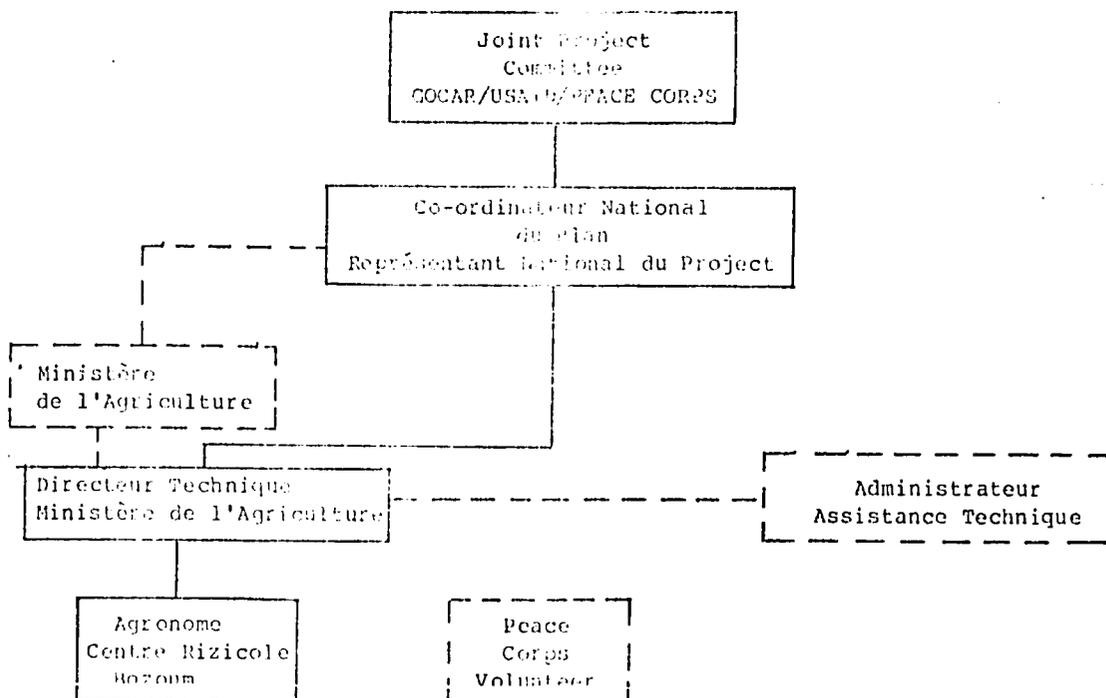
The rice centre of Bozoum is located 385 kilometres North-West of Bangui. Although Bozoum is the industrial centre for Oulam-Pendé it could not be classified as a large town, having a population of only some 15,000. The area's climate is not dissimilar from that of the north of the Cameroon with a rainy season which in normal times extends from May to October. The vegetation is varied and the land is capable of supporting crops such as cotton, peanuts, castor, sesame, maize, sorghum and millet as well as the usual fruits and vegetables.

The cultivation of rice at Bozoum was introduced by the Taiwanese as part of a general development assistance programme for the Central African Republic which was initiated in the early 1970s. This programme was abruptly terminated in 1975 when diplomatic relations between the Central African Republic and Taiwan were severed. At that time the rice centre at Bozoum had over two hundred farmers and consisted of 20 hectares of irrigated rice fields and 20 hectares of rainfed rice. Yields are estimated to have been up to 4 tons of paddy per hectare for irrigated land and up to 2 tons of paddy per hectare for rainfed. It would appear that the direction of the rice centre was concentrated in the hands of the Taiwanese although they also provided technical training and assistance.

With the departure of the Taiwanese the activities at the rice centre inevitably declined. The equipment left by the Taiwanese was kept in running order as long as possible but the lack of spare parts and mechanical expertise eventually made themselves felt. In addition the stocks of seed, fertilizer and insecticide became exhausted or ceased to be effective. The area cultivated was reduced to 3 hectares of irrigated rice by 1980 which was farmed by approximately 20 people under the direction of a civil service agronomist who had received training from the Taiwanese.

It is against this background that the USAID's involvement in the rice centre must be viewed. This involvement stemmed from the mission of a project design team following approval of a Project Identification Document in September 1981: AID policy was "to design and successfully implement projects meeting the needs of the poor majority on the CAR without the existence of a major U.S. Government economic assistance programme in the country". Projects to increase rice, fish and beeswax production seemed to correspond well with this objective, and the existing rice centre at Bozoum was selected as one of the two rice centres to benefit from the project.

Currently the project may be characterised as a cooperative effort between the USAID and the Central African authorities with assistance from the Peace Corps. In so far as Bozoum is concerned the organisational structure may be summarised as follows:



The day-to-day administration of the project was to be carried out at Bozoum by agricultural experts seconded by the GOCAR with the cooperation of a Peace Corps volunteer. Supervision was to be exercised from Bangui where a project administrator (USAID) and a Technical Director (GOCAR) were to be located. They, in turn, became responsible to the National Plan Co-ordinator under the guidance of the Joint Project Committee which sets policy.

Financially the Bozoum project was established with total project expenditures of US \$239,200 over the estimated three year life of the project. The USAID contribution was the largest, at US \$172,100, while the Government of the Central African Republic (GOCAR) was to contribute US \$16,500 and Peace Corps volunteers to the value of US \$50,600 were to be provided. Of this US \$172,000 it was envisaged that part of the amount should be used to purchase equipment and commodities and meet some of the operating expenses of the centre;

| US \$ 000                    | Year 1 | Year 2 | Year 3 | TOTAL      |
|------------------------------|--------|--------|--------|------------|
| <u>Commodities</u>           |        |        |        |            |
| Vehicles/Spare Parts         | 27.5   | 3.2    | 3.3    | 34.0       |
| Equipment/Spare Parts        | 10.2   | -      | -      | 10.2       |
| Farm tools                   | 3.0    | -      | 3.0    | 6.0        |
| Fertilizers                  | 6.7    | 5.2    | 2.5    | 14.2       |
| <u>Others Costs</u>          |        |        |        |            |
| Operating Costs-Vehicles     | 6.0    | 6.5    | 7.0    | 19.5       |
| Operating Costs-Equipment    | 2.6    | 0.4    | 0.5    | 3.5        |
| Rehabilitation of Facilities | 5.0    | -      | -      | <u>5.0</u> |
|                              |        |        |        | 92.4       |

US-AID Funds were also ear-marked for administration, technical assistance and training. A provision of 5% for unexpected expenses and a 12% inflation factor were also built into the project expenditure plan to arrive at the final total of US \$172,100.

The project is currently due to be terminated at the end of 1985, and thus is presently at the mid-point of its existence. It is therefore an appropriate time to undertake an assessment of the project's achievements to date and the probability of it's fulfilling its end objective of creating a centre which is capable of operating independently as an autonomous self-financing institution.

## B. THE PRODUCTION CYCLE

The annual cycle of activities in Bozoum takes place under the direction of the management which is paternalistic in style. A programme is established for each month and this is discussed at a monthly meeting with the farmers. For the farmers the most important meetings are those that open the different campaigns.

At the start of each campaign the plots are attributed to the farmers by the management. Past performance and a good track record are normally the main criteria utilized. Thus a good farmer is likely to retain the same plot of land over time.

The management then sets the dates for the various stages in the campaign. First of all the land must be cleared "defrichage" by the farmer before it can be worked. This is, of course, particularly true of rainfed cultivation or when abandoned plots are brought back into cultivation. Then the tilling of the land will take place using a motor-tiller ("moto-culteur") which will first of all plough in the stubble ("de-chaumage") and then pass again to turn ("labourage"), and level, ("planage"), the land as may be necessary. This stage will only commence for the rainfed plots after the first couple of rains have fallen to soften up the ground.

The ground is now ready for sowing or transplanting. Irrigated land is generally planted with rice seedlings. The seedlings come from nursery grown seed which the farmers receive from their previous harvest. Sometimes the centre will exchange a new variety for an existing variety from a good farmer. Usually 10-12 kg of seed will be sufficient to provide seedlings for an average plot of 12,5 ares (1 are = 10m x 10m). Occasionally in irrigated plots seed may be sown directly in which case 16kg of seed will be required. In rainfed cultivation the plots are sown directly to germinate on the ground as the rains come.

Planting is normally done on a basis of family assistance and mutual self-help. With eight people an average plot will be transplanted in one day, 6-7 hours work. Thereafter the tending of the rice plots is normally carried out on a family basis until harvest time when neighbours may be called in to assist.

Fertilizer is applied 5-7 days after replanting. Thereafter the plots will be weeded, ("sarclage"), and perhaps a further application of fertilizer may be made. During the first campaign birds are a major problem since they are capable of devastating the plots in the absence of suitable food elsewhere: birdscares is thus important. Opinions on the utilization of insecticides are divided with those who hold that the best solution is disease resistant strains of rice, and those who believe in the desirability of applying insecticides. Losses from both birds and insects may have a major impact on yields.

Throughout this period the management of the centre watches the individual plots carefully and will not hesitate, should it be necessary, to remonstrate with farmers who do not take care of their plots. Likewise, it is the management of the centre which decides when the plots should be harvested. The farmer will then assemble his family and various helpers so that the harvest can take place.

A threshing machine will be taken out to the plot and the harvesters will cut the rice and put it in the threshing machine. The grains of rice (paddy), will be put in sacks and taken to the drying area. Part of the rice will, however, never reach the drying area but will be distributed to those who have participated in the harvesting - usually at a rate of 2-5 kg per head. Those who helped with the planting normally help with the harvest, but it would not be unusual to have c. 15 people working at harvest time which will obviously have an effect upon the reported production figures.

The paddy will probably lose 5-8% of its weight (according to the season) over the 2-5 days at the drying area. It is then passed through the winnover to remove the chaff and impurities. Thereafter it is put in sacks and taken to be weighed and the production recorded. It is at this point that the center takes its fee of 40 kg for 10 acres of plot preparation.

The timing of the next operation, hulling and polishing ("decortilage" and "blanchissage") is largely determined by the amount of paddy requiring treatment. If there is paddy in stock then the farmer may have to wait; the paddy is dealt with according to the order in which it is weighed. Estimates are difficult to make but, except in the event of a major breakdown, 10-15 days wait would be considered long. The paddy then passes through the huller and polisher and the rice is weighed. Here the centre takes its fee of 8 kg for 100 kg of rice for the operation.

The rice is now in its consumable state and ready for sale. The peasant farmer may now take part of his rice for his own consumption. The centre will then sell the remaining rice which is put in stock. In some instances, which appear to be related to the type of rice, a percentage of the rice will be broken ("brisures"), but this appears to have no effect upon its marketability at this point in time.

There are apparently no problems with rice sales at present in Bozoum. Demand if anything exceeds supply. Both merchants and individuals come to the rice centre to buy (the centre is therefore not involved in marketing or distribution costs or activities). There is no difference in the wholesale and retail price. It is perhaps worth bearing in mind that rice prices are theoretically controlled by the government and applications must be made to the Ministry for permission to increase prices: currently there appears to be no problem in obtaining increases. Probably the key factor in normal times for fixing prices is the transport differential between rice from the Cameroon and local rice.

During the month of July 1984 there was no rice in stock and as soon as the paddy was transformed into rice it was sold for cash. There are no credit sales. The centre then deducts from the proceeds of the rice sale all those debts which the peasant farmer has incurred during the production cycle - debts for preparation fees and hulling, seed, fertilizer, tools, boots etc... The balance is then given to the farmer.

If, for various reasons such as drought, the farmer's production is insufficient to meet his debts they will be carried forward to the next campaign and the farmer's progress observed with great attention. Attempts have been made to encourage peasants to pay cash for the various production

inputs but discounts and similar encouragements have failed to have any effect. In addition farmers prefer to pay their fees in cash at the end of the cycle and not in kind. The length of time the debts are outstanding may thus vary considerably.

In addition, it should always be born in mind that there is a district difference between irrigated and rainfed cultivation. With irrigated rice the production cycle is of the order of six months from the start of the nursery until the harvest is converted into cash. The cycle for rainfed rice is even longer, from the distribution of land and its preparation to the sale of the rice may require close to twelve months.

Rice Calendar for Bozoum July 1983-June 1984

| <u>Month</u>         | <u>Irrigated</u>  | <u>Rainfed</u>   |
|----------------------|---|--|
| <u>1983</u>          |   |  |
| July                 | : <u>1st Campaign</u><br>- transplanting<br>- 1st fertilizer treatment  | : <u>2nd Campaign</u><br>- 1st fertilizer treatment                                    |
| August               | : - Harvest<br>- finish transplanting<br>- 1st treatment insecticide  | : - 1st weeding (some on 2nd)<br>- 1st fertilizer treatment                            |
| September:           | - Harvest<br>- hulling<br>- 2nd fertilizer treatment<br>- further insecticed<br>treatment 1st campaign  | - 1st weeding (start 3rd)<br>- 2nd fertilizer treatment<br>- insecticides as necessary |
| October/<br>November | : - Nursery<br>- harvest begining C&D<br>- weeding A&B<br>- insecticides as necessary   | : - harvest  |
| Decembre             | : - transplanting C&D<br>- harvest ending A&B   | : - finish harvest   |
| <u>1984</u>          |   |  |
| January/             | : - 1st weeding C&D   |  |
| February             | : - 1st fertilizer treatment C&D<br>- finish harvest A&D<br>- insecticides C&D<br>- re-plant A&B<br>- 1st weeding A&B<br>- 1st fertilizer treatment A&B |  |
| March/<br>April      | : - 2nd & 3rd weeding<br>insecticides<br>- 2nd fertilizer treatment   | : - distribution land I<br>- prepare land  |
| May                  | : - harvest C&D<br>- hulling  | : - distribution land II<br>- prepare land   |
| June/<br>July        | : - hulling (problems)<br>- Start nursery<br>- re-piquage A&B<br>- 1st fertilizer   | : - Sow land<br>- weeding<br>- 1st fertilizer treatment                                |

## C. RESOURCES

### The land

The rice centre of Bozoum is located in a flat bowl surrounded by small hills: the area suitable for rice cultivation extends for more than 50 hectares. The area is crossed by a major river, the Ouham, and various smaller rivers and tributaries. As a result the laterite earth is somewhat enriched by a deposit of alluvial soil. Bozoum is situated at an elevation of c. 700 metres and nights are sometimes cold. The temperature range is of the order of 13°C - 35°C. Rainfall is concentrated during the rainy season April/May - October and may vary between 1300mm and 1700mm.

### The Irrigation System

The Irrigation system at Bozoum was laid out by the Taiwanese who designed it to take advantage of the network of small rivers near Bozoum. Excavations for a reservoir were made to the south of the centre and a barrage placed across the Boro river. The appropriate system of irrigation canals and dykes was installed to enable 20 hectares of rice fields to be irrigated. It would appear that a further extension of the reservoir was envisaged as well as the possibility of a secondary reservoir to maintain permanently the appropriate level in the main reservoir.

For the present, however, the situation is somewhat different. The existing reservoir has shrunk considerably since the Taiwanese left, and it would appear that little or no effort has been made to clear out the areas that have silted up. The result is that the amount of water in the reservoir is becoming inadequate to maintain rice production during the dry season. It may, of course, be argued that the past two seasons have been exceptionally dry and that advantage should have been taken of this situation to improve the reservoir but it is evident that the management has difficulty in mobilising the farmers for this type of co-operative activity.

The results of the first campaign this year have in fact been so disastrous - in plot D nearly 90% of the paddies were abandoned due to lack of water - that it would appear that there is a real possibility that in the future irrigated rice will be grown only on plots A & B.

The system of primary and secondary canals and dykes, however, appears to be relatively well maintained although there are some leaks. There has been some discussion of installing separate sluice gates for each plot, but for the present no action has been taken and it is possible that the technical expertise and co-operation necessary for the functioning of such a system are currently lacking at Bozoum.

In brief then, the irrigation system constitutes a valuable resource for the centre but it is in the process of deteriorating unless measures are taken.

### The Buildings

The buildings at Bozoum are of a rudimentary nature consisting of one large hangar divided into two parts. The southern part serves as an office and stockage and sales point for the rice: the northern part is the store room where fertilizer, paddy, tools and spare parts are kept. An open extension from the northern wall provides shelter for machines and the huller/polisher is located there. An open cemented area to the west of the hangar is the drying area.

Plans exist for the construction of new buildings for the centre so that all the equipment can be kept under cover and the draught animals stabled. So far the cement has been purchased but construction has been delayed, in part due to the absence of a Peace Corps volunteer and difficulty over plans. The result is that no construction will take place now before early next year, the start of the dry season. In the meantime machinery stays outside and animals remain unhoused during the rainy season.

### The Equipment

Two types of equipment may be found at the centre; Taiwanese supplied and USAID supplied. It is, perhaps, hardly surprising that the peasant farmers cling with conservative tenacity to the Taiwanese equipment whenever this is possible. Another major factor affecting the use of the equipment is the lack of mechanical expertise at the centre which means that breakdowns rapidly assume major proportions particularly since spare parts appear not to be kept as a regular matter of course. This factor has tended to encourage the "reserve" mentality whereby a major consideration is ensuring that a back-up machine or alternative exists.

#### a) Equipment for preparing the ground

Taiwanese  
1x Ford 5,000 Tractor  
over 15 years old

USAID  
2x Yanmar motor tillers  
1 year old  
economic life 3-5 years

Enormous effort has been devoted to keeping the old Ford tractor in working order but it would appear that this is no longer feasible. Great importance is attached to the utility of the tractor in breaking the rainfed rice ground when it is too hard for the motor tillers whilst its superior capacity of 1 hectare a day is attractive when all the ground must be prepared within a month. In addition the tractor offers the opportunity of transport between the centre and Bozoum should the need arise.

The motor-tillers are generally well accepted. They are run by operators trained by the Taiwanese who have no mechanical expertise. The operators are only part time workers and there are occasional conflicts during peak periods with their other interests. So far the motor-tillers appear to have operated without major problems although the operators tend to run them dry of fuel and then have problems re-starting them because of the air lock. The lack of spare parts, however, means that one or other motor-tiller is normally kept permanently in reserve so that only one is working at any one time.

On average a motor-tiller will take a day, 7-8 hours, to plough 0,625 ha or will turn and level 0,50 ha in the same time. Diesel consumption is in the neighbourhood of 25 liters per hectare while oil consumption is of the order of 3 liters of oil and 8 liters of transmission oil for 60 hours of operating time

b) Equipment for threshing the rice

Taiwanese  
1x thresher,  
at least 3 years old.

USAID  
3x thresher  
one year old  
minimum economic life  
5-6 years

For the present time the old Taiwanese thresher is preferred to the USAID-provided ones which were purchased at the CEEMA in the Cameroon. The reason given for this preference is that the way in which the old thresher is mounted in a box to collect the paddy is superior to that for the new models which do not give the correct clearance for the machine thus causing excessive amounts of paddy to fall outside the box.

With competent help it should be possible to resolve this problem and there is probably no reason why in the long run the peasant farmers would not use the USAID-supplied equipment.

c) Equipment for winnowing the rice

Taiwanese  
1x winnower  
at least 8 years old

USAID  
2x winnower  
one year old  
minimum economic life  
5-6 years

Here the situation is similar to that with the threshing machines. The peasant farmers have a preference for the old machine. The machines supplied by USAID are pedal powered like bicycles and this appears to present some problems. It is said that too much of the paddy is thrown outside the winnower and that the machines are too sensitive to wind. In part this may be explained by too vigorous pedalling, but it is worth remarking that the pedals have been removed from one machine so that it can be used by hand like the old Taiwanese model.

d) Equipment for hulling and polishing the rice

Taiwanese

USAID  
1x Yanmar huller/polisher  
one year old economic life 5 years.

The huller/polisher is one of the critical bottlenecks in the Bozoum production cycle, since there is no alternative if it should breakdown. In this respect it is significant that no spare parts are carried apart from:

|                    | Received | Used    | In stock |
|--------------------|----------|---------|----------|
| rollers (meules)   | 5 pairs  | 4 pairs | 1 pairs  |
| grills (tamis)     | 8        | 3       | 5        |
| grinders (fraises) | 54       | 36      | 18       |

Experience up to the present time has shown that the diesel motor is satisfactory but there have been some problems with the transmission and the grills for the huller and polisher. Recently the machine was out of action for three months waiting for spare rollers to arrive from Japan. As a result the paddy from the second campaign 1983 was still being processed in May/June.

It would appear that so far the machine has not operated at its potential capacity and the two operations, which should take place at the same time, have not been performed simultaneously. In May the machine was processing approximately 1,400 kg rice a day, and the centre's staff appeared relatively pleased with its performance. Its fuel consumption at that time was of the order of 4-5 liters diesel per day and approximately 3 liters of oil for 7 days work.

The major problems for the future appear to lie in the need for a skilled mechanic to maintain the machine - particularly as it starts to age and there are motor problems - as well as the desirability of building up a reasonable stock of spare parts.

#### e) Weighing machine

The centre has a 30 kg weighing machine which appears to function correctly. The exactitude and verification of this machine are important since it provides the statistical basis for all the production figures and the calculation of fees due to the centre as well as the value of sales.

#### Draught animals

The question of the utilization of draught animals is a vexed one. The project is favourable to the introduction of draught animals with a view to their being used instead of a tractor for the rainfed rice fields. The peasant farmers, however, find it difficult to regard such a step as anything other than retrograde.

The crux of the argument turns around the preparation of the rainfed rice fields, which must be carried out within a period of roughly one month. The peasant farmers argue that since a pair of draught animals can only plough 1/4 hectare a day and the drivers have other engagements this is not a very satisfactory arrangement. In addition, out of three pairs of draught animals one has always been ill and unlike a tractor their ability to work is limited until after the first rains have softened up the ground. Thus in 1984 the draught animals only prepared 5,7 ha as opposed to the 15 ha planned.

On the other hand it is argued that the introduction of draught animals is still in its early stages and that their use for cotton preparation in the same region demonstrates that they can work satisfactorily. In addition it is argued that with draught animals the dangers of breakdowns and the availability of spare parts are minimised since it is always possible to buy a replacement locally - currently, CFA 60,000

For the present time therefore the experiment with draught oxen is likely to continue. It is, however, evident that if there is no solution to the "tractor" problem the amount of rainfed rice cultivation next year will be

limited to something like 10ha for the shorter preparation period unless there is a considerable expansion in the number of draught animals with the training and infrastructure which that would involve. It is also unclear how the peasant farmers would react to greater demands on their time looking after draught animals given their other activities and the fact that such demands have not been necessary when machines were used. In this respect the centre is partially passing maintenance costs onto the farmers, whilst decreasing its capital expenditure.

### Transport

The project has supplied the centre with one Toyota BJ-45 Land Cruiser pick-up and two Suzuki 125 Trial motor-bicycles.

The pick-up is for use by the centre to transport equipment and fetch supplies. It is used from time to time for trips to Bangui for supplies and meetings. At the present time it has 16,000 km after approximately a year's use. It appears to be carefully maintained.

The two motor bicycles are for the centre Director and the Peace Corps Volunteer to facilitate their payments.

The question of transport is a difficult one since notions of status become rapidly involved. The Toyota is an expensive vehicle and if the idea of continuing the centre's independence in matters of transport is maintained then it would probably be wiser to consider replacing it with something more economical in the future. Alternatively the centre could decide to give up its transport independence and utilise contractors. While one or two transport contractors exist in Bozoum, it is essentially a captive market and the most economical solution would be to arrange transport in Bangui where there is more competition, combining an "up"-load of supplies with a "down"-load of rice. At the present time the project costs transport from Bangui to Bozoum at CFA 20/kg.

The provision of the Suzukis for the centre's personnel may also prove to be an over-generous gesture in the future. It is possible that the replacement of at least one by a moped, which is cheaper and would have lower running costs, should be envisaged.

### Tools

The question of the tools supplied to the centre is an interesting one. To date USAID has supplied the centre with the following tools:

| <u>Item</u> | <u>Price</u> | <u>Quantity</u>   | <u>Sold</u> | <u>Balance</u> |
|-------------|--------------|-------------------|-------------|----------------|
|             |              | at 23rd July 1984 |             |                |
| Sacks       | 600          | 400               | 379*        | 21             |
| Matchettes  | 1300         | 40                | 35          | 5              |
| Spades      | 2400         | 40                | 25          | 15             |
| Rakes       | 2000         | 6                 | 2           | 4              |
| Boots pr    | 6500         | 50                | 44          | 6              |

\* some of these are used by the centre.

The centre receives the tools from USAID and then sells them to the peasant farmers, the idea being that these sales should help towards providing working capital for the centre. In fact the situation is not so clear cut. The centre encounters resistance to cash sales of tools and in general the peasant farmers buy on credit until the end of the harvest when debts are repaid. The centre is functioning as a financial institution for the farmers.

At this stage it is not clear how long the farmers will need to go on acquiring tools, particularly if the number of farmers increases should new areas be brought under cultivation. In fact, there exists a requirement for sickles for harvesting the rice. Apparently the Taiwanese supplied special rice sickles which were particularly well designed and made the job a lot easier. At the time the sickles were given to the farmers as an incentive; today the few that remain are carefully lent out for the day by the centre. In addition there will always be a replacement need as tools break or are lost. There is no local smith capable of making simple tools. One would therefore envisage that the centre will continue to have a role to play as a purchasing agent for the farmers with a concomittant credit function.

#### Rice Varieties:

At the inception of the project, the rice varieties used at Bozoum were those initially supplied when the Taiwanese were present. Over the six intervening years the rice used had deteriorated and had become less resistant to disease. The initial project programme identified three varieties of rice, IR 36, IR 28 and IR 46 as being particularly well adapted to the Bozoum conditions and as being also disease resistant. With these varieties it was expected that yields would increase from 2,9 t/hectare in irrigated areas to 4,5 t/hectare by the end of the project, and from 1,13 t/hectare in the rainfed areas to 2,6 t/hectare.

Experience to date has inevitably been affected by climatic considerations and initial trials appear somewhat disappointing. As a result other varieties have been introduced which appear to give encouraging results on a trial basis, particularly the ITA 712 and the ITA 235 from the Semey centre in the Cameroon, at table. At this stage it is difficult to foresee the level of future yields, but it would appear that with sufficiently favourable conditions target yields may be approached by the peasant farmers. It should, however, be kept in mind that there are wide variations in farmers' yields and that usually production is underestimated in comparison with trial plot production since the statistical weighing point usually occurs after up to 25% or more of the crop has been lost by drying or distributed to family etc.

#### Rice varieties:

| <u>Old one</u><br>type: | cycle<br>days | 1982 (1)<br>Yield observations<br>t/hectare |
|-------------------------|---------------|---|
| IR 3 )                  |               | )   |
| Taiwan 2)               | 130-140       | 2,9 irrigation) all affected by             |
| CS 6 )                  |               | ) leaf blight disease                       |

| <u>New one</u><br>type:      | cycle<br>days | Yield observations<br>t/hectare   |
|------------------------------|---------------|---|
| <u>Initially recommended</u> |               |   |
| IR 35                        | 115           | 4,5 irrigated for dry season  |
| IR 28 )                      | 125-130       | 2,0 rainfed) for rainy season<br>) resistant to leaf<br>) blight disease. |

| <u>Currently in trial</u> | cycle<br>days | 1983<br>Yield<br>t/hectare | Observations |
|---------------------------|---------------|----------------------------|--------------|
| IR 28                     | 90-100        |                            |              |
| TOX 1011-41               | 90-100        | (2)                        |              |
| IR 46                     | 110-120       | 4,4                        |              |
| ITA 212                   | 110-120       | 5,0                        |              |
| ITA 118                   | 110-120       | 2,1                        |              |
| ITA 235                   | 110-120       | 4,1                        |              |

- (1) Probably underestimated, paddy not weighed at plot  
 (2) badly affected by birds

Fertilizer

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\* Footnote: Discrepancies exist between the figures quoted by the centre and the figures of deliveries from the project:

Position at 23d July 1984

50kg sacks of fertilizer

| <u>Type</u> | USAID<br>delivered<br>end June 1984 | Centre<br>Received | Centre distributed | Centre Stock |
|-------------|-------------------------------------|--------------------|--------------------|--------------|
| 20.10.10    | 60                                  | 60                 |                    |              |
| UREA        | 52                                  | 62                 | 91                 | 79           |
| SULFATE     |                                     | 48                 |                    |              |

On the face of it, it looks unlikely that the centre distributed 61 sacks of fertilizer for the first campaign 1984 - particularly since sales records point to a figure of 27 1/2 sacks for the first six months of 1984.

By the end of 1983 the project had delivered 3,5 tons of fertilizer to the centre:

| Type     | Quantity         | June 1984                              | Summer 1984    | January 1984 |
|----------|------------------|--|----------------|--------------|
|          |                  | Current<br>Cost USAID<br>w/o transport | Cost of farmer | Unsold       |
| 20.10.10 | 2.0t (40 sacks)  | 13,500 sacks                           | 7,500 sack     | 0,5t         |
| Urea     | 1,5 t (30 sacks) | 16,500 sacks                           | 5,755 sack     | 1,5t         |

The utilization of fertilizer was considerably less than the amount of land cultivated would lead one to expect.

|                   |         |          | theoretical<br>consumption | actual<br>consumption |
|-------------------|---------|----------|----------------------------|-----------------------|
| 1983 1st campaign | 5,59ha  | 20.10.10 | 22 sacks                   |                       |
| 2nd campaign      | 3,87ha  | 20.10.10 | 15 sacks                   | 30 sacks              |
| rained            | 19,06ha | 20.10.10 | 20 sacks                   |                       |
| 1984 1st campaign | 5,92ha  | 20.10.10 | 24 sacks                   |                       |

Various reasons may be advanced for this low level of fertilizer utilization. Firstly there is the problem that the peasant farmers are unwilling to use urea by itself without ammonia sulfate. Secondly, supplies were received late in the year in 1983 thus affecting consumption. Thirdly the price, although subsidised, was felt to be high.

The question of price sensitivity is a difficult one. Reference is frequently made to peasant farmers utilizing the subsidised fertilizer provided by SOCADA for cotton farmers. It would appear, however that SOCADA does not sell its fertilizer in the accepted sense of the word: it is made available to those farmers whose cotton cultivation is better than average. These farmers then have the possibility of utilising this fertilizer, 20.10.10 costing CFA 3.000 per 50kg sack either for their cotton, or for their rice if they are also rice farmers, or selling it to rice farmers. For this reason it is difficult to estimate the precise amount of fertilizer a peasant has used and it will probably vary considerably.

Obviously the amount of fertilizer applied is less than the recommended dose, nonetheless, if the percentage of abandoned plots is taken into account the actual yields per hectare are not too disappointing with the best cultivation reaching 6.000kg per hectare in irrigated.

For the future it is difficult to judge how fertilizer use will evolve in practice. In theory as the peasants become more affluent the purchase of fertilizers, even at the high prices prevailing in the CAR, should become easier for them. It is doubtful, however, whether over the life of the project the average consumption will reach more than 50-60% of the recommended amount. In fact, trials are currently taking place to determine the effect of lower amounts of fertilizer on yields of different varieties of rice.

### Fuel

Apart from small quantities of fuel purchased for cleaning spare parts, etc., fuel is provided by USAID for the project through a coupon system.

Over the year from July 1982 to June 1984 the following amounts have been provided

| <u>Fuel</u> |        | <u>Oil</u> |       |              |
|-------------|--------|------------|-------|--------------|
| Diesel      | Petrol | 2T         | Motor | Transmission |
| 3625 l      | 1000 l | 13 l       | 160 l | 60 l         |

Currently the prices for fuel and oil are as follows:

|                  | <u>litre</u> |
|------------------|--------------|
| Diesel           | 215          |
| Petrol           | 248          |
| 2T oil           | 630          |
| Motor Oil        | 785          |
| Transmission oil | 900          |

### Management

Reference has already been made to the fact that the tripartite nature of the project is reflected in the centre's management.

At the time of writing, however, certain changes are on the way in so far as the payment of the employees is concerned. During the first year of the project the GOCAR paid the salaries of its appointees whilst the project paid the salaries of the centre's staff. Current policy is for the centre to become responsible for the payment of the salaries of its employees although this has not yet been formalised in writing.

The management consists of:

a) Provided by the GOCAR:

- A director, who has been associated with the centre for the last ten years and is responsible for its overall good functioning.
- An assistant director/extension agent, responsible for operations and managing the irrigated area.
- An extension agent, responsible for the rainfed area and for hulling and polishing operations.
- An extension agent, responsible for the draught animals and their utilization.

b) Provided by USAID for the project:

- A guard/night watchman, Jean EINGRANGRI, who is paid on a monthly basis at a daily rate of CFA 500.
- A tractor driver/machine operator, Joseph Kewene, who is a temporary employee paid at a daily rate of CFA 500.

- A motor tiller operator, Samuel Ndiki, who is a temporary employee paid at a daily rate of CFA 500.
- A motor tiller operator, Georges Inedndji, who is a temporary employee paid at a daily rate of CFA 500.

Only the guard is a permanent employee. The other three temporary employees have only worked a total of 62 days during the first six months of 1984.

- c) Provided by the Peace Corps:
  - Mechanic/maillat (position vacant).

It should be noted that the disappointment occasioned by the previous Peace Corps Volunteer is marked. He terminated his Peace Corps service after his house was repeatedly robbed. At the present time the centre lacks mechanical expertise as well as someone capable of assisting the peasant farmers towards the initial formation of a pre-cooperative grouping.

#### The farmers

Among the 100 or so peasant farmers at Bozoum there is no predominant ethnic group. The different groupings seem to work together without apparent friction. In addition, the pattern of plot distribution is fairly uniform. In irrigated cultivation approximately half the farmers have two plots while in rainfed cultivation it is exceptional for a farmer to have more than one plot. It is worth underlining the fact, however, that there are no "large" farmers with a disproportionate number of plots.

Families are normally large and the extended kinship connections are called into play at planting and harvest times. It should be stressed, however, that the farmers (male or female) are by no means exclusively rice farmers. Each family unit will have a variety of activities and sources of income. Pisciculture, cotton growing, groundnuts, manioc, sesame, sorghum and maize all offer alternative employment opportunities to rice. It is therefore important to bear in mind the fact that rice will be of interest to the farming community so long as it is more attractive, in terms of income and effort, than alternative occupations.

D. THE CURRENT SITUATION

Rice cultivation and production

Since the inception of the project, activities at Dozoum have evolved as follows:

1982

| <u>Zones</u>              | Peasants  | Plots <sup>1</sup> | Areas Sown    | Tons Paddy | Tons Rice  | Tons/ha yield |
|---------------------------|-----------|--------------------|---------------|------------|------------|---------------|
| <u>Irrigated</u>          |           |                    |               |            |            |               |
| 1st campaign              | 31        | 46                 | 5,20ha        | 14,1       | 5,9        | 2,7           |
| 2nd campaign <sup>2</sup> | 27        | 34                 | 4,02ha        | 12,4       | 6,3        | 3,1           |
| <u>Rainfed</u>            | <u>40</u> | <u>42</u>          | <u>7,15ha</u> | <u>8,1</u> | <u>3,3</u> | <u>1,13</u>   |
|                           | 98        | 122                | 16,37ha       | 34,6T      | 19,5T      | 2,1           |

1983

|                           |           |           |                |             |                  |            |
|---------------------------|-----------|-----------|----------------|-------------|------------------|------------|
| <u>Irrigated</u>          |           |           |                |             |                  |            |
| 1st campaign <sup>3</sup> | 34        | 47        | 5,59ha         | 6,2         | 2,0 <sup>4</sup> | 1,1        |
| 2nd campaign              | 26        | 33        | 3,87ha         | 10,7        | 4,9              | 2,8        |
| <u>Rainfed</u>            | <u>47</u> | <u>49</u> | <u>10,08ha</u> | <u>27,6</u> | <u>15,1</u>      | <u>2,7</u> |
|                           | 107       | 129       | 19,54ha        | 44,5T       | 22,0             | 2,3        |

1. Plots in irrigated are usually 12,5 ares (10x10are = 1 hectare) or occasionally 25 ares ; rainfed plots are usually 25 ares.
2. Usually fewer farmers during 2nd campaign because of alternative work.
3. Badly affected by the drought.
4. Not all Paddy hulled by centre.

1984 provisional

| <u>Irrigated</u>          | Peasants | Plots | Area Sown | Tons Paddy | Tons Rice | Tons Yield |
|---------------------------|----------|-------|-----------|------------|-----------|------------|
| 1st Campaign <sup>5</sup> | 45       | 51    | 5,92      | 9,1        | 4,9       | 1,5        |

5. Badly affected by drought and lack of water in reservoir.

These figures compare with those presented in the project data sheet as follows:

|                | <u>Yields T/ha</u> |         |           |         |
|----------------|--------------------|---------|-----------|---------|
|                | Planned            |         | Actual    |         |
|                | Irrigated          | Rainfed | Irrigated | Rainfed |
| Starting Point | N/A                | N/A     | 2,87      | 1,13    |
| 1st year 1983  | 3,5                | 1,5     | 1,78      | 2,7     |
| 2nd year 1984  | 4,0                | 1,75    |           |         |
| 3rd year 1985  | 4,5                | 2,0     |           |         |

(N.B.: Project equipment was actually available in 1983 for 2nd Campaign and rainfed only, not for 1st Campaign; 1984 will be the first year to benefit fully from project equipment).

|                | <u>Planned</u>   |                | <u>Surfaces Ha</u> |                | <u>Actual</u>    |                |
|----------------|------------------|----------------|--------------------|----------------|------------------|----------------|
|                | <u>Irrigated</u> | <u>Rainfed</u> | <u>Irrigated</u>   | <u>Rainfed</u> | <u>Irrigated</u> | <u>Rainfed</u> |
| Starting Point | N/A              | N/A            | 9,22               | 7,15           |                  |                |
| 1st Year 1983  |                  |                | 9,46               | 10,08          |                  |                |
| 2nd Year 1984  |                  |                |                    |                |                  |                |
| 3rd Year 1985  | 25               | 20             |                    |                |                  |                |

(Irrigated total 20ha 1st campaign 5ha 2nd campaign).

At first sight it would appear that the first year of the project has been disappointing in so far as irrigated rice is concerned. Yields have been poor and the surface planted has barely increased. In fairness, however, it should be pointed out that the results have been badly affected by drought with up to 50% of the plots abandoned due to lack of irrigation water. The importance of the reservoir in this context is continually emphasized by the management of the centre.

On the other hand, the results for the rainfed rice appear fairly encouraging. Yields are considerably better than those planned and the surface cultivated has increased at a rate compatible with the achievement of the 20 hectares at the end of the third year. Caution should, however, be exercised over this point since further success will probably be greatly influenced by decisions relating to equipment utilization.

In passing one notes that the number of peasant farmers has increased and there appears to be no lack of demand for plots. Apparently over 100 presented their applications for distribution of rainfed plots this year and there was insufficient land available. In this respect an increasing number of peasant farmers appear to regard the centre as a worthwhile means of increasing their income.

#### The effect on farmers' incomes

It is difficult to put a precise figure on the monetary benefit derived by the farmers from the centre since there may be no alternative work to provide a shadow price for labour. However, taking into account the net output after the centre has deducted all fees and relating that figure to the number of farmers some very general idea of the average benefit may be derived.

In so far as 1983 is concerned (which was badly affected by drought), the number of farmers increased from 122 to 129, the surface sown from 16.37ha to 19,54ha (with practically all this increase concentrated in rainfed), and production of paddy rose by 28,6% to 44,5 tons. Looking at the figures, however, it becomes clear that this improvement was the result of very much better yields in the rainfed plots whilst there was a decrease in the yield from irrigated rice. These general figures in fact conceal great variations in the yield for irrigated rice since the best farmers managed about 5 tons a hectare whilst others abandoned their plots due to lack of water.

In theory, using the 1984 fees for preparation and hulling, and assuming production levels at roughly the same level as in 1983, one may estimate the farmers' incomes as follows (bearing in mind that some will end up in debt and some will have made very much more than the average figure):

Irrigated: provisional

1984

1st campaign 45 peasants, 5,92 Ha sown, 9,1 tons Paddy.  
4,9 tons rice, yield 1,5 tons Ha.

Fees: 400kg. Paddy per hectare prepared = 2,368kg  
8kg. Rice per 100kg rice hulled = 392kg.

Assume: average plot 12,15 ares  
average production Paddy 202kg  
average fee for preparation 52kg  
balance 150kg  
- 50% conversion for rice 90kg  
average fee for hulling 9kg  
balance 81kg per farmer

at a price of CFA 200 per kg. the farmer on average received CFA 16,200.

N.B. This figure does not include deductions for fertilizer and purchases of tools, sacks, etc.

Theoretically 24 x 50kg sacks of 20.10.10 fertilizer should have been used but the actual figure is probably nearer 1/2 this which implies a cost to the farmers of 12 x CFA 7,500 = CFA 90,000 or CFA 2,000 per farmer.

On a rough basis then, one may guesstimate that a mythical average farmer earned at least CFA 10,000 during the 1st campaign 1984 and to this should probably be added at least another CFA 5,000 to cover the paddy distributed at the plot.

Irrigated

1983

2nd Campaign 20 peasants, 3,87 Ha sown, 10,7 tons Paddy, 4,9 tons rice, yield 2,8 tons Ha.

Fees: 400kg Paddy per hectare prepared = 1548kg  
8kg Rice per 100kg rice hulled = 392kg.

Assume: average plot 14,88 ares  
average production Paddy 411kg  
average fee for preparation 60kg  
balance 351kg  
- 46% conversion to rice 161kg  
average fee for hulling 15kg  
balance 146kg

at a price of CFA 200 per kg the farmer on average received CFA 29.200.

N.B. This figure does not include deductions for fertilizer and purchases of tools, sacks, etc...

Theoretically 15 x 50kg sacks of 20.10.10. fertilizer should have been used but the actual figure is probably nearer 1/2 this which implies a cost to the farmers of 7.5 x CFA 7,500 = CFA 56,250 or CFA 2163 per farmer.

On a rough basis then, one may guesstimate that a mythical average farmer earned at least CFA 24,000 during the second campaign 1983 and to this should probably be added at least another CFA 5,000 to cover the paddy rice distributed at the plot.

Rainfed  
1983

47 peasants, 10,08 sava, 27,6 tons Paddy, 15,1 tons rice,  
yield 2,7 tons hectare.

Fees: 335kg Paddy per hectare prepared\*: 3377  
8kg rice per 100kg rice hulled : 1208  
\*figure derived from old rainfed fee for tractor.

Assume: average plot 21,45 ares  
average production paddy 587kg  
average fee for preparation 72kg  
balance 515kg  
55% conversion to rice 283kg  
average fee for hulling 26kg  
balance 257kg

at a price of CFA 200 per kg, the farmer on average received CFA 51,400.

N.B. This figure does not include deductions for fertilizer and purchases of tools, sacks etc...

Theoretically 20 x 50kg sacks of 20.10.10. fertilizer should have been used but the actual figure is probably nearer 1/2 this which implies a cost to the farmers of 10 x CFA 7,500 = CFA 75,000 or CFA 1596 per farmer.

On a rough basis then, one may guesstimate that a mythical average farmer earned at least CFA 45,000 during the rainfed campaign 1983 and to this should probably be added at least another CFA 5,000 to cover the paddy rice distributed at the plot.

It would appear that farmers derive greater benefit from rainfed rice than from irrigated, but it should be remembered that the rainfed production cycle is nearly twice as long as that of irrigated rice and in addition most of the work takes place at a time when other crops are being cultivated.

The Rice Centre

While it is clear that in some measure at least the farmers have benefitted from the project, a distinction must be made between the benefit derived by the farmers and the existence of the rice centre. It is all too easy to view the rice centre as a means of providing technical assistance to the farmers and as a channel for providing them with subsidised fertilizers and services. For the long-term benefit of the farmers the centre must be capable of functioning as an independent autonomous institution once the project is terminated. Such an objective implies that it will be capable of:

1. providing capital equipment for rice farming;
2. grouping purchases of fertilizer and equipment;
3. providing credit to farmers during campaigns;
4. supplying some form of technical assistance and training;
5. acting as a marketing organisation if necessary;

All these activities will have to be financed by fee income from the renting of capital equipment.

So far these functions do not appear to have been analysed in detail with a view to determining their true cost and establishing whether the current situation will permit their development, although steps are being taken in this direction. A major obstacle in the way, however, is the absence of readily verifiable financial records at the centre. While many records are kept, they are not established in an internally related form which permits easy access. As a result, the figures that will be quoted below are often approximations and should accordingly be treated with caution.

Profit and Loss Account

A pro-forma profit and loss account for the first six months of 1984, January-June, plainly shows that the centre would have difficulty in continuing if it provided fully for depreciation on its equipment and did not receive help from the project.

PRO-FORMA PROFIT AND LOSS ACCOUNT  
1984  
JANUARY-JUNE

|                     |                               | US\$1:CFA 410<br>(IMF 1984)<br><u>CFA</u> |
|---------------------|-------------------------------|---|
| Fee Income:         | Preparation 1st campaign 1984 | 284.160                                   |
|                     | hulling 2nd campaign 1983     | 78.400                                    |
|                     | rained 1983                   | 241.600                                   |
|                     | 1st campaign 1984             | 78.400                                    |
|                     |                               | <u>682.560</u>                            |
| Salaries            |                               | (121 500)                                 |
| Fuel - USAID        | Agricultural Machinery        | (135 400)                                 |
|                     | Vehicles                      | (233 870)                                 |
| Spare Parts - USAID | Agricultural Machinery        | (204 590)                                 |
|                     | Vehicles                      | (206 062)                                 |
|                     | - Centre                      | (95 840)                                  |
| Insurance - USAID   |                               | (92 305)                                  |
|                     |                               | <u>(1089 567)</u>                         |
|                     |                               | <u>(407 007)</u>                          |
| Depreciation        | Agricultural Machinery        | (407 051)                                 |
| of table            | Vehicles                      | (864 000)                                 |
|                     |                               | <u>(1271 051)</u>                         |
|                     |                               | <u>(1678 058)</u>                         |
| Other Income        |                               |   |
|                     | - Bananas                     | 11 595                                    |
|                     | - rice husks                  | 38 920                                    |
|                     | - rice & rice seed            | 51 040                                    |
|                     |                               | <u>101 555</u>                            |

|   |                 |                   |
|---|-----------------|-------------------|
| Other Expenses - centre                   | (14 535)        |                   |
| Draught Animals - expenses                | (36 030)        |                   |
| - training                                | (32 000)        |                   |
|   | <u>(82 565)</u> |                   |
| Net income/(Loss)<br>before unusual items |                 | <u>(1659 068)</u> |

|                      |                |                   |
|----------------------|----------------|-------------------|
| Extraordinary Income |                |                   |
| Fertiliser sold      | 240 050        |                   |
| Tools sold           | 339 100        |                   |
|                      | <u>579 150</u> |                   |
|                      |                | <u>(1079 918)</u> |

Depreciation Table  
(No provision for inflation or Fx)

Agricultural Machinery

|                                    |                  |  |                |
|------------------------------------|------------------|--|----------------|
| 2. Motor - Tillers Yanmar          |                  |  | <u>CFA</u>     |
| Unit price and<br>emergency spares | 493 766          |  |                |
| 25% customs                        | <u>123 442</u>   |  |                |
| TTC                                | 617 108          |  |                |
| depreciated over 5 years           | 128 251 p.a. x 2 |  | 256 502        |
| 1. Polisher/Huller                 |                  |  |                |
| Unit price                         | 1 950 400        |  |                |
| 25% customs                        | <u>487 600</u>   |  |                |
| TTC                                | 2 438 000        |  |                |
| depreciated over 5 years           | 487 600 p.a.     |  | 487 600        |
| 3. Threshers                       |                  |  |                |
| Unit price                         | 60 000           |  |                |
| 25% customs                        | <u>15 000</u>    |  |                |
| TTC                                | 75 000           |  |                |
| depreciated over 5 years           | 15 000 p.a. x 3  |  | 45 000         |
| 2. Winnowers                       |                  |  |                |
| Unit price                         | 50 000           |  |                |
| 25% customs                        | <u>12 500</u>    |  |                |
| TTC                                | 62 500           |  |                |
| depreciated over 5 years           | 12 500 p.a. x 2  |  | 25 000         |
|                                    | Sub Total        |  | <u>814 102</u> |

Transport Vehicles

|                          |                  |  |         |
|--------------------------|------------------|--|---------|
| 2. Suzuki TS 125 ERX     |                  |  |         |
| Unit price               | 656 000          |  |         |
| 25% customs              | <u>164 000</u>   |  |         |
| TTC                      | 820 000          |  |         |
| depreciated over 5 years | 164 000 p.a. x 2 |  | 328 000 |

|                              |                  |           |                  |
|------------------------------|------------------|-----------|------------------|
| 1. Toyota Land Cruiser BJ 45 |                  |           |                  |
| Unit price                   | 5 600 000        |           |                  |
| 25% customs                  | <u>1 400 000</u> |           |                  |
|                              | TTC              | 7 000 000 |                  |
| depreciated over 5 years     | 1 400 000 p.a.   |           | <u>1 400 000</u> |
|                              |                  | Sub Total | <u>1 528 000</u> |
|                              |                  | Total     | 2 562 102        |

To summarise, at the present time the centre is not self-supporting. Firstly, the fee income generated is clearly insufficient to maintain the existing capital equipment without the help of the project. Secondly, the importance of the amounts involved in running and depreciating the transport vehicles is such too great for an operation of this size. To redress the situation it would be necessary to increase the fee income generated and to seek alternative transport options.

Balance sheet

The pro-forma balance sheet shown below is at best an approximation of the centre's position. Too many elements cannot be assigned a definite value due to different recording methods (both within the centre and between the centre and the project). Nonetheless, the general picture is probably sufficiently accurate for a number points to be made.

Firstly, it is quite clear that USAID is effectively providing the capital for the centre and that this capital is being depleted by the operating losses of the centre, which are in part occasioned by the large amounts of depreciation required. Secondly, it would appear that the value of heavy equipment is disproportionately high for an operation of this scale.

Thirdly, it is evident that there is the danger of increasing illiquidity for the centre given the size of its working capital requirement, CFA 1.500.000 relative to its fee income CFA 700.000. The absence of increased financing for fertilizer purchases and the extension of credit to farmers is likely to prove a severe strain on the centre's activities in the future once the project funds cease to be available.

Pro Forma Balance Sheet

June 30th 1984

| ASSETS                    |                | CFA | LIABILITIES         |         |
|---------------------------|----------------|-----|---------------------|---------|
| Cash                      | 306.100        |     | USAID Project Funds |         |
| Accounts Receivable est.* | 1.012.500      |     | - tools             | 605.000 |
| Inventory est.            |                |     | - 3.5t 20.10.10.    | 898.875 |
| - tools                   | 100.900        |     | fertilizer          |         |
| - fertilizer              | 37.500         |     |                     |         |
| 0.25t 20.10.10.           | <u>138.400</u> |     | - Construction      | 523.000 |
|                           | 1.457.000      |     | material            |         |
| Construction materials    |                |     | - training          | 507.300 |
| - USAID                   | 523.000        |     | - light equipment   | 30.687  |
| - Centre                  | 268.590        |     |                     |         |
|                           | 791.590        |     |                     |         |

|                   |                    |
|-------------------|--------------------|
| Fixed Assests     |                    |
| - buildings       | 172.345            |
| - light equipment | 30.637             |
| - heavy equipment | 10.129.932         |
| - draught animals | <u>580.915</u>     |
| (depreciation)    | 10.915.679         |
| (1 year)          | <u>(2.542.102)</u> |
|                   | 8.951.777          |

|              |                |
|--------------|----------------|
| Intangibles  |                |
| - training   | 507.300        |
| - subsidies  | 385 000        |
| fertilizer   | <u>892 300</u> |
| Total Assets | 11.492.667     |

|                    |                |
|--------------------|----------------|
| .. draught animals | <u>580.915</u> |
|                    | 3.145.777      |

USAID Capital Equipment

|                         |                   |
|-------------------------|-------------------|
| - Construction          | 172.345           |
| - heavy equipment       | <u>129.932</u>    |
|                         | <u>10.302.277</u> |
|                         | 13.448.054        |
| Loss on 1st 6 months 84 | (1.079.918)       |
| Est. loss on 1983       | <u>( 875.469)</u> |
| Total Investment        | 11.492.667        |

\* Average of CFA 22.500 for 45 farmers 1st campaign.

Even with the projec. funds, the cashflow is practically negative before making provision for investment and working capital:

Pro Forma Cashflow

|                                      |                   |
|--------------------------------------|-------------------|
|                                      | <u>CFA</u>        |
| Net (Loss) Before Unusual Items      | (1659.068)        |
| Non cash charge - depreciation       | <u>1271.051</u>   |
| Funds from Operations                | ( 388.017)        |
| Extraordinary Income                 | <u>579.150</u>    |
|                                      | 191.133           |
| Investment in construction materials | <u>( 268.590)</u> |
|                                      | ( 77.457)         |

#### E. STRATEGIC OPTIONS

The present scale of operations at Bozoum is insufficient to ensure the continuation of the centre without project assistance. In order to expand production two courses of action are possible. These are either to increase the area irrigated or to expand the rainfed cultivation (or both of these). Both these options will require the provision of further assistance by the project both in material ways and in training.

The expansion of the irrigated area implies the re-excavation, probable extension and ensuing maintenance of the reservoir. At this point in time, without expert advice, it is impossible to judge the cost of such works. While under the psychological impact of the project's assistance more of the peasant-farmers may be willing to cooperate on *journées pionnières*. Additional expenses will undoubtedly have to be incurred, particularly if earth moving equipment needs to be used.

The amount of land that could be brought back into production by this measure would vary between 10 and 20 hectares depending on the scale of the work undertaken. If an area of 15 hectares was taken as a starting point it could be envisaged that 15 hectares would be cultivated during the first campaign and 5 hectares during the second campaign for a total of 20 hectares per year. Conservatively, the yields on this irrigated land may be estimated at 4 tons/hectare (thus taking into account the poor yields to date, in part at least explained by drought and lack of irrigation).

The difficulty arises of trying to place some monetary value on the improved irrigation system and of working out some way of incorporating its maintenance into the fee structure. Allowing for the fact that some of the maintenance will be undertaken on a communal basis, the assumption may be made that an extra charge of 10kgs of paddy for the maintenance of the irrigation system will be incorporated into the preparation fee of 40kgs paddy for the preparation of 10 ares. The new fee would thus be 50kgs per 10 ares or 500kgs per hectare.

In so far as a time framework is concerned, even if an expert visits the centre before the end of the year and reports favourably, work will not be able to commence before the dry season in early 1985 and it will be 1986 before the full benefit of the improved and expanded irrigated area will be felt. The implementation of this part of the expansion programme would thus fall beyond the end of the project as it is currently defined.

The expansion of the area devoted to the cultivation of rainfed rice is in some senses simpler although it requires a number of critical decisions and considerable organisation. Estimates vary as to the amount of land that could be used for rainfed cultivation, ranging from 20 hectares to 50 hectares. Initially, it may be wise to consider expanding to 30 hectares leaving the further 20 hectares to a latter date so as not to over-stretch management capabilities.

The key factor for the expansion of rainfed cultivation is the fact that the area must be prepared in one month (usually May) to allow sowing to take place in June. The critical bottleneck here is the availability of machinery capable of preparing the area designated within the required time. The

possibility of using draught animals, with a capacity of 25 ares a day, would imply - allowing for sickness, etc., and the daily limits of their working capacity - at least 110 days work or 10 pairs of draught animals (c. cfa 1.200.000 at current prices) and it is by no means sure that they would be capable of breaking the same dry land before the rains come\*.

For this reason, although it may be desirable to retain the existing draught animals as a reserve, their limitations make it undesirable to rely exclusively upon them for the preparation of the rainfed area within the required time.

Two other possible solutions remain: the utilization of a small tractor (40 hp has been mentioned as being capable of coping with the hard ground) or the introduction of more robust motor-tillers than the existing Yanmar (which have problems breaking the soil before the rains come). It is estimated that a small tractor would cost in the neighbourhood of CFA 8.000.000 and it should be capable of preparing 1 hectare of ground per day. Details of more robust motor-tillers (such as those used for mountain cultivation in Switzerland) are not currently available but it will be assumed for simplicity's sake that they would cost half as much as the tractor and be capable of preparing 50 ares per day: thus two motor-tillers would be required (which would confer greater flexibility and security on the operation) and the expenditures involved would be calculated at the same level as for the tractor which probably over-states considerably the real cost involved and provides some margin.

A by-product of either of these two solutions is that they would offer a means of transport between the centre and Boreum (a cart may be attached to the motor-tiller). A disadvantage is obviously the maintenance factor and any decision to adopt either of these solutions would have to be underpinned with adequate stocks of spare parts and the provision of a well-trained mechanic capable of dealing with all but the most major breakdowns.

In so far as yields are concerned for rainfed cultivation, the figure of 2.7 tons a hectare obtained in 1962 was already above the targeted level of 2 tons a hectare. To err on the conservative side, a figure of 2,5 tons a hectare will be used in the projections.

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\* footnote: It should be borne in mind that the draught animals used are of a considerably lighter build than those utilised in South East Asia, and are often subject to sickness.

PROJECTIONS

US \$ 1 CFA 410  
(IRF 1984)

PROFIT AND LOSS ACCOUNT  
CFA (000)

|                            | <u>1985</u>   | <u>1986</u>   | <u>1987</u>   | <u>1988</u>   | <u>1989</u>   |
|----------------------------|---------------|---------------|---------------|---------------|---------------|
| Fee Income (1):            |               |               |               |               |               |
| Irrigated:                 |               |               |               |               |               |
| 1st campaign: preparation  | 330           | 871           | 1197          | 1319          | 1449          |
| hulling                    | 132           | 418           | 670           | 738           | 811           |
| 2nd campaign: preparation  | 330           | 363           | 399           | 440           | 483           |
| hulling                    | 132           | 174           | 223           | 246           | 271           |
| Rainfed: Preparation       | 1328          | 2178          | 2394          | 2637          | 2898          |
| hulling                    | 517           | 700           | 766           | 844           | 927           |
|                            | <u>2761</u>   | <u>4704</u>   | <u>5649</u>   | <u>6224</u>   | <u>6839</u>   |
| Salaries (2): Monthly      | 210           | 241           | 278           | 319           | 367           |
| daily                      | 37            | 67            | 82            | 95            | 109           |
|                            | <u>(247)</u>  | <u>(308)</u>  | <u>(360)</u>  | <u>(414)</u>  | <u>(476)</u>  |
| Agricultural machinery (3) |               |               |               |               |               |
| fuel                       | 364           | 637           | 820           | 955           | 1097          |
| spare parts                | 1342          | 1543          | 1775          | 2041          | 2347          |
|                            | <u>(1706)</u> | <u>(2170)</u> | <u>(2595)</u> | <u>(2996)</u> | <u>(3444)</u> |
| Transport vehicles (4):    |               |               |               |               |               |
| fuel                       | 902           | 1037          | 1194          | 1371          | 1576          |
| spare parts                | 1088          | 1251          | 1439          | 1655          | 1903          |
| insurance                  | 106           | 122           | 140           | 161           | 186           |
|                            | <u>(2096)</u> | <u>(2410)</u> | <u>(2773)</u> | <u>(3187)</u> | <u>(3665)</u> |
| Depreciation (5):          |               |               |               |               |               |
| Agricultural machinery     | 1936          | 2225          | 2559          | 2943          | 3384          |
| Transport vehicles         | 1987          | 2285          | 2628          | 3022          | 3476          |
|                            | <u>(3923)</u> | <u>(4510)</u> | <u>(5187)</u> | <u>(5965)</u> | <u>(6860)</u> |
| Other Income:              |               |               |               |               |               |
| By-Products                | 117           | 135           | 155           | 178           | 205           |
| Renting of equipment       | 165           | 182           | 200           | 220           | 242           |
|                            | <u>282</u>    | <u>317</u>    | <u>355</u>    | <u>398</u>    | <u>447</u>    |
| Other Expenses             | (33)          | (38)          | (44)          | (51)          | (58)          |
| Brought Animals            | (83)          | (95)          | (110)         | (127)         | (145)         |
| Net Income/(Loss)          | <u>(5045)</u> | <u>(4510)</u> | <u>(5365)</u> | <u>(6118)</u> | <u>(7362)</u> |

ASSUMPTIONS:

1. Fee Income

Irrigated areas:

|                        | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| 1st campaign hectares  | 5           | 12          | 15          | 15          | 15          |
| 2nd campaign, hectares | 5           | 5           | 5           | 5           | 5           |
|                        | <u>10</u>   | <u>17</u>   | <u>20</u>   | <u>20</u>   | <u>20</u>   |
| Yields t/ha            | 3,0         | 3,5         | 4,0         | 4,0         | 4,0         |
| Conversion rate        | 60%         | 60%         | 60%         | 60%         | 60%         |
| Preparation fee/10ares | 50kg        | 50kg        | 50kg        | 50kg        | 50kg        |
| Hulling fee/100kg      | 8kg         | 8kg         | 8kg         | 8kg         | 8kg         |

Rainfed Areas

|                         | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
|-------------------------|-------------|-------------|-------------|-------------|-------------|
| Area                    | 20          | 30          | 30          | 30          | 30          |
| Yield t/hectare         | 2,5         | 2,5         | 2,5         | 2,5         | 2,5         |
| Conversion rate         | 60%         | 60%         | 60%         | 60%         | 60%         |
| Preparation fee/10ares* | 50kg        | 50kg        | 50kg        | 50kg        | 50kg        |
| Hulling fee/100kg       | 8kg         | 8kg         | 8kg         | 8kg         | 8kg         |

\* increased from 40kg to reflect new equipment cost and convenience.

Rice Price

Inflated by 10% p.a. on basis of CFA 200kg in 1984

| <u>CFA</u> | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
|------------|-------------|-------------|-------------|-------------|-------------|
| Rice kg.   | 220         | 242         | 266         | 293         | 322         |

2. Salaries

Salary costs are inflated by 15% p.a. Monthly salaries amounted to CFA 182,500 p.a in 1984. Daily salaries were set at CFA 500 per day in 1984.

Number of days worked

|                         | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
|-------------------------|-------------|-------------|-------------|-------------|-------------|
| Preparation of land*    |             |             |             |             |             |
| Irrigated :1st campaign | 12          | 29          | 36          | 36          | 36          |
| 2nd campaign            | 12          | 12          | 12          | 12          | 12          |
| Rainfed                 | 40          | 60          | 60          | 60          | 60          |
| TOTAL                   | <u>64</u>   | <u>101</u>  | <u>108</u>  | <u>108</u>  | <u>108</u>  |
| Daily salary CFA        | 575         | 661         | 760         | 875         | 1006        |

\* Footnote: Preparation of irrigated land is based on the figure of 17 hours for the labourer and plough of 1 hectare. Preparation of rainfed land is based on the new motor-tillers which require 2 days for 1 hectare.

3. Agricultural machinery

Agricultural machinery costs are based on the following fuel consumption:

|                  | Liters      |             |             |             |             |
|------------------|-------------|-------------|-------------|-------------|-------------|
|                  | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
| diesel           | 1011        | 1512        | 1750        | 1750        | 1750        |
| oil              | 49          | 76          | 83          | 83          | 83          |
| transmission oil | 69          | 108         | 116         | 116         | 116         |

Fuel

Fuel prices are projected to rise by 15% p.a. on 1984 base prices:

|                  | CFA/liter   |             |             |             |             |             |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                  | <u>1984</u> | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
| diesel           | 215         | 247         | 284         | 327         | 376         | 432         |
| petrol           | 248         | 285         | 328         | 377         | 434         | 499         |
| 2T oil           | 630         | 725         | 833         | 958         | 1012        | 1267        |
| Motor oil        | 785         | 905         | 1038        | 1194        | 1373        | 1579        |
| Transmission oil | 900         | 1035        | 1190        | 1369        | 1574        | 1810        |

Spare parts

Spare parts are projected at 10% of the 1984 cost of equipment inflated by 15% p.a. plus an extra CFA 200.000 for the additional rainfed cultivation equipment.

4. Transport vehicles

Fuel is based on 1984 consumption inflated by 15% p.a. Spare parts are projected at 10% of the 1984 cost and inflated by 15% p.a. Insurance costs for 1984 are inflated by 15% p.a.

5. Depreciation

Depreciation is based upon 1984 prices inflated at 15% p.a.,. Agricultural machinery includes a provision for amortisation of a tractor costing CFA 8.000.000 over 8 years, purchased in 1985.

6. Other income

It is estimated that the tractor could be rented out for alternative uses, e.g. cotton preparation, for another 6 weeks per year at a fee of CFA 5,000 per day in 1984. This fee will increase by 10% p.a.

By-products from rice production will continue to be sold and are estimated to rise by 15% p.a.

7. Other Expenses

Historical expenses are inflated by 15%, p.a.

8. Draught animals

Historical expenses are projected to increase by 15% p.a.

At first sight the projections present a pretty depressing picture with constant losses. It must, however, be borne in mind that very conservative assumptions have been made with respect to inflation and the production and price of rice. In addition the provision for the new rainfed equipment is generous.

Nonetheless the projections do permit the disproportionate percentage of costs incurred by the transport vehicles to be clearly identified:

| CFA (000)       | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
|-----------------|-------------|-------------|-------------|-------------|-------------|
| Fee Income      | 2761        | 4704        | 5649        | 6224        | 6839        |
| Transport costs | (4683)      | (4695)      | (5401)      | (6209)      | (7141)      |
| Net (Loss)      | (3045)      | (4515)      | (5365)      | (6118)      | (7362)      |

It is quite obvious that without the transport costs the centre would be more or less in a breakeven situation even given the unfavourable assumptions that have been made. If in addition the area cultivated could be increased then the centre should be in a situation in which, with good management, it should be capable of becoming autonomous.

The projections could be modified to reduce transport costs as follows:

Firstly, dispose of the Toyota Land Cruiser and have recourse to contractors (currently the project costs transport to Bozoum at CFA 20/kg and this figure could probably be reduced if a return journey was made with rice to Bangui). The cost of making such a journey once every two weeks with a load of 1 ton would currently be about CFA 520,000 a year.

Secondly, replace the Suzuki Trial motor-cycles by mopedettes which would be quite adequate for the 8km between Bozoum and the centre. A mopedette currently costs CFA 275,000 as opposed to CFA 820,000 for the Suzuki, and associated costs would also decline.

On this basis the transport costs could be drastically reduced - spare parts would fall to c. CFA 50,000 per year, and other costs would probably fall correspondingly. It could thus be estimated that, including the cost of contracting, transport costs would fall to 15% of their current level.

Nonetheless, even on this revised basis the centre would incur a loss unless production were expanded. For the centre to be viable it is therefore necessary to increase the amount of rainfed cultivation using overtime on the tractor/motor-filters or more economically using the draught animals. In this way at least another 10 hectares could be added to the centre, with the corresponding increase in fee income that this would represent.

REVISY PROJECTIONS

|                        | <u>PROFIT AND LOSS ACCOUNT</u> |             |             |             |             | CFA (000) |
|------------------------|--------------------------------|-------------|-------------|-------------|-------------|-----------|
|                        | <u>1985</u>                    | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |           |
| Fee Income             | 3680                           | 5663        | 6702        | 7384        | 8114        |           |
| Salaries               | (170)                          | (334)       | (390)       | (449)       | (516)       |           |
| Agricultural machinery | (1706)                         | (2176)      | (2595)      | (2996)      | (3444)      |           |
| Transport (incl dep)   | (766)                          | (1579)      | (1014)      | (1164)      | (1340)      |           |
| Depreciation           | (1936)                         | (2225)      | (2559)      | (2943)      | (3384)      |           |
| Other Income           | 282                            | 317         | 355         | 398         | 447         |           |
| Other Expenses         | (33)                           | (36)        | (44)        | (51)        | (58)        |           |
| Draught Animals        | (63)                           | (95)        | (110)       | (127)       | (145)       |           |
| Net profit/(Loss)      | (652)                          | (452)       | 345         | 52          | (326)       |           |

On this basis it is possible to see the centre becoming self-supporting in 1987 and 1988 if the project continued its support until then. Thereafter the continuation of the project would depend greatly upon the ability of the direction to find additional sources of income using existing equipment more intensively. In fact, it is likely given the light use that is made of the agricultural equipment that it could be depreciated over a longer period if it is well maintained which would have a favourable impact on the profit and loss account.

REVISED PROJECTIONS

|                                  | <u>BALANCE SHEET</u>       |                           |                           |                           |                           |                           | CFA (000) |
|----------------------------------|----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-----------|
|                                  | <u>June</u><br><u>1984</u> | <u>Dec</u><br><u>1985</u> | <u>Dec</u><br><u>1986</u> | <u>Dec</u><br><u>1987</u> | <u>Dec</u><br><u>1988</u> | <u>Dec</u><br><u>1989</u> |           |
| Cash                             | 306                        | 41                        | 562                       | 2770                      | 3098                      | 5631                      |           |
| Accounts Receivable(1)<br>4057   |                            | 1012                      | 1840                      | 2832                      | 3351                      | 3692                      |           |
| Inventory(2)                     | 138                        | 330                       | 537                       | 654                       | 753                       | 865                       |           |
| Spare Parts(3)                   | -                          | 349                       | 402                       | 462                       | 531                       | 611                       |           |
| Fixed Assets(4)                  | 11705                      | 14148                     | 14148                     | 14148                     | 15318                     | 15318                     |           |
| (depreciation)(5)                | (2562)                     | (4498)                    | (6723)                    | (9282)                    | (10067)                   | (13451)                   |           |
| Net Fixed Assets                 | 9143                       | 9650                      | 7425                      | 4866                      | 5251                      | 1867                      |           |
| Intangibles                      | 892                        | 892                       | 892                       | 892                       | 892                       | 892                       |           |
| Total Assets                     | <u>11491</u>               | <u>13102</u>              | <u>12650</u>              | <u>12995</u>              | <u>14217</u>              | <u>13923</u>              |           |
| U.S. AID Project Funds<br>48     |                            | 13447                     | 13448                     | 13448                     | 13448                     | 13448                     | 134       |
| Arrests disposed of              |                            | (6109)                    | (6109)                    | (6109)                    | (4939)                    | (4907)                    |           |
|                                  |                            | 8550                      | 8550                      | 8550                      | 8550                      | 8550                      |           |
| Profit/(Loss) Brought<br>Forward | (1955)                     | (2787)                    | (3239)                    | (2894)                    | (2842)                    | (3168)                    |           |
| TOTAL INVESTMENT                 | <u>11492</u>               | <u>13102</u>              | <u>12650</u>              | <u>12995</u>              | <u>14217</u>              | <u>13923</u>              |           |

\* Adjusted for difference in residual value of assets and spare parts replaced.

REVISED PROJECTION:

BALANCE SHEET ASSUMPTIONS

1. Accounts Receivable

Accounts Receivable are projected at a level of 180 days of fee income to allow for lags in payments from farmers.

2. Inventory

Inventory will consist of fertilizer which is projected to be utilised at 60% of the following rates: 150kg Urea/Hectare and 100kg Sulfate/Hectare.

|                    | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
|--------------------|-------------|-------------|-------------|-------------|-------------|
| Surface (Hectares) | 40          | 57          | 60          | 60          | 60          |
| Urea tons          | 6,0         | 8,55        | 9,0         | 9,0         | 9,0         |
| Sulfate tons       | 4,0         | 5,7         | 6,0         | 6,0         | 6,0         |
| 60% Urea           | 3,6         | 5,1         | 5,4         | 5,4         | 5,4         |
| 60% Sulfate        | 2,4         | 3,4         | 3,6         | 3,6         | 3,6         |
| Urea CFA/kg*       | 213         | 245         | 282         | 324         | 373         |
| Sulfate CFA/kg*    | 230         | 264         | 304         | 350         | 402         |

\* 1984 price projected to rise by 15% p.a.

It is estimated that three months supply of fertilizer will be kept in stock.

3. Spare Parts

It is assumed that three months supply of spare parts will be held in stock.

4. Fixed Assets

For convenience, construction materials of CFA 791590 to be purchased June 1984 are included among fixed assets.

By the end of 1985 it is assumed that the Toyota has been disposed of and that the Suzukis have been exchanged for mobylettes. It is also assumed that a capital expenditure of CFA 8.000.000 has been made to acquire equipment for the rainfed cultivation. In addition, the Yanmar motor-tillers should be replaced at the end of 1988 at an estimated total cost of CFA 2.158.277.

5. Depreciation

Depreciation has been calculated using the 1984 base where this is applicable and then adjusting this for inflation at a rate of 15% p.a.

For the heavy equipment depreciation may be broken down as follows:

|                   | <u>CFA (000)</u> | Depreciated over |             |
|-------------------|------------------|------------------|-------------|
| 2 Motor-tillers   | 1 234            | 5 years          | 256 (1984)  |
| 1 Polisher-huller | 2 438            | 5 years          | 488 (1984)  |
| 3 Thrashers       | 225              | 5 years          | 45 (1984)   |
| 2 Winnowers       | 125              | 5 years          | 25 (1984)   |
| 2 Holeyettes      | 550              | 5 years          | 110 (1985)  |
| Rainfed equipment | 8000             | 8 years          | 1000 (1985) |
|                   | <u>12572</u>     |                  | <u>1924</u> |
| Buildings         | 964              |                  |             |
| Light Equipment   | 31               |                  |             |
| Draught Animals   | 591              |                  |             |
|                   | <u>1576</u>      |                  |             |
| TOTAL             | <u>14148</u>     |                  |             |

REVISED PROJECTIONS

|                               | CASHFLOW      |               | CFA (000)    |              |              |
|-------------------------------|---------------|---------------|--------------|--------------|--------------|
|                               | <u>1985</u>   | <u>1986</u>   | <u>1987</u>  | <u>1988</u>  | <u>1989</u>  |
| Net Profit/(Loss)             | (832)         | (452)         | 345          | 52           | (326)        |
| Depreciation                  | 1936          | 2225          | 2706         | 2943         | 3384         |
| Gross funds from operations   | <u>1104</u>   | <u>1773</u>   | <u>2904</u>  | <u>2995</u>  | <u>3058</u>  |
| Working Capital               |               |               |              |              |              |
| Accounts receivable           | (828)         | (992)         | (519)        | (341)        | (365)        |
| Inventory                     | (192)         | (207)         | (117)        | ( 99)        | ( 80)        |
| Spare Parts                   | (349)         | ( 53)         | ( 60)        | ( 69)        | ( 80)        |
| Working Capital required      | <u>(1369)</u> | <u>(1252)</u> | <u>(696)</u> | <u>(509)</u> | <u>(525)</u> |
| Net funds from operations     | <u>265</u>    | <u>521</u>    | <u>2208</u>  | <u>2486</u>  | <u>2533</u>  |
| Investment                    | (8550)        | -             | -            | (2158)       | -            |
| Financing/Asset Sale Required | 8550          | -             | -            | -            | -            |
| Cash and Banks                | (265)         | 521           | 2208         | 328          | 2533         |
| (Cumulative)                  | 41            | 562           | 2770         | 3098         | 5631         |

With these revised projections the situation starts to come into balance. The cashflow is positive and the centre is able to finance the replacement of the motor-tillers without difficulty. The replacement of the huller/polisher in 1989 could also be envisaged without straining cash reserves. After the initial period the demands for working capital become less important and can well be financed from the cashflow.

The critical point is the replacement of the transport vehicles by cheaper modes of transport and the investment of the funds so released in productive equipment.

Undoubtedly there are weak points. The effective utilization of equipment is low and should be considerably higher - to which end any alternative uses of the equipment to produce income are to be encouraged as is the utilization of equipment costing less than CFA 8.000.000 for the expansion of rainfed cultivation. In addition, no provision has been made for the centre to take on additional paid personnel which will eventually have to be considered. Much will continue to depend on the management of the Centre and its ability to successfully co-ordinate the extended activities.

The rice centre of Boumba may, if certain conditions are fulfilled, evolve into an autonomous self-financing institution, but it is by no means a clear-cut case. There are considerable risks involved and in any event the centre will not be in an autonomous position before 1987 at the earliest. Over that period of time it will require additional financing of at least CFA 8.550.000 to re-structure its capital equipment, although part of this amount should be recouped through the disposal of the Suzuki and the Land Cruiser. Without such assistance and the re-structuring of its expansion to generate more fee income the centre will never become self-supporting.

## F. CONCLUSION

For all the discussion of the expansion of production at Bozoum it should not be forgotten that the rice centre at Bozoum is a small project. As with practically all projects of such a size material assistance is insufficient unless there is adequate management. In the final analysis, therefore, the key elements are human or people orientated.

It is in this light that the centre's continued functioning must be viewed and its weaknesses identified. At the present time there is no difficulty about marketing Bozoum's rice as the centre benefits from a seller's market. Even with increased production there should be no difficulty in disposing of the harvest unless there is a radical change in the government's import policy. The centre's marketing function is thus assured at the present time without difficulty.

In fact the problems are far more likely to arise from a shortage of supply due to mechanical breakdowns either of the motor-tillers or of the huller/polisher. It cannot be stressed too often how vulnerable Bozoum is to mechanical failure and how isolated it is from assistance. Emphasis has been laid upon the keeping of an adequate stock of spare parts but in itself this will not be sufficient unless somebody reliable is trained and present to deal continuously with all maintenance and repair problems. It is highly desirable that someone should be selected and trained to a sufficient level to cope with the mechanical problems that the centre may face. Such a requirement becomes all the more necessary if investments are made in additional equipment for rainfed cultivation.

At this stage it is not clear whether it will be worthwhile to increase the capacity of the centre's reservoir although such a step is obviously desirable from the point of view of fee income generation. A survey should definitely be carried out to determine what is possible and/or worthwhile doing, preferably within the immediate future.

Although the amount of technical assistance provided by the centre is one of the chief points in its favour, nonetheless, it is probably desirable that some additional training in irrigated cultivation should be given to the rice farmers and to this end the appropriate extension agent should probably pursue further studies. In fact, if the extension plans go ahead then there is likely to be an increased number of new rice farmers who will need considerable technical assistance over the first few campaigns unless yields are to drop below target. Attention should obviously also be directed towards rainfed cultivation since this is the major area of expansion.

Currently Bozoum benefits from a clearly defined management structure, and in particular from the presence of the long-serving director. It is by no means certain that this state of affairs will continue if plans go ahead for the transformation of Bozoum into a co-operative. The peasant farmers have multiple interests of which rice cultivation is but one and it is probably unrealistic to expect them to devote increased time to co-operative affairs. In addition, it is difficult to foresee how the centre's management, paternalistic and technocratic by tradition, will cope with the fragmentation of decision-making which would normally be entailed by the establishment of a

co-operative. Assistance will thus be required to help the centre over the transition stage and towards organisation of new patterns of authority. Perhaps the DACCA, the Direction de l'Action Coopérative et du Crédit Agricole, could provide some guidance at this point.

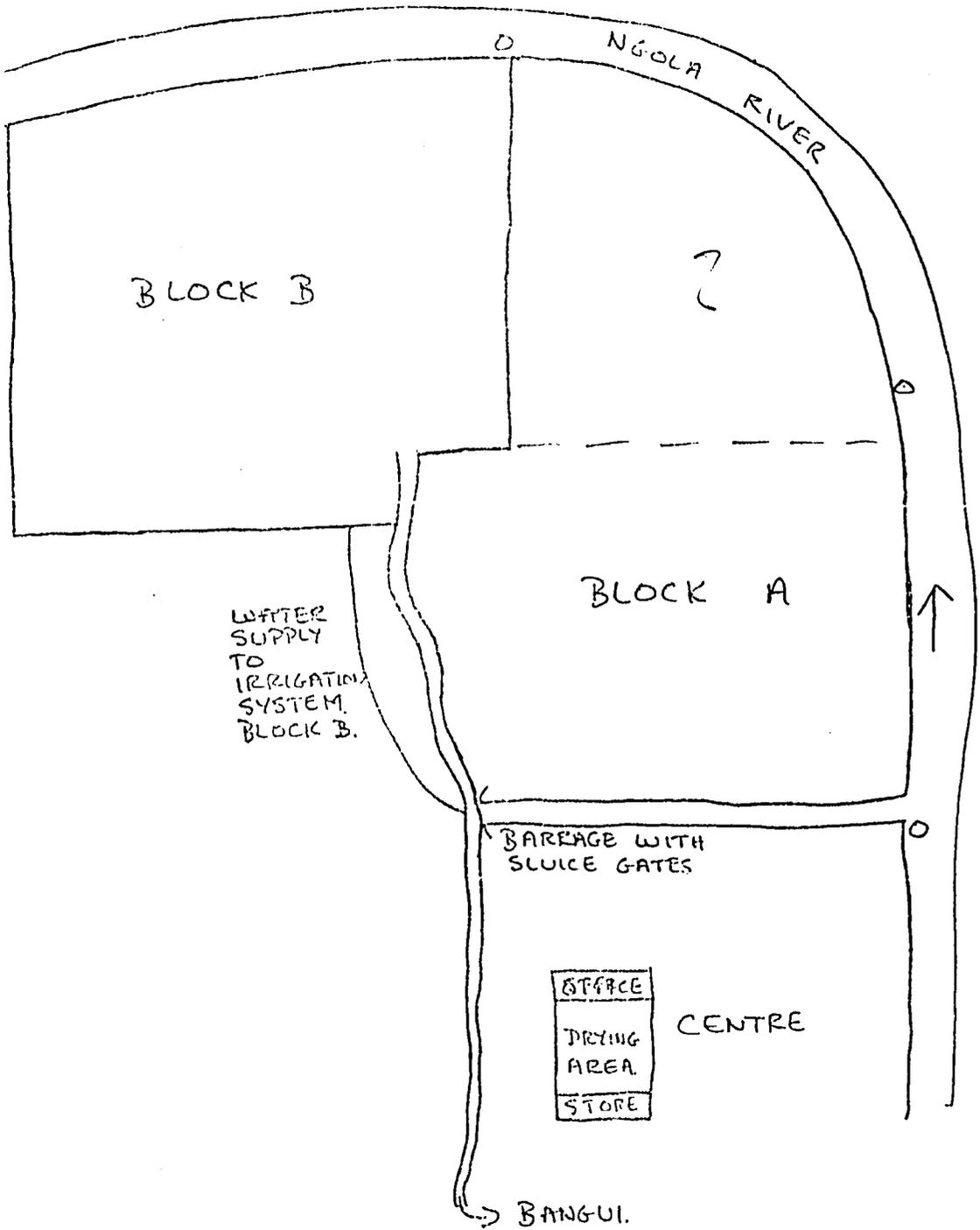
The expansion of the centre's activities and its formal organisation will also require a more sophisticated accounting system than that which is currently in place. At the present time the extension agents perform the tasks of store-keeper and cashier while the director keeps the accounts. It is probably advisable that an accounting system be installed by an expert. At this stage it is not clear whether the scale of operations will require a specialised cashier/book-keeper but the possibility should be examined and, if necessary, appropriate training given. The need for control systems as the centre expands is self-evident.

In addition the growth of the centre's credit functions will place an extra strain upon the administrative capacity of the centre. Given the amounts involved it is probably desirable that the director assumes responsibility for this area of the centre's activities. Delays in payment could have a serious impact on the centre at certain times of the year due to the cyclical nature of production. At the present time the number of peasant farmers is small and decisions relating to credit are relatively easy. It will not be as simple to control the system when the numbers double.

For all the discussion of the necessity for expansion and the marginal character of the centre's economic viability it should be underlined that the impression made by the Bazoum rice centre is of a well managed concern. It would be a pity if, in pursuing an expansionist policy, the importance of the management's quality was lost sight of.

SAKAYE

SKETCH MAP OF SAIKAYE.  
(NOT TO SCALE)



o = estimated position of old pumps

## A. INTRODUCTION

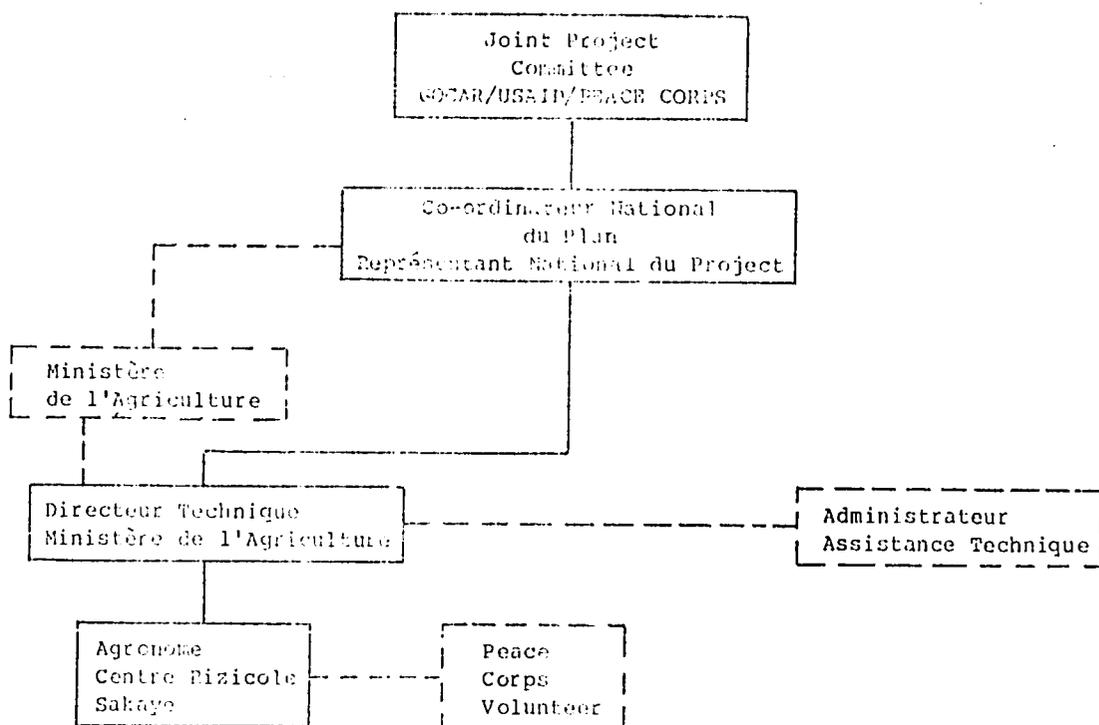
The rice centre of Sakaye is located twenty kilometres by road to the west of the capital Bangui, and is in fact greatly affected by its proximity to the capital. The rice centre is surrounded by five villages, Sakaye I, II, III, IV and V. It lies in the alluvial plain created by the Oubangui river. The climate comprises the typical wet and dry season of the region although temperatures are more moderate than in the North. The milder climate offers a variety of agricultural possibilities including coffee, cassava and maize.

As at Bozoum the cultivation of rice was developed by the Taiwanese in the context of their general development assistance program. With the withdrawal of the Taiwanese a co-operative was formed in 1975 by about 100 farmers to continue the cultivation of the irrigated rice fields. In fact, however, the co-operative was only active in half of the original area, or in "Block B", which has about 33 hectares. The army took over "Block A" which is about 32 hectares. When the army left Block A the irrigation system, based on a diesel powered irrigation pump, was no longer in working condition. As a result, the area cultivated has declined from 65 hectares at the time of the Taiwanese to 15,9 hectares in 1981.

The withdrawal of the Taiwanese inevitably had a serious effect upon rice cultivation. Difficulties were encountered in maintaining existing equipment in working order although great efforts were made. In addition, the absence of the Taiwanese had a considerable effect upon the management of the irrigation system and the number of farmers was practically halved. Inevitably yields declined as seed stocks were exhausted and degenerated. Nonetheless, the 1981 paddy yield of 2.9t/hectare was very creditable in the circumstances.

The project design team sent by USAID in 1981 was sufficiently impressed by the efforts being made at Sakaye to adopt it as one of the rice centres to benefit from USAID assistance. At that time AID policy was "to design and successfully implement projects meeting the needs of the poor majority in the CAR without the existence of a major U.S. Government economic assistance program in the country".

As at Bozoum, the project is a tri-partite co-operative effort among USAID and the Central African Republic authorities with the assistance of the Peace Corps. The current organisational structure is the same as at Bozoum:



The position is, however, complicated further by the fact that Sakaye is a cooperative. Initially, the co-operative was effectively managed by technical experts seconded by the Ministry of Agriculture. The Ministry named a director and two other agents. The co-operative was theoretically administered by an Administrative Council consisting of eight members including a President, a Secretary and a Treasurer. Currently the members of the co-operative, with the assistance of one Peace Corps volunteer, are becoming more active so that they are playing a greater role in decision-making. Inevitably this has resulted in some problems since the taking of decisions has become more complex and more time-consuming as more people are involved.

Project administration, as distinct from co-operative administration, is still carried out by the USAID Project Administrator and the GOCAR's Technical Director who are located in Bangui with easy communications to Sakaye. The overall responsibility for the project for Sakaye remains with the patronal Plan Co-ordinator under the Joint Project Committee.

Financially, total expenditure on the Sakaye project was set at US \$275,500 to be spread over three years. The USAID contribution was the largest, at US \$208,400, while the Government of the Central African Republic (GOCAR) was to contribute US \$16,500 and Peace Corps volunteers to the value of US \$50,600 were to be provided.

Of the USAID contribution of US \$208,400 it was envisaged that part of the expenditure be used towards the purchase of equipment and commodities and to help meet some of the centre's operating expenses:

US \$ (000)

|                           | Year 1 | Year 2 | Year 3 | TOTAL      |
|---------------------------|--------|--------|--------|------------|
| <u>Commodities</u>        |        |        |        |            |
| Vehicles/Spare Parts      | 25,0   | 0,8    | 1,4    | 27,2       |
| Equipment/Spare Parts     | 24,3   | -      | -      | 24,3       |
| Farm tools                | 3,0    | 3,8    | -      | 6,8        |
| Fertilizers               | 29,6   | 19,0   | 6,3    | 54,9       |
| <u>Other Costs</u>        |        |        |        |            |
| Operating Costs Vehicles  | 3,5    | 4,1    | 4,2    | 11,8       |
| Operating Costs Equipment | 1,9    | 0,2    | 0,2    | <u>2,3</u> |
|                           |        |        |        | 127,3      |

USAID funds were also ear-marked for administration, technical assistance and training. A contingency provision of 5% and a 12% inflation factor were also built into the project expenditure plan to arrive at the final total of US \$208,400.

The project is due to come to an end in December, 1985, so that it is currently at the half-way stage. It is therefore an opportune moment to undertake an assessment of the project's accomplishments to date and the likelihood of it attaining the goal of fostering a centre which will be capable of operating independently as an autonomous self-financing institution.

## B. THE PRODUCTION CYCLE

In many senses the production cycle at Sakaye is both simpler and more complicated than that at Bozoum - simpler because Sakaye has only irrigated rice fields and no rainfed; more complicated because there is a much greater degree of individual freedom in the farmers' behaviour at Sakaye than at Bozoum.

Unlike Bozoum, it is the individual farmers who decide when they will cultivate their plots which are usually 10 ares (10mx10m). The plots usually remain permanently in the hands of the co-operative member and the management does not distribute them among the members. As a result, given the fact that the rice is irrigated, it may be grown throughout the year and typically neighbouring plots will have rice at different stages of cultivation.

The actual production cycle is approximately five months. The period is determined by the variety of rice grown which normally requires 120 days to reach harvest stage. Although varieties exist which will be ready for harvesting in 90 days, they have not been very successful in the Central African Republic in terms of yield. Adding the preparatory period and the harvesting time, a total of 150 days or five months is required for one rice cycle.

The land will be cleared first of all, if this is necessary, and then the motor-tillers will be used to prepare the plots - first of all ploughing them and then levelling them (these two operations "labourage" and "planage" together constitute the preparation for work or "droit de labour"). The ground is now ready for replanting.

The farmer will have already made his own nursery and will transplant the seedlings. At Sakaye it is noticeable that the plots are not as well planted as at Bozoum, although apparently progress towards planting in rows with even spacing is being made. The working pattern on the different plots varies considerably, largely as a function of age and social standing. A young farmer may transplant his plot alone, whereas a prosperous member of the community will have three or four paid labourers to carry out the work under his supervision. There appears to be less of the mutual self-help that was evident at Bozoum.

Thereafter the farmer will spread the first dose of fertilizer and the familiar pattern of weeding, fertilising and treatment against insects follows. The quality of field care varies enormously, as do the yields from 1.7 t/ha to 7 t/ha. The best farmers make two or even three applications of fertilizer whilst systematically weeding their plots. The performance of others is ragged to say the least with one application of fertilizer being the maximum because of cost considerations.

In part yields will be affected by the efficiency of the water control. The best plots will be well watered at the right times (thus permitting easier weeding) and easy to drain for the harvest. Other plots will suffer from an excess or shortage of water which will considerably reduce yields. In addition, birds, particularly in the dry season, are a menace and can devastate a plot to such an extent that it is no longer worth harvesting. Bird scaring is thus a great importance.

At harvest time the plot ideally is drained and rapidly harvested by ten to fifteen people, often members of the extended family group. At this point the paddy is distributed to those who have participated in the harvest, the amount varying between 10 and 20kg per head.

The rice is threshed near the plot although this creates transport problems since the threshing buildings where the machinery is stored are at some distance from Block B and the track is in poor condition. The paddy is then brought in carts to the centre for drying where it will spend 3-6 days outside depending upon the amount of sunshine or rain. It is estimated that at this point 1kg of weight is lost for every 6 kg of paddy. Afterwards the paddy is winnowed and then weighed and put in sacks. At this point the "droit de labour" of 40kg Paddy for 10 area is exacted which is usually paid in kind at Sakaye. The production figures, based on the amount of paddy weighed at this time, are not always very exact since, apart from the paddy distributed to the harvesters, the farmer will often also take rice for his own consumption (estimated at c. 40kg) and for seed purposes before having his paddy weighed. A round figure of 100kg of paddy rice should probably be added to each plot's production.

Once there are 2-5 tons of paddy in stock it is worthwhile to commence hulling and polishing operations. Currently the Yanmar is capable of treating 1.3 tons of paddy a day which at a 60% conversion rate produces 0.8 tons of rice (800kg). The centre then takes its fee, usually in kind, of 10kg of rice for every 100kg produced. The rice is now ready for sale.

It is at this stage that Sakaye has experienced problems unlike Bozoum. Rice prices round Bangui were badly affected by the gift of Japanese rice following the severe drought of 1982/1983: this rice sold on the market at c. CFA 150kg (Bozoum rice sells at c. CFA 200kg). Although Japanese rice has now almost disappeared from the market, its effects are still felt. The difficulties over marketing the rice meant that the co-operative, more precisely the management, moved into the role of selling the rice. The co-operative thus took on the function of a marketing organisation of which it had no experience and which typically offers opportunities for "magouille". Marketing efforts are still fairly rudimentary. Rice is sold to individuals, often women who come out from Bangui, in quantities of 5, 10 or 20kgs. The co-operative has also sought to enter into contact with merchants to whom it sells by the ton with the merchants arranging their own transport. The prices that have been obtained are not very encouraging, c. CFA 180kg.

In part the management ascribes the relatively unsuccessful marketing efforts. It is true that a lot of the rice is broken, ("brisures"), during the polishing process. As yet it is unclear as to precisely why this occurs. Various hypotheses have been advanced - the plots are not sufficiently drained at harvest time; some varieties break more than others; the paddy attracts too much humidity whilst it is in storage; the machine is not appropriate for irrigated rice or is badly adjusted, etc, etc... It is also not clear how much consumer resistance to broken rice actually exists, nor to what extent the low prices may be due to poor selling techniques when dealing with sophisticated customers or conflicts of interest.

In any event it is clear that greater attention will have to be paid to the marketing effort in the future. At the same time it is also obvious that a more sophisticated marketing effort will need to be accompanied by increased financial resources to fund the holding of stocks and the eventual sale of rice on credit to merchants. It is only when cash is finally received for the sale of rice that the co-op can hope to recoup the advances that it has made to the members of the co-operative for seed, fertilizer and tools as well as those fees that have not been paid in kind. The financing of a production cycle may thus easily spread over six months, by which time the next campaign may well be under way.

## C. RESOURCES

### The land

The rice centre of Sakaye is situated in the alluvial plain of the Oubaogui River. The total area that had been cultivated, Block A and Block B, amounts to 65 hectares and it may be possible to extend activities to neighbouring land as well. The area is watered by the Ngola river, a tributary of the Oubaogui, and water is obtained for the irrigation of Block B from a dam on the river. In the past Block A, 33 hectares, was irrigated by pumping water from the river. The feasibility of recommencing cultivation of Block A is still under examination.

Sakaye lies at roughly the same altitude as Bangui, c. 500 metres, and has the same climate.

The average temperature is of the order of 25°C, and the usual rains bring an average precipitation of 1636mm spread over nine months of the year, April to December. The climate is more temperate than that of Bozoum and the harmattan does not make itself felt this far south.

### The Irrigation System

The irrigation system is of critical importance for Sakaye and is currently in a state of poor repair. A Peace Corps volunteer has recently been charged with making a study of the system, complete with recommendations for improvements, and his report is expected by the end of August. In the meantime a number of observations may be made.

Firstly, the system as it was run by the Taiwanese, appears to be in constant evolution. In the beginning it was a question of one pump to permit Block A to be cultivated. It now appears that two pumps were installed on Block A with a capacity of 300 and 250 hp. In so far as Block B is concerned, there was initially no provision of a pump but now there is talk of a pump to irrigate the part nearest to the river bank which is not reached easily by irrigation water (talk has it that the ground is higher there but surveys appear to show a difference of only 1cm which the irrigation system should be capable of dealing with).

Secondly, the maintenance of the irrigation system, canals and dykes, has been lamentable although it is evident that efforts are now being made to redress the situation. Water control is poor to say the least with plots remaining flooded at harvest time and drying out during the growth period. The situation is made more complicated due to the fact that the plots are all at different stages of cultivation with different irrigation requirements. The obvious solution is a system of individual sluices for each plot so that each farmer can regulate his own water supply.

In brief, it is evident that the irrigation system is at one and the same time the most important factor for the good functioning of the rice co-operative and the one to which least attention has been given in the past. As an indication, for the second campaign in 1983 a total surface of 23,15

hectares was planted, but only 10,65 hectares were actually harvested due to drought and excess water which made numerous plots not worth harvesting. Even allowing for some depredations made by the birds and plots abandoned due to sickness, etc., the loss of production and effort is staggering.

In the field of irrigation and water management there is, therefore, a great deal to be done to enable the maximum benefit to be derived from the original irrigation system.

### The Buildings

The buildings at Sakaye are situated at the edge of Block A and are thus at the least convenient point for the exploitation of Block B. Currently the buildings at Sakaye consist of an office building, 15mx20m, situated on the north side of the drying area which measures 28mx22m. To the south of the drying area is a similar building, 10mx20m which serves as a storage area and houses the huller/polisher machine. Plans exist for the erection of a "garage" for agricultural machinery on the edge of Block B so that the centre will no longer have to move equipment along the poorly maintained track between the existing buildings and Block B.

In general the buildings appear to be in good condition and are well maintained. The office furniture appears adequate. There is a possible need for greater storage space for paddy, rice and fertilizers in the future but so much will depend upon the future marketing efforts that it is difficult to forecast any precise need at the present time.

### The Equipment

As at Bozoum, it is possible to find both Taiwanese and American supplied equipment at the centre. Unlike Bozoum, however, Sakaye benefits from its proximity to Bangui which has probably made the acquisition of spare parts and the repair of equipment somewhat easier. As at Bozoum though there is a general preference for the Taiwanese material which is seen as being much more solid and durable. In addition, it is worth noting that much of the new equipment has never been properly demonstrated so that the suspicion of the farmers has never been completely dissipated. Once again though it should be underlined that there is an extreme consciousness of the vulnerability of the centre's operations should a machine breakdown and a corresponding desire to always have an alternative available.

#### a) Equipment for preparing the ground

##### Taiwanese

1 x Hino rotor-tiller  
over 9 years old

##### USAID

2 x Yanmar motor-tillers  
1 year old  
economic life 3-5 years.

Sakaye has managed to keep one of the old Taiwanese motor-tillers in sufficient order for it to be regularly used. It is preferred by the people at the centre because it is solid (it is much heavier than the Yanmar) and it is seen as being very reliable. By contrast, the Yanmar machines are seen as

being too light and fragile - the rear wheels have broken and had to be re-welded. In addition the Yanmar machines are regarded as being more difficult to maintain with less easy access to greasing points, etc... Nonetheless, the Yannars are used and in fact the centre appears to feel the need for more of them in order to extend operations and to have machines in reserve in the event of a breakdown.

At the present time it is estimated that the motor-tiller will turn, ("labourer"), 30 acres per 7-8 hour day with a fuel consumption of 10 litres (3 litres of oil being consumed for 100 hours). For levelling, ("planage"), the motor-tiller will manage 50 acres a day with a fuel consumption of 7,5 litres. The machines are operated by ("machinistes"), some of whom were trained by the Taiwanese, but they have no engineering expertise in the event of difficulties.

At Sakaye the attempt is made to stagger the use of the motor-tillers, since planting does not all take place at the same time, with a view to their more efficient utilization. Nonetheless, for the centre the danger of their breaking down remains. For example, the fact that only 23 hectares were prepared instead of 32 hectares is blamed on the fact that the machines broke down.

Spare parts and their availability (or otherwise) are thus seen as a critical factor in the utilization of the motor-tillers.

b) Equipment for threshing the rice

Taiwanese  
1 x thresher  
at least 8 years old

USAID  
3 x thresher  
one year old;  
minimum economic life 5-6  
years.

As at Bokoum, the old Taiwanese thresher is preferred to the USAID-supplied ones which were purchased at CENDEMA in the Cameroon. Apparently one of the reasons given for the preference at Sakaye is that the old Taiwanese thresher can be used by two people together and is much heavier and more effective. The CENDEMA threshers are found to be less efficient with a lot of the grain falling outside the box. It is not clear how much the performance of the CENDEMA threshers could be improved if they were properly demonstrated.

c) Equipment for winnowing the rice

Taiwanese  
2 x winniower  
at least 8 years old

USAID  
2 x winniower  
one year old;  
minimum economic life 5-6  
years.

Once again, the Taiwanese equipment is seen as being heavier and more durable than that supplied by USAID. The winniowers supplied by the project came from the CENDEMA in the Cameroon and are pedal-powered. In fact, the centre has removed the pedals and prefers to use them manually. It would seem that there is perhaps an effort to be made in demonstrating how the machines may be used without dispersing the rice grains outside the bins, thus making the work or recovery less arduous.

d) Equipment for hulling and polishing the rice

Other

USAID

1 x Yanmar huller/polisher  
one year old  
economic life 5 years.

The huller/polisher is one of the critical bottlenecks for the rice centre of Sakaye since there is no alternative if it should breakdown. The machines were initially supplied with emergency spare parts, but these have already long since been used. Although more spare parts have been ordered, they have not yet been received. As a result the machine is very vulnerable to any mechanical problem. In early August the machine was out of operation due to broken rollers and it was unclear when the spare parts would be received. In the meantime the paddy waited to be processed.

When the machine is in working order it is capable of processing 1,300 kilograms of paddy a day. At Sakaye both operations, hulling and polishing, are run at the same time (initially this was not the case due to fears of over-loading the motor). With a conversion rate of roughly 60%, the 1,300 kilograms of paddy produce 800 kilograms of white rice. Although results vary, it would appear that broken rice, ("brisures"), accounts for approximately 50% of production which is seen as a problem by the centre, particularly in so far as the marketing of the rice is concerned.

Functioning normally, the huller/polisher has a consumption of 10 litres of diesel in three days, i.e. 21-24 hours, and requires 3 litres of oil when it is changed after 100 hours.

The difficulties with the huller/polisher thus centre round the availability of spare parts and the length of time it spends down. It is not clear at this stage how far the machine itself is responsible, if at all, for the seemingly high level of broken rice.

e) Weighing machine

The centre has a 30 kg weighing machine supplied by the project which appears to function correctly. The verification of this machine on an on-going basis is important since it serves as the statistical basis for the centre's production figures and the fees generated by its operations

f) Motor-pump

Taiwanese

2 x 300 hp: no longer  
1 x 250 hp: functioning

USAID

1 x Sykes type P 492  
& Lister diesel engine  
c. one year old  
economic life 5 years  
(not yet installed.)

The irrigation motor-pump supplied by the project has not yet been installed and it is by no means certain that it will be. It would appear that the pump is too small for either Block A, where apparently the Taiwanese had a 300 hp and a 250 hp pump, or Block B where another 300 hp pump was installed.

At the present time, therefore it would probably be wiser to concentrate on improving the irrigation system on Block B and finding some other use for the Sykes pump - perhaps even on another project or for pisciculture.

Transport

The project has supplied the centre with one Toyota BJ-45 Land Cruiser pick-up and three Sanyo 125 trail motor bicycles.

The pick-up was destined for use by the centre to transport equipment and fetch supplies and rice deliveries. The three motor bicycles were destined for the Centre's Director and his assistant and the Peace Corps volunteer.

Unlike Bexum, it should be remembered that the rice centre of Sakaye is situated at 20km from Bangui by a very poor road (on foot the distance is closer to 10-12 km). In addition, the centre's staff in fact live in Bangui and travel to the centre each day. The Peace Corps volunteers live out at Sakaye during the week but often have occasion to go to Bangui for meetings. The transport difficulties have therefore a different, everyday, dimension for Sakaye that is not present at Bexum.

Nonetheless, it is difficult to justify the Toyota Land-Cruiser which is in fact a source of contention. The temptation to use it for purposes other than those for which it was originally designed is considerable and has already led to friction between the centre and the co-operative's members and staff.

In fact, it is difficult to justify the existence of the Land Cruiser given the current state of operations. Alternatively, contract transport is available in Bangui (at c. CFA 5,000 per ton) and the merchants organise their own transport for fetching the rice they have bought. The cost of fully depreciating the Land Cruiser and meeting its running costs in full is probably beyond the reasonable capability of the Centre for the immediate future.

Tools

The project has supplied the centre with tools to enable the co-operative's members to cultivate their plots. This operation was seen as a "one-time" operation with the centre selling the tools to the members and keeping the proceeds for working capital purposes. To date USAID has supplied the centre with the following tools:

| <u>Item</u> | <u>Sale Price</u> | <u>Quantity</u> | <u>Sold</u> | <u>30 June 1984 Balance</u> |
|-------------|-------------------|-----------------|-------------|-----------------------------|
| Boots       | 6425              | 116             | 98          | 18                          |
| Sickles     | 1000              | 70              | 10          | 60                          |
| Matchettes  | 1300              | 105             | 101         | 4                           |
| Spades:     | 1750              | 40              | 40          | -                           |
|             | 2300              | 40              | 40          | -                           |

Whilst the co-operative members have been pleased to have access to the tools, the question of payment is another matter. The centre has found itself selling the tools on credit to the farmers until the end of the harvest (attempts to interest the farmers in paying in cash through discounts etc, have not been successful). The difficulty has arisen that for the first campaign with the new equipment some of the farmers have been badly affected by drought or poor conditions (second campaign 1983). As a result it was decided by the co-operative that while all members must pay for their fees, fertilizer and seed that if they had on credit, they would only be required to pay half of the amount outstanding for tools purchased. With some exceptions this policy has been followed, but it means that the centre is continuing to provide financing for the farmers for over a year in some cases.

### Rice Varieties

At the inception of the project, the rice varieties at Sakaye were those supplied by the Taiwanese and over time they have degenerated and deteriorated becoming less resistant to bacterial leaf blight. The initial project programme selected three varieties of rice, IR 36, IR 28 and IR 46, as being well suited to conditions at Sakaye. With these varieties it was expected that yields would increase from 2.9 T/hectare to 4.5 T/hectare by the end of the project.

Obviously, the experience during the life of the project has been affected by climatic considerations, in particular the drought of 1982-1983. Some of the initial trials of the new varieties recommended do not appear to have met the target yields and a number of other varieties, notably ITA 123 and ITA 212, have been introduced. These additional varieties appear to give encouraging results and would indicate that the yields envisaged for the project can be met. It should, however, be remembered that once cultivation is entrusted to the farmers, yields vary enormously, ranging from 1.700 kg/hectare to 7.000 kg/hectare. In addition, production from the plots of the farmers, as opposed to the trial plots, is weighed at the rice centre when it has been dried and usually after distribution to helpers has taken place, so that in fact farmer's production figures should be increased by approximately 100kg on average per plot.

Rice varieties

| <u>Old one</u><br>type:                 | cycle<br>days  | 1982 (1)<br>Yield<br>t/hectare | observations                                    |
|---|----------------|--------------------------------|---|
| IR 8 )<br>Taiwan 2)<br>CS 6 )<br>CN 8 ) | 130-140        | 2,9                            | )<br>) all affected by<br>) leaf blight disease |
| <u>New one</u><br>type:                 | cycle<br>days  | Yield<br>t/hectare             | observations                                    |
| IR 36 )<br>IR 28 )<br>IR 46 )           | 115<br>125-130 | 4,0 )<br>5,6 )                 | for dry season<br>for rainy season              |

Currently in trial

| type    | cycle<br>days | 2nd campaign<br>1983 yield<br>t/hectare |
|---------|---------------|---|
| IR 28   | 90-100        | 4.080kg                                 |
| IR 46   | 110-120       | 4.184kg                                 |
| ITA 123 | 110-120       | 5.200kg                                 |
| ITA 212 | 110-120       | 7.000kg                                 |

(1) Probably underestimated, paddy not weighed at plot

Fertilizer

According to the centre's records the amount of fertilizer received amounted to 9,050 tons of 20.10.10. and 3,500 tonne of urea by the end of June 1984.

| Type      | Quantity (1)                             | June 1984<br>Current Cost<br>USAID w/o trans-<br>port | June 1984<br>Summer 1984<br>Cost to farmer | June<br>1984<br>stock      |
|-----------|--|---|--|----------------------------|
| 20.10.10. | (50kg sacks)<br>9,05 tons<br>(181 sacks) | CFA 207.000<br>(CFA 10.350 sack)                      | CFA 7.750 sack                             | 1.475t<br>(2950s)<br>sacks |
| Urea      | 3.5 tons<br>(70 sacks)                   | (CFA 195.000<br>(CFA 9.750 sack)                      | CFA 7.250 sack                             | 2.0125<br>(40.25)<br>sacks |

(1) USAID project figures appear to show only 8.5 tons of 20.10.10 delivered and no deliveries of Urea.

The utilization of fertilizer may be related to the amount of land cultivated as follows:

|      |              |         | theoretical<br>consumption        | actual<br>consumption              |
|------|--------------|---------|-----------------------------------|------------------------------------|
| 1983 | 2nd campaign | 23.15ha | 20.10.10. 5787.5kg<br>Urea 2315kg | 20.10.10.: 4625kg<br>Urea : 1025kg |
| 1984 | 1st campaign | 23.15ha | 20.10.10. 5787.5kg<br>Urea 2315kg | 20.10.10 : 2200kg<br>Urea : 100kg. |

It should be borne in mind that of the 23.15 hectares cultivated, only 10.65 hectares were harvested during the second campaign 1983 and 16.40 hectares for the first campaign in 1984. Utilising these figures the theoretical consumption diminishes and the actual consumption figures improve:

|      |              |          | theoretical kg                  | actual kg    |
|------|--------------|----------|---------------------------------|--------------|
| 1983 | 2nd campaign | 10.65 ha | 20.10.10. 2662.5kg<br>Urea 1065 | 4625<br>1025 |
| 1984 | 1st campaign | 16.40 ha | 20.10.10. 1100<br>Urea 1640     | 2200<br>100  |

In fact, it would appear that the amount of fertilizer consumed was excessive during the 2nd campaign (or may have been consumed elsewhere) even allowing for some abandoned plots. The level of fertilizer consumption for 1984's 1st campaign appears more reasonable - c. 50-60% of the recommended levels for 20.10.10.

The pattern of consumption appears to resemble that at Bozoum. There is an unwillingness of the peasant farmers to use Urea even though it is cheaper than the 20.10.10. Secondly, it would appear that consumption was affected by price sensitivity. Fertilizer is felt to be expensive and there are no cheap alternative sources of supply such as SOGADA at Bozoum.

Currently trials are under way to determine the effect on yields of lower amounts of fertilizer than those initially recommended. It would appear that in general the co-operative members are sensitive to the demonstration effect of the trial plots. It is, however, inevitable that it is easier for the larger, more wealthy farmers to afford the amounts of fertilizer that are thought desirable for improving yields.

#### Fuel

In general fuel is provided by USAID for the project - partly through coupons, and partly through deliveries in drums. Over the period July 1983-June 1984 the following amounts were made available.

| Fuel   |        | Oil |       |              |
|--------|--------|-----|-------|--------------|
| Diesel | Petrol | 2T  | Motor | Transmission |
| 35001  | 16001  | 381 | 1281  | 201          |

Currently the prices for fuel and oil are as follows:

|                  | <u>Litres</u> |
|------------------|---------------|
| diesel           | 215           |
| petrol           | 248           |
| 2T oil           | 630           |
| Motor oil        | 785           |
| Transmission oil | 900           |

Management

The management of the Sakaye Rice Centre is complicated by the fact that Sakaye is a co-operative. As a result there are at least three groups of people to be taken into account when management decisions are being made. There are those members of the management who are seconded by the Government of the Central African Republic; there are those co-operative members elected to the Administrative Council (Conseil d'Administration); and there are the members of the cooperative. It should also be taken into account the fact that the centre has its own staff, both permanent and temporary. There is also the factor of the presence of one or more Peace Corps volunteers.

- a) At the present time the management provided by the COCAR consists of:
- a director newly appointed at the beginning of June;
  - an assistant director and operations manager;
  - an extension agent responsible for the "vulgarisation" of rice cultivation techniques.
- b) The centre itself has a number of permanent and temporary staff members:
- cashier/accountant, Jules Arsene NGATE, newly appointed in April, responsible for keeping the books and the cash position of the centre; monthly salary CFA 25916;
  - a storekeeper, Noël FEIBOUARD, responsible for the stores and recording the inventory movements; monthly salary CFA 25910, (he also has some mechanical capabilities having previously been a machine operator);
  - a night watchman, Antoine FENEALE, with a monthly salary of CFA 14.307;
  - a motor-tiller operator/mechanic, Ambroise MADOU, with a daily rate of cfa 635;
  - a motor-tiller operator, Vincent BEZOUA, with a daily rate of CFA 500;
  - a motor-tiller operator, Zéphane DECAUMELLE, with a daily rate of CFA 500;
  - a motor-tiller operator, Fidèle ZOUBANE, with a daily rate of CFA 500;
  - a motor-tiller operator, Angeine GONGBA, with a daily rate of CFA 500;
  - a motor-tiller operator, Paul LOUANENBOU, with a daily rate of CFA 500;
  - a motor-tiller operator, Emmanuel NAM IRGUINA, with a daily rate of CFA 500;
  - a motor-tiller operator, Tene Gaston LAKOUE, with a daily rate of CFA 500;
  - a motor-tiller operator, Armande A. OUAÏNO, with a daily rate of CFA 500;
  - a motor-tiller operator, Michel MAPOUKA with a daily rate of CFA 500.

Among these daily workers the number of days worked between January and the end of June 1984 varied between 7 and 130 days. The total number of days worked amounted to 371 days.

- c) Currently the Peace Corps has two volunteers at Sakaye:
- a volunteer to assist with the vulgarisation of rice cultivation techniques and to help the co-operative members;
  - a volunteer to survey the plots and to examine the irrigation system

d) The co-operative itself consist of 100 members from whom a fee of CFA 30,000 is theoretically due on entry but in fact only CFA 10.000 is called up. When the project commenced there were 97 co-operative members and three new members have been enrolled this year. The members elect their Administrative Council which consists of eight members:

- a President;
- a Secretary;
- a Treasurer;
- five other members.

Normally the Council members are persons of considerable standing in the local communities who derive a fair amount of revenue from their rice cultivation which may involve up to 7 or more plots.

### The Farmers

There are one hundred farmers, male and female, who are members of the co-operative. They live in the villages, Sakaye I, II, III, IV and V, scattered round the rice centre. There is no predominant ethnic grouping and, superficially at least, there appears to be no ethnic friction. There are, however, considerable differences among the farmers. Whilst all of them will have interests other than rice cultivation there are some who pay particular attention to rice which provides a considerable part of their income. The "specialist" rice growers are in general older and thus can call on an extended family structure to help them at planting and harvesting. They are also likely to have four or more plots and are more likely to farm rice continuously throughout the year (with hired labour if necessary). It is interesting to note that this "ulaki-rice" is further encouraged by the practice of renting plots to non-co-operative members at a fee which is roughly of the order of one third to one half of the harvest.

By contrast, the peasant farmer who has only one plot is in a much more marginal position. His dependence on other activities outside the rice centre limits the amount of time that he can consecrate to rice cultivation so that he is unlikely to undertake more than two campaigns. Economically he is not in a position to hire extra labour or purchase additional fertilizer. In addition his position in the pattern of extended family obligations will make it more difficult to call on others to help him. As one would expect, in general the yields of these farmers are lower than those of the richer co-operative members and the plots abandoned are more likely to belong to them.

Recently the question of how the various elements of management are paid has been given increased attention. Although initially USAID, via the project, paid the centre's employees, policy now requires the centre itself to pay them. In addition, the remuneration of the government appointees is now under review since the COCAR has indicated that it feels that the centre should be responsible for these expenses in the long-run. At the present time there has been talk of indemnities for the Director and the Assistant Director as well as the members of the Administrative Council. Earlier this year the suggested indemnities were set at the following amounts in the centre's budget proposal:

|                            | CPA              |
|----------------------------|------------------|
| Director                   | 288.000          |
| Assistant Director         | 240.000          |
| President                  | 240.000          |
| Secretary                  | 180.000          |
| Members of the Council (6) | 540.000          |
|                            | <u>1.488.000</u> |

So far this idea has not been accepted but in July the co-operative agreed to make 5kg of rice available weekly for each of the three government officials (i.e 260kg a year or CFA 10,200 at a price of CFA 180/kg). It is clear that the present government's policy of restraining public sector wage increases and allowances has its effect on its appointees at Sakaye. The increasing institutionalisation of the co-operative also tends to create tensions as roles become more complex but more clearly defined so that these governmental officials are unlikely to undertake more than two campaigns a year.

D. THE CURRENT SITUATION

Rice cultivation and production

Since the inception of the project, activities at Sakaye have evolved as follows:

| 1982         | Peasants | Av. Plot | Hectares |           | tons Paddy        | tons Rice | Tons/ha <sup>3</sup><br>Yield |
|--------------|----------|----------|----------|-----------|-------------------|-----------|-------------------------------|
|              |          |          | Sown     | Harvested |                   |           |                               |
| 1st campaign | 44       | 29 ares  | 14,3     | N.A.      | 38.9 <sup>1</sup> | 20.4      | 2.7                           |
| 2nd campaign | 31       | 37 ares  | 11,5     | N.A.      | DROUGHT           |           |                               |
| <u>1983</u>  |          |          |          |           |                   |           |                               |
| 1st campaign |          |          | DROUGHT  |           |                   |           |                               |
| 2nd campaign | 61       | 37 ares  | 22,85    | N.A.      | DROUGHT           |           |                               |
| 3rd campaign | 97       | 24 ares  | 23,15    | 10,65     | 40,3 <sup>2</sup> | 21,6.     | 1.7<br>(3.8)                  |
| <u>1984</u>  |          |          |          |           |                   |           |                               |
| 1st campaign | 50       | 33 ares  | 23,15    | 16,40     | 37,4              | N.A.      | 1,6<br>(2,3)                  |

<sup>1</sup> Allowing for self-consumption only 34 tons were hulled.

<sup>2</sup> Amount net of distribution and self-consumption.

<sup>3</sup> Figures in brackets give yield per hectare harvested.

These figures compare with those presented in the project data sheet as follows:

|                | <u>Yields T/ha</u> |                                     |
|----------------|--------------------|-------------------------------------|
|                | <u>Planned</u>     | <u>Actual</u>                       |
| Starting Point | N.A.               | 2.7                                 |
| 1st year 1983  | 3.5                | 1.7 <sup>1</sup> (3.8) <sup>2</sup> |
| 2nd year 1984  | 4.0                | 1.6 <sup>1</sup> (2.3) <sup>2</sup> |
| 3rd year 1985  | 4.5                |                                     |

<sup>1</sup>Fig: figures affected by drought and based on one campaign.

<sup>2</sup> Figures in brackets give yield per hectare harvested.

|                | <u>Surfaces/Hectares</u> |               |
|----------------|--------------------------|---------------|
|                | <u>Planned</u>           | <u>Actual</u> |
| Starting Point | N.A.                     | 25.8          |
| 1st year 1983  |                          | 46.0          |
| 2nd year 1984  |                          |               |
| 3rd year 1985  | 216 <sup>1</sup>         |               |

<sup>1</sup>Based on an estimate of 3 campaigns per year and bringing Block A, estimated at 42 hectares, into cultivation i.e. 72 hectares available for rice cultivation.

The figures are undoubtedly disappointing, although the impact of the drought should be kept in mind. In fact production figures are probably considerably higher if the amount of rice distributed and kept for

self-consumption is taken into account. In addition some farmers are clearly exceeding the planned production figures although others fall far below. One can, however, hope for some improvement arising from the demonstration effect. It is also to be expected that the repairs to the irrigation system will improve yields. It would appear therefore that the production targets are probably attainable by the end of the project.

The surface targets, however, are another matter. Firstly, the assumption that three full campaigns can take place in one year appears to be erroneous. The period required is closer to 15 months than 12 months. Secondly, it is by no means clear, given their other activities, that all the farmers are willing to undertake continuous rice cultivation. Thirdly, the actual physical amount of land cultivated appears to be over-estimated in the projections. Block A consists of 32 hectares and Block B of 33 hectares for a total of 65 hectares, not 72 hectares as the projections assumed. While it may be possible to take in a further 7 hectares from the surrounding land, this is not necessarily the case. In addition, the status of Block A is by no means certain. Even if the appropriate irrigation system were installed it is by no means self-evident that the type of cultivation that would result would meet the original terms of reference of the project. Currently utilization of Block A is not seen as greatly expanding the membership of the co-operative, but rather as permitting those farmers who wish to increase their holdings to do so, with any land left undistributed being cultivated by the centre with the help of hired labour (reflecting in part the increasing trend towards institutionalisation and bureaucratisation of the co-operative management). It is hard to see these trends as being consonant with a policy... "to design and successfully implement projects meeting the needs of the poor majority in the CAR"...

*equity*

For the purposes of this report, therefore, attention will be concentrated in the development and potential of Block B although references will, of course, be made to Block A where this is appropriate.

#### The effect on farmers' incomes

It is difficult to estimate the precise monetary benefit that the co-operative's members derive from the project's activities at the rice centre of Salaye. The absence of any very meaningful shadow price for labour makes such calculations problematic. However, by taking into account the net output after the centre has deducted all fees and relating that figure to the number of farmers, some very general idea of the average benefit may be derived.

In so far as 1983 is concerned, even though it was badly affected by drought, the number of farmers increased from 79 to 158 over the two campaigns for which records were kept. It is in fact difficult to evaluate this increase since there was no third campaign in 1982 and no campaign in the early part of 1983. Approaching the figures from a different point of view, it would appear that comparing the 1st campaign 1982 with the 1st campaign 1984 there were only two additional farmers whilst the average size of the plots per farmer increased from 29 ares to 33 ares. In so far as production is concerned, there appears to be very little difference between that of the first campaign in 1982 and that of the first campaign in 1984, (38,9 tons in 1982 as opposed to 37,4 tons in 1984), although it is likely that something of

the order of at least 15 tons should be added to the 1984 figure to reflect the amounts distributed and kept for auto-consumption. Obviously, some farmers will have had yields very much superior to the average of 2.3t/hectare whilst others will have simply abandoned their plots due to lack of water, illness, etc...

On an average basis, however, using the 1984 fees and applying them to the 3rd campaign 1983 and the 1st campaign 1984 and assuming that production levels will be at least as good as in these cases, one may come up with a rough estimate of farmers' average incomes as follows:

|              |                                    |                            |
|--------------|------------------------------------|----------------------------|
| 1984         |                                    |                            |
| 1st campaign | 50 peasant,                        | 23.15 hectares prepared,   |
|              |                                    | 16.40 hectares harvested,  |
|              | 37.4 tons Paddy                    | 22.4 tons rice, estimated, |
|              |                                    | yield 2.3 ton/hectare.     |
| Fees         | 400kg Paddy per hectare prepared = | 9260kg                     |
|              | 10kg rice per 100kg rice hulled =  | 2240kg.                    |
| Assume       | average plot 33 area               |                            |
|              | average production Paddy           | 748kg                      |
|              | average fee for preparation        | 185kg                      |
|              | balance                            | 563kg                      |
|              | 60% conversion to rice             | 338kg                      |
|              | average fee for hulling            | 34kg                       |
|              | balance                            | 304kg                      |

at a price CFA 180 per kg the farmer on average received CFA 54.720 (CFA 60.800 if rice at CFA 200/kg).

N.B this figure does not include deductions for fertilizer and purchases of tools, sacks etc.

Theoretically 11650kg sacks of 20.10.10 fertilizer should have been used and 46x59kg sacks of urea, but actual consumption was 44 sacks of 20.10.10 and 2 sacks of urea which implies an average cost of CFA 6820 for 20.10.10 and CFA 200 for urea, or a cost of CFA 7110 per farmer.

On a rough basis then, one may guesstimate that a mythical average farmer with a little over three plots earned at least CFA 47.610 (CFA 14,427 per plot) during the first campaign 1984, and to this figure should probably be added at least another CFA 20.000 to cover the paddy distributed at the plot for self-consumption.

|               |   |
|---------------|---|
| 1983          |   |
| 3rd campaign: | 97 peasant, 23.15 hectares prepared, 10,65 hectares harvested, 40,3 tons Paddy, 21,6 tons rice, yield 3.8 tons/hectare. |

|       |   |
|-------|---|
| Fees: | 400kg Paddy for hectare prepared = 9260kg |
|       | 10kg rice for 100kg rice hulled = 2160kg  |

|         |                             |       |
|---------|-----------------------------|-------|
| Assume: | average plot 24 ares        |       |
|         | average production Paddy    | 415kg |
|         | average fee for preparation | 95kg  |
|         | balance                     | 320kg |
|         | 60% conversion to rice      | 192kg |
|         | average fee for hulling     | 19kg  |
|         | balance                     | 173kg |

At a price of CFA 180kg, the farmer on average received CFA 31.140 (CFA 34.600 if rice at CFA 200kg).

- N.B This figure does not include deductions for fertilizer and purchases of tools, sacks, etc.

Theoretically 116x50kg sacks of 20.10.10 fertilizer should have been used and 40x50kg sacks of seed, actual consumption figures are not trustworthy so the figures for the 1st campaign 1984 will be taken as a guide - a cost to the farmer of CFA 2,445.

On a rough basis that one may estimate that a mythical average farmer with approximately two and a half plots earned at least CFA 27,475 (CFA 11,448 per plot) during the third campaign 1984, and to this figure should probably be added at least another CFA 20,000 to cover the paddy distributed at the plot for self-consumption.

Obviously these average figures mask wide discrepancies. Some farmers will have had their land prepared and then will have had no production which was the case of 30% of farmers in the first campaign 1984 and 50% of farmers in the last campaign of 1984. They will only find themselves further in debt at the end of the campaign - debts which are usually carried forward to the next campaign. Other farmers, with high yields, will have paid proportionately less in fees for preparation and will dispose of larger incomes. In brief, the marginal, poor farmers on the less favourably situated plots will have done badly, whilst those who cultivate carefully well situated plots will have done very well out of rice cultivation. The objective should be to improve the irrigation system so that all plots may benefit from the same amount of water at the appropriate times and to re-inforce the amount of technical assistance and advice given to the less able cultivators.

#### The Co-operative

The co-operative at Sakaye has been in existence for nearly ten years, but it is not absolutely clear what its precise functions are or what role it should play. Currently it has one hundred members who elect the eight members of the Administrative Council, who meet from time to time to discuss items of business, and participate in decision making. It would appear that up to the present time the main function of the co-operative has been to provide a framework for the undertaking of common tasks, such as maintenance, in which all members have an interest. In fact, if one considers the irrigation system, the co-operative's record has been less than successful. Although present efforts are being made to activate the co-operative members and to organise them for communal works (and perhaps for providing them with some technical assistance) it is by no means clear what effect this will have upon the eventual structure and role of the co-operative and it is hardly surprising that some friction and hard feelings have been the result.

In the past it would appear that the co-operative was essentially a fairly passive body and that the rice centre of Sakaye was effectively run by the government secondees in so far as it was managed. The Administrative Council was a largely honorific body and members took a personal view of their privileges and functions. The present trend appears to be for the co-operative to take on a more active role and this requires modification of behaviour both on the part of the co-operative members and on the part of the Administrative Council. The co-operative is being forced to become more active over the irrigation system and over the provision of marketing services for its members. In addition, it has other functions, via the centre, both for the provision of credit and services. As a result the Administrative Council's members are being required to play a more institutional and less personal role. Inevitably this is not an easy transformation for them to accept nor is it facilitated by the fact that the existing management of the centre, seconded by the government, has already partially institutionalized its own role.

For the future, the co-operative will need assistance to enable it to determine what its precise role should be and how it should go about achieving it.

#### The Rice Centre

In one sense, separating the rice centre from the co-operative is an artificial distinction since they are theoretically the same thing, and yet this is not wholly true. The rice centre does not consist simply of the co-operative members. In fact, it requires outside assistance to enable it to fulfill a number of functions that, so far, the co-operative is not yet capable of assuming. Whilst the co-operative members may have benefitted from the project and the assistance it has provided, in the long run the rice centre itself must be capable of assuming and providing all the various services that the co-operative is coming to expect of it.

Such an objective implies that it will be capable of:

1. providing capital equipment for rice farming;
2. grouping purchases of fertilizer and equipment;
3. providing credit to farmers during campaigns;
4. supplying some form of technical assistance and training;
5. acting as a marketing organisation if necessary.

Since the co-operative members do not pay an annual fee to the centre, all these activities will have to be financed by fee income from the renting of capital equipment. It is therefore necessary to examine the centre's financial situation to determine whether or not the centre will be capable of providing all these facilities in the future. Fortunately the centre has recently begun to keep fairly reliable financial records and these will be used in the following analysis with occasional adjustments.

#### Profit and Loss Account

A pro-forma profit and loss account for the first six months of 1984 is presented below.

PRO-FORMA PROFIT AND LOSS ACCOUNT

1984

January-June

US \$ 1: CFA 410 (IMF)

|                                       |                               | <u>CFA</u>         |                      |
|---------------------------------------|-------------------------------|--------------------|----------------------|
| Fee Income(1)                         | Preparation 1st campaign 1984 | 1.000.080          |                      |
|                                       | hulling 3rd campaign 1984     | 388.800            |                      |
|                                       | 1st campaign 1984(2)          | 403.920            |                      |
|                                       | est CFA 403.920               |                    | <u>1.792.800 (3)</u> |
| Salaries                              |                               | (565.387)          |                      |
| Fuel - USAID                          | - Agricultural Machinery      | (168.700)          |                      |
|                                       | - Vehicles                    | (373.665)          |                      |
| Spare Parts USAID                     | - Agricultural Machinery      | (325.925)          |                      |
|                                       | - Vehicles                    | (292.819)          |                      |
| Insurance - USAID (for year)          |                               | <u>(102.580)</u>   |                      |
|                                       |                               | 1.829.076          | <u>(36.276)</u>      |
| Depreciation - Agricultural Machinery |                               | (747.129)          |                      |
| cf. Table - Vehicles                  |                               | <u>(946.000)</u>   |                      |
|                                       |                               | <u>(1.693.129)</u> | <u>(1.729.405)</u>   |
| Other Income                          |                               |                    |                      |
| Other Expenses - USAID                |                               | (54.505)           |                      |
|                                       | Net Income/(loss)             |                    | <u>(1.783.910)</u>   |
|                                       | Before unusual items          |                    |                      |
| Extraordinary Income                  |                               |                    |                      |
| - Fertiliser & tools sold             |                               | <u>446.795</u>     | <u>(1.337.115)</u>   |

(1) Using price of CFA 180kg rice.

(2) Not yet processed due to breakdown of huller.

(3) Given delays in payment from previous campaigns the centre actually received CFA 2.240.370 worth of rice during January-June 1984.

Depreciation Table

(no provision for inflation or FX)

Agricultural Machinery

CFA

2. Motor-Tillers Yanmar

Unit price

+ emergency spares

493.766

25% customs

123.442

TTC

617.108

depreciated over 5 years

128.251 p.a x 2

256.502

|                                |                 |           |                  |
|--------------------------------|-----------------|-----------|------------------|
| 1. Polisher/Huller             |                 |           |                  |
| Unit price                     | 1 950 400       |           |                  |
| + 25% customs                  | <u>487 600</u>  |           |                  |
|                                | TTC             | 2 438 000 |                  |
| depreciated over 5 years       | 487 600 p.a.    |           | 487 600          |
| 3. Threshers                   |                 |           |                  |
| Unit price                     | 60 000          |           |                  |
| + 25% customs                  | <u>15 000</u>   |           |                  |
|                                | TTC             | 75 000    |                  |
| depreciated over 5 years       | 15 000 p.a. x 3 |           | 45 000           |
| 2. Winnowers                   |                 |           |                  |
| Unit price                     | 50 000          |           |                  |
| + 25% customs                  | <u>12 500</u>   |           |                  |
|                                | TTC             | 62 700    |                  |
| depreciated over 5 years       | 12 500 p.a. x 2 |           | 25 000           |
| 1. Pump Sykes type P492 Lister |                 |           |                  |
| Unit Price.                    | 2 720 637       |           |                  |
| + 25% customs                  | <u>680 157</u>  |           |                  |
|                                | TTC             | 3 400 786 |                  |
| depreciated over 5 years       | 680 157         |           | <u>680 157</u>   |
|                                | CFA             |           | <u>1 498 259</u> |

Transport Vehicles

|                                   |                  |           |                       |
|-----------------------------------|------------------|-----------|-----------------------|
| 3. Suzuki: TS 125 ERX Motorcycles |                  |           |                       |
| Unit price                        | 656 000          |           |                       |
| + 25% customs                     | <u>164 000</u>   |           |                       |
|                                   | TTC              | 820 000   |                       |
| depreciated over 5 year           | 164 000 p.a.     |           | 492 000               |
| 1. Toyota Land Cruiser BJ 45      |                  |           |                       |
| Unit price                        | 5 600 000        |           |                       |
| + 25% customs                     | <u>1 400 000</u> |           |                       |
|                                   | TTC              | 7 000 000 |                       |
| depreciated over 5 years          | 1 400 000 p.a.   |           | <u>1 400 000</u>      |
|                                   |                  |           | <u>1 892 000 p.a.</u> |

Although at first sight it would appear that the centre would have problems in continuing its operations without the project's assistance, a number of points should be borne in mind. First of all the price taken for the calculation of the value of the fee income is CFA 180 per kg of rice whereas it should be possible to obtain CFA 200/kg which would increase fee income to CFA 199 200 (or + 11%). Secondly, once the irrigation system is improved it should be possible to increase fee income considerably. If, for example, the surface cultivated increased from 23.15 hectares to 30 hectares this would imply an increase in fee income from preparing land of roughly 30%. Theoretically then it should be possible to envisage fee income as being at least 50% higher without any other major investment.

In so far as the expenses and the actual utilization of machinery is concerned the following remarks may be made. Even at the present level of operations, if the transport vehicles and their associated costs (CFA 1.715.064) were factored out the operation would be profitable. If in addition the motor-pump was withdrawn, savings of CFA 680.157 for the year could be made in the depreciation account (which would be more than sufficient to cover the cost of an additional motor-tiller if this should prove necessary).

To summarize, at the present time if the centre no longer had the expenses of the transport vehicles, particularly the Toyota Land Cruiser, it would be capable of being self-supporting. The costs of the transport vehicles' operation and their depreciation is too great for a project of this size. Nonetheless, it is obvious that at the present time there is not a great deal of margin available unless the irrigation system is improved and the centre should beware of taking on too many additional commitments which involve it in extra expenses.

Balance Sheet

The Pro-FORMA Balance Sheet is necessarily an approximation of the centre's position since a number of the items could only be estimated. There are occasional differences between USAID records and the centre's accounting, particularly for the earlier period. Some items, for example fertilizer figures, should be treated with caution. The general picture, however, probably presents a fairly fair impression of the state of affairs at Sakaye.

PRO-FORMA BALANCE SHEET  
JUNE 30th 1984  
(CFA)

|   |                    |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
|---|--------------------|-----------|---|-----------|------|--|-----------|--|---------|---------|--------------|---------|------------|--------|-----------|------------------|--|-----------|------|--|-------------|--|-------------|---------|-------------------|---------|-------------------|-------------------|--|-------------------|--------------|--------------------|--|-------------------|--|--|---------------------|--|---------|---------|--------------|-----------|--------------------------|--------|------------|---------|------------------------|---------|--|------------------|------|--|-------------------------|--|----------------|---------|-------------------|-------------------|--|-------------------|
| <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">Cash</td> <td style="width: 15%; text-align: right;">1.241.345</td> </tr> <tr> <td>Accounts Receivable (1)<br/>from co-op members</td> <td style="text-align: right;">1.479.565</td> </tr> <tr> <td><br/></td> <td></td> </tr> <tr> <td>Inventory</td> <td></td> </tr> <tr> <td>- tools</td> <td style="text-align: right;">108.850</td> </tr> <tr> <td>- fertilizer</td> <td style="text-align: right;">520.438</td> </tr> <tr> <td>- paddy(2)</td> <td style="text-align: right;">47.628</td> </tr> <tr> <td>- rice(3)</td> <td style="text-align: right;"><u>1.372.680</u></td> </tr> <tr> <td></td> <td style="text-align: right;">2.121.596</td> </tr> <tr> <td><br/></td> <td></td> </tr> <tr> <td>Fixed Asset</td> <td></td> </tr> <tr> <td>- buildings</td> <td style="text-align: right;">460.334</td> </tr> <tr> <td>- light equipment</td> <td style="text-align: right;">576.808</td> </tr> <tr> <td>- heavy equipment</td> <td style="text-align: right;"><u>13.506.569</u></td> </tr> <tr> <td></td> <td style="text-align: right;"><u>14.543.711</u></td> </tr> <tr> <td>depreciation</td> <td style="text-align: right;"><u>(3.386.259)</u></td> </tr> <tr> <td></td> <td style="text-align: right;"><u>11.157.452</u></td> </tr> </table> | Cash               | 1.241.345 | Accounts Receivable (1)<br>from co-op members | 1.479.565 | <br> |  | Inventory |  | - tools | 108.850 | - fertilizer | 520.438 | - paddy(2) | 47.628 | - rice(3) | <u>1.372.680</u> |  | 2.121.596 | <br> |  | Fixed Asset |  | - buildings | 460.334 | - light equipment | 576.808 | - heavy equipment | <u>13.506.569</u> |  | <u>14.543.711</u> | depreciation | <u>(3.386.259)</u> |  | <u>11.157.452</u> |  | <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">USAID Project Funds</td> <td style="width: 15%;"></td> </tr> <tr> <td>- tools</td> <td style="text-align: right;">937.115</td> </tr> <tr> <td>- fertilizer</td> <td style="text-align: right;">2.073.375</td> </tr> <tr> <td>- construction materials</td> <td style="text-align: right;">44.630</td> </tr> <tr> <td>- training</td> <td style="text-align: right;">584.535</td> </tr> <tr> <td>- light equip-<br/>ment</td> <td style="text-align: right;">576.808</td> </tr> <tr> <td></td> <td style="text-align: right;"><u>4.216.463</u></td> </tr> <tr> <td><br/></td> <td></td> </tr> <tr> <td>USAID Capital Equipment</td> <td></td> </tr> <tr> <td>- Construction</td> <td style="text-align: right;">415.704</td> </tr> <tr> <td>- Heavy equipment</td> <td style="text-align: right;"><u>13.506.569</u></td> </tr> <tr> <td></td> <td style="text-align: right;"><u>13.922.273</u></td> </tr> </table> | USAID Project Funds |  | - tools | 937.115 | - fertilizer | 2.073.375 | - construction materials | 44.630 | - training | 584.535 | - light equip-<br>ment | 576.808 |  | <u>4.216.463</u> | <br> |  | USAID Capital Equipment |  | - Construction | 415.704 | - Heavy equipment | <u>13.506.569</u> |  | <u>13.922.273</u> |
| Cash  | 1.241.345          |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| Accounts Receivable (1)<br>from co-op members   | 1.479.565          |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| <br>  |                    |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| Inventory   |                    |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - tools   | 108.850            |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - fertilizer  | 520.438            |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - paddy(2)  | 47.628             |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - rice(3)   | <u>1.372.680</u>   |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
|   | 2.121.596          |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| <br>  |                    |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| Fixed Asset   |                    |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - buildings   | 460.334            |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - light equipment   | 576.808            |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - heavy equipment   | <u>13.506.569</u>  |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
|   | <u>14.543.711</u>  |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| depreciation  | <u>(3.386.259)</u> |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
|   | <u>11.157.452</u>  |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| USAID Project Funds   |                    |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - tools   | 937.115            |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - fertilizer  | 2.073.375          |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - construction materials  | 44.630             |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - training  | 584.535            |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - light equip-<br>ment  | 576.808            |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
|   | <u>4.216.463</u>   |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| <br>  |                    |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| USAID Capital Equipment   |                    |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - Construction  | 415.704            |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
| - Heavy equipment   | <u>13.506.569</u>  |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |
|   | <u>13.922.273</u>  |           |   |           |      |  |           |  |         |         |              |         |            |        |           |                  |  |           |      |  |             |  |             |         |                   |         |                   |                   |  |                   |              |                    |  |                   |  |  |                     |  |         |         |              |           |                          |        |            |         |                        |         |  |                  |      |  |                         |  |                |         |                   |                   |  |                   |

|                           |                   |                               |                   |
|---------------------------|-------------------|-------------------------------|-------------------|
|                           | 11,157,452        |                               |                   |
| Intangibles               |                   |                               |                   |
| - training                | 584,535           | Profit/(Loss) brought forward | (724,923)         |
| - fertilizer subsidies(4) | 829,350           |                               |                   |
|                           | <u>1,413,885</u>  |                               |                   |
|                           | 1,413,885         |                               |                   |
| TOTAL ASSETS              | <u>17,413,813</u> | TOTAL INVESTMENT              | <u>17,413,813</u> |

- (1) includes CFA 200,000 advance for President's mobyette
- (2) 60% conversion factor;
- (3) CFA 180kg price;
- (4) estimated at 40% of fertilizer supplied.

The two main points to be made are the importance of the heavy equipment item and the size of the working capital requirement. The amount (roughly 60% of assets) invested in heavy equipment, particularly in transport vehicles, is disproportionate for an operation of this scale which is not or is only marginally, in the distribution business. On the other hand, whilst the working capital requirements appear high, it should be borne in mind that the Accounts Receivable are probably starting to decline since the first campaign has just finished. This is in part reflected by the level of rice stocks although their level (12,5) tons also relates to marketing difficulties. It is perhaps worth noting that the fertilizer subsidies, which were meant to assist with the working capital requirements, are clearly insufficient to finance the CFA 3,500,000 required at this stage of the centre's operations. Future expansion of the centre's activities will make these requirements larger and are thus likely to render the centre increasingly illiquid since existing cashflow is clearly inadequate.

PRO-FORMA CASHFLOW

|                                 |                  |
|---------------------------------|------------------|
| Net (Loss) Before Unusual Items | (1,783,910)      |
| Non cash charge - depreciation  | <u>1,693,129</u> |
|                                 | ( 90,781)        |
| Extraordinary income            | <u>446,795</u>   |
|                                 | <u>356,000</u>   |

E. STRATEGIC OPTIONS

At Sakaye the options for the future appear relatively simple. It is not recommended that Block A should be brought back into production under the aegis of the USAID project since it is by no means clear that this would correspond with the project's terms of reference. Should the co-operative decide to go ahead with this development in the future on its own initiative - perhaps using funds from the recently created Credit Agricole of the CAR - that would have to be its own decision. For the present, attention must be centred on making Sakaye an effective unit on the basis of Block B alone.

The chief emphasis must be on the restoration of the irrigation system since this is the only way to create sufficient production to generate the necessary fee income to finance the Centre's activities. At the present time only 26.4 hectares out of a possible 33 hectares are actually harvested due to poor water control. Allowing a full year for all the work that needs to be carried out, including individual plot sluice gates, it will only be at the end of 1985 that the centre will be starting to produce at around its full potential. Since it should be possible to recover some of the adjacent land, the future extent of Block B may be fixed, conservatively, at around 35 hectares\*.

It does not appear to be realistic to expect three full campaigns each year. Taking an average of 5 months per campaign, 15 months would be required for three campaigns. Thus during a typical year an average farmer would have the possibility of cultivating two and two fifths campaigns. As has been underlined in the preceding sections, the yields obtained by farmers vary considerably and could undoubtedly be improved. The project's target of 4.5 tons a hectare does not appear out of line provided that there is sufficient extension work and technical assistance. Initially though, average yields will probably be lower, at least in so far as they are reported.

For the co-operative members a further problem is posed by the question of the marketing of the rice. It seems clear that the members have an interest in combining forces to obtain better prices for their rice and to this end the centre needs to establish a marketing framework with a clearly designated person who is responsible for sales and client contact (and in addition is properly supervised). The importance of this position means that it should probably be attributed to the director. Given DACCCA's (Direction de l'Action Cooperative du Credit et de la Commercialisation Agricole) experience in marketing coffee perhaps some assistance could be given on this point although the two markets are of course very different.

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\* footnote: Should some type of additional irrigation be required for Block B, which may well not be the case, it should be possible to come to some low cost solution using the "belier" type of pump with no moving parts.

Reference has already been made to the problems experienced over the rice quality and the high percentage of broken rice. Obviously some form of assistance is required to determine what factors are chiefly responsible for this state of affairs, but it is to be questioned whether any fundamental modification in equipment is required.

The crucial importance of the equipment and its good functioning cannot be underestimated. A breakdown of the huller/polisher means no rice can be sold. A breakdown of the motor-tillers means that rice is not planted and a campaign may be lost. The absence of spare parts and the dearth of qualified mechanics renders the whole operation extremely vulnerable. In this respect the designation of someone responsible for the agricultural machinery and its maintenance and the training of such a person so that he is capable of repairing all but the most major breakdowns is absolutely essential. With hindsight it may be thought that some of the equipment supplied, particularly the motor-tillers, is perhaps rather fragile for the way in which it is used at the centre. At replacement time it may be thought desirable to select more robust equipment.

Potentially Sakayo stands to benefit considerably from the possibility which its irrigated plots offer, i.e., staggering campaigns throughout the year so that machinery can be more effectively utilised. Although there is some resistance, occasioned partly by the competing claims of other crops, it should be possible by staggering transplanting times to easily cope with the potential 35 hectares with the existing machinery.

|                     | Hectares | Labourage | Planage | Total          |
|---------------------|----------|-----------|---------|----------------|
| 1st campaign        | 35       | 88        | 70      | 150 days       |
| 2nd campaign        | 35       | 88        | 70      | 150 days       |
| 3rd campaign 2/5ths | 14       | 35        | 28      | <u>63</u> days |
|                     |          |           |         | 363 days       |

At the present time 2 Yanmar motor-tillers are used as well as the old Hino. With three machines they each work 121 days a year, or with two machines they each work 182 days a year. With proper maintenance and mechanical support these figures are not unrealistic.

In so far as the huller/polisher is concerned, a bottleneck may be created by the existence of only one machine. If one assumes that 84 hectares (35+35+14) are cultivated and that average production reaches 4.5 tons per hectare, then the centre will have to be capable of dealing with 378 tons of paddy. The existing Yanmar huller/polisher deals with 1.3 tons a day which would mean that 291 days a year were required to cope with production. As a utilization rate this appears to be on the high side unless the centre moves away from what is effectively a five day week without overtime and makes additional time available for maintenance. The replacement of the huller/polisher by a bigger machine or by two smaller machines should thus be seriously considered when these levels of production are reached.

It appears likely that these levels will be reached using the most promising of the new varieties of rice and with less, c. 60%, than the recommended fertilizer applications. It is to be expected that fertilizer use will remain sensitive to price, although technical assistance and extension work will encourage the smaller farmers to use greater amounts.

The gradual "conversion" of the less progressive peasant farmers is a matter of great importance at Sakaye and there is a significant role for a well trained extension agent to play - stressing the neutrality of technical assistance in whatever difficulties may arise between the peasant farmers, the Administrative Council and the government secondees.

Ultimately there is the problem of co-ordinating and managing all these disparate elements which is by no means obvious as the centre evolves and the wishes of its members alter. A major requirement will be a clear division of responsibilities, and decision-making powers, as well as a sufficiently developed control system. It is by no means clear that the existing personnel will be sufficiently apt to follow the evolving requirements of the centre.

Assuming, however, that all these conditions are met one may project the following financial scenario for the next five year.



Projection Assumptions

1. Fee Income: Calculated in terms of rice with a base price of CFA 180kg i 1984 increased by 10% each year. Fees remain at same level as in 1984. Production is estimated at 3.5t/Ha 1985 : 4.0t/Ha 1986: 4.5t/Ha thereafter. The conversion rate of paddy to rice is 60%.

2. Salaries: Monthly salaries amounted to CFA 56.127 per month in 1984 and are increased by 15% p.a.  
Daily salaries were fixed at CFA 512.3 per day for the huller/polisher operator and CFA 500 per day for the motor-tiller operator in 1984 : these amounts are increased by 15% p.a. The number of days worked for preparation amount to 310 per year for the 35 hectares. The number of days worked for hulling/polishing amount to 226 in 1985, 250 in 1986 and 270 thereafter to reflect the increases in production.

3. Agricultural Machinery  
Fuel requirements are projected as follows:

|                   | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1989</u> |
|-------------------|-------------|-------------|-------------|-------------|
| preparation       | 2100        | 2100        | 2100        | 2100        |
| hulling/polishing | 750         | 860         | 970         | 970         |
|                   | <u>2850</u> | <u>2960</u> | <u>3070</u> | <u>3070</u> |

oil litres

|                   | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1989</u> |
|-------------------|-------------|-------------|-------------|-------------|
| preparation       | 78          | 78          | 78          | 78          |
| hulling/polishing | 48          | 56          | 62          | 62          |
|                   | <u>126</u>  | <u>134</u>  | <u>140</u>  | <u>140</u>  |

Prices were increased by 15% each year using 1984 as base:

| CFA       | <u>1984</u> | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| diesel    | 215         | 247         | 284         | 327         | 376         | 432         |
| motor oil | 785         | 903         | 1038        | 1194        | 1373        | 1579        |

Spare parts were calculated at 10% of the 1984 value of the equipment increased by 15% each year.

4. Transport Vehicles

Fuel requirements were calculated on the basis of historic usage of 1808L diesel, 1600L petrol, 38L 2T oil, 28L SAE 40 oil and 20L 90 oil in 1983/1984.

Prices were increased by 15% p.a. on the basis of 1984 prices:

| CFA    | <u>1984</u> | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
|--------|-------------|-------------|-------------|-------------|-------------|-------------|
| diesel | 215         | 247         | 284         | 327         | 376         | 432         |
| petrol | 248         | 285         | 328         | 377         | 433         | 499         |
| 2T     | 630         | 725         | 833         | 958         | 1102        | 1267        |
| SAE 40 | 785         | 903         | 1048        | 1194        | 1373        | 1579        |
| 90     | 900         | 1035        | 1190        | 1369        | 1574        | 1810        |

Spare parts were calculated at 10% of the 1984 value of the equipment increased by 15% each year.

Insurance was based on the 1984 figure of CFA 102.580 increased by 15% each year.

5. Depreciation

Depreciation is taken from the 1984 June depreciation Table and an inflation factor of 15% p.a. is built in.

6. Other Expenses - salaries

Taken into account the suggested remuneration of officials in 1984 which was set at CFA 1.168.000 p.a. this amount has been increased by 15% p.a.

7. Other Expenses - office

To cover office expenses such as stationery etc. a figure of CFA 120.000 was taken for 1984 and this was increased by 15% p.a.

At first sight the projections of the profit and loss account seems to offer a depressing picture of Sakaye's future, but on closer examination all is not gloom. To begin with the assumptions with regard to the price of rice and the rate of inflation are clearly unreasonable to the centre. It is obvious that the price of rice is critical for the centre's viability and that the marketing of the rice is of key importance.

What the projections do show, however, is the heavy charge occasioned by the transport vehicles which provide no direct income.

| CFA (000)          | 1985   | 1986   | 1987   | 1988   | 1989   |
|--------------------|--------|--------|--------|--------|--------|
| Fee Income         | 7453   | 8758   | 10281  | 11311  | 12424  |
| Transport Vehicles | (1356) | (5912) | (5762) | (6627) | (7621) |
| (LOSS)             | (592)  | (3755) | (4252) | (5403) | (6795) |

In each year this charge more than accounts for the loss on operations. There are obviously two ways to approach this problem, either to reduce the charge of the transport vehicles or to make them produce additional income.

Should it be decided to reduce the charge of the transport vehicles then it is obvious that alternative transport arrangements would have to be made so that Sakaye would not be at the mercy of suppliers and clients who had to come to it. A weekly ferry delivery could be costed at CFA 5.000 a ton or roughly CFA 250.000.000 a year which would be sufficient to move the centre's own rice and to bring in fertilizer supplies. At a rough estimate of CFA 500.000 p.a. for this service the centre's accounts would be positive and would continue to be so up to about CFA 750.000 p.a. in 1985.

Alternatively, it may be thought advisable to develop the transport function for the co-operative as whole, thus preserving its independence. In this event the centre would become responsible for delivering the rice of the co-operative members, thus presenting an extension of its marketing function. If one estimates that CFA 10/kg could be added to the price of the rice for delivery and the centre's total production is in the neighbourhood of 378.000kg p.a. then this operation would bring in CFA 2.268.000 (which would increase in line with inflation) and cover most of the expenses associated with the Toyota Land Cruiser. Should this option be considered it would, however, probably be desirable to consider replacing the Toyota by a less expensive vehicle.

The more conservative approach would undoubtedly be to have recourse to an outside contractor who would assure a weekly service. At this point expenses would be reduced by about 75% for transport and depreciation would be correspondingly reduced. The reduction in depreciation provisions would, however, be likely to have an unfavourable impact upon the cash-flow and on working capital requirements.

|                                     |               |               |               |               |               |
|-------------------------------------|---------------|---------------|---------------|---------------|---------------|
| CFA (000)                           | <u>1985</u>   | <u>1986</u>   | <u>1987</u>   | <u>1988</u>   | <u>1989</u>   |
| Transport Vehicles<br>deducting 75% | (1689)        | (1255)        | (1441)        | (1657)        | (1905)        |
| Add Cost of<br>contractor           | (380)         | (345)         | (397)         | (456)         | (525)         |
| Revised transport<br>cost           | <u>(1389)</u> | <u>(1596)</u> | <u>(1838)</u> | <u>(2113)</u> | <u>(2430)</u> |
| Other income<br>(from transport)    | 1090          | 1331          | 1647          | 1811          | 1992          |
| Balance                             | <u>(389)</u>  | <u>(267)</u>  | <u>(191)</u>  | <u>(302)</u>  | <u>(438)</u>  |

|                             |             |             |             |             |             |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|
| CFA (000)                   | <u>1985</u> | <u>1986</u> | <u>1987</u> | <u>1988</u> | <u>1989</u> |
| Fee Income                  | 7483        | 8788        | 10281       | 11311       | 12424       |
| Expenses<br>excl. transport | (6519)      | (7564)      | (8771)      | (10087)     | (11598)     |
| Transport balance           | (389)       | (267)       | (191)       | (302)       | (438)       |
| Profit (Loss)               | <u>575</u>  | <u>957</u>  | <u>1319</u> | <u>922</u>  | <u>388</u>  |

It should probably also be noted that going into the transport operations would undoubtedly carry some risk and it may be thought advisable to avoid this option for that reason.

| PROJECTORS                     | BALANCE SHEET |              |                    |                   |              |                  |
|--------------------------------|---------------|--------------|--------------------|-------------------|--------------|------------------|
|                                | June          | Dec          | Dec                | Dec               | Dec          | CFA (000)<br>Dec |
|                                | 1984          | 1985         | 1986               | 1987              | 1988         | 1989             |
| Cash                           | 1241          | 1241         | 1241               | 1241              | 1241         | 1241             |
| Accounts Receivable            | 1479          |              |                    |                   |              |                  |
| - clients                      |               | 1247         | 1465               | 1714              | 1885         | 2071             |
| - partners                     |               | 1663         | 1953               | 2285              | 2514         | 2761             |
|                                |               | 2910         | 3418               | 3999              | 4399         | 4832             |
| Inventory                      | 2122          |              |                    |                   |              |                  |
| - fertilizer                   |               | 1030         | 1185               | 1363              | 1567         | 1801             |
| - poultry                      |               | 233          | 256                | 282               | 310          | 341              |
| - rice                         |               | 136          | 171                | 212               | 233          | 256              |
| - stores                       |               | 486          | 558                | 642               | 738          | 849              |
|                                |               | 1865         | 2170               | 2499              | 2848         | 3247             |
| Fixed Assets                   | 14543         | 14543        | 14543              | 17942             | 17942        | 17942            |
| (Depreciation)                 | (3386)        | (8315)       | (12793)            | -                 | (5922)       | (12732)          |
|                                | 11157         | 6228         | 1750               | 17942             | 12020        | 5210             |
| Intangibles                    | 1414          | 1414         | 1414               | 1414              | 1414         | 1414             |
| <b>TOTAL ASSETS</b>            | <b>17413</b>  | <b>13678</b> | <b>9993</b>        | <b>27095</b>      | <b>21922</b> | <b>15944</b>     |
| Project Aid                    | 18138         | 18138        | 18138              | 18138             | 18138        | 18138            |
| Provision                      | -             | -            | -                  | 2932 <sup>2</sup> | 2932         | 2932             |
| Financial Requirement<br>19229 |               | -            | (343) <sup>1</sup> | 240               | 18182        | 18412            |
| Profit/(loss)                  | (725)         | (4117)       | (7905)             | (12157)           | (17560)      | (24355)          |
| Brought Forward                |               |              |                    |                   |              |                  |
| <b>TOTAL LIABILITIES</b>       | <b>17413</b>  | <b>13678</b> | <b>9993</b>        | <b>27055</b>      | <b>21922</b> | <b>15944</b>     |

<sup>1</sup> adjustment arising from change in year end.

<sup>2</sup> Provision arising from change in assets and excess residual value.

PROJECT DATA

Balance Sheet

Assumptions:

1. Accounts Receivable

It is assumed that credit to farmers will be outstanding on average 80 days and that credit to clients will be extended up to 60 days.

2. Inventories

Fertilizer - It is assumed that the centre would hold three months supply of fertilizer. This is calculated on the basis of a utilization rate of 60% of the recommended rate of 250kg per Hectare 10.10.10 and 100kg per Hectare Urea with base prices of CFA257kg and CFA 195kg respectively in 1984, increased by 15% p.a.

| CFA/kg                                   | 1984      | 1985 | 1986 | 1987        | 1988 | 1989 |
|--|-----------|------|------|-------------|------|------|
| 20.10.10.                                | 207       | 232  | 274  | 315         | 362  | 416  |
| Urea                                     | 195       | 224  | 258  | 297         | 341  | 392  |
| Consumption recommended for 84 hectares: |           |      |      |             |      |      |
| 20.10.10.                                | 21.0 tons | -    | 60%  | = 12.6 tons |      |      |
| urea                                     | 8.4 tons  | -    | 60%  | = 5.0 tons  |      |      |

Expenditure on fertilizer

| CFA (000) | 1985 | 1986 | 1987 | 1988 | 1989 |
|-----------|------|------|------|------|------|
| 20.10.10  | 2999 | 3452 | 3969 | 4561 | 5242 |
| Urea      | 1120 | 1290 | 1485 | 1705 | 1960 |
| TOTAL     | 4119 | 4742 | 5454 | 6266 | 7202 |

Paddy - It is assumed that the centre will not suffer from major breakdowns and that no more than three weeks of paddy will be stored by the centre, 1968kg, which represents 1776kg rice.

Rice - It is assumed that rice will on average remain two weeks in storage before it is sold.

Spares - It is assumed that spares for three months will be carried.

Fixed Assets - It is assumed that the fixed assets will be completely written off and replaced in 1987 at the end of five years of the project's life.

PROJECTIONS

|  | <u>CASHFLOW</u> |             |                  |             |             |
|--|-----------------|-------------|------------------|-------------|-------------|
|  | <u>1985</u>     | <u>1986</u> | <u>CFA (000)</u> |             |             |
|  |                 |             | <u>1987</u>      | <u>1988</u> | <u>1989</u> |
| PROFIT/(LOSS)                          | (3292)          | (3788)      | (4252)           | (5403)      | (6795)      |
| DEPRECIATION                           | 3693            | 4478        | 5149             | 5932        | 6810        |
| GROSS FUNDS FROM OPERATIONS            | 561             | 690         | 897              | 529         | 15          |
| WORKING CAPITAL REQUIREMENTS           |                 |             |                  |             |             |
| A/R                                    | (1431)          | ( 508)      | ( 591)           | ( 400)      | ( 433)      |
| INVENTORY                              | 237             | ( 285)      | ( 329)           | ( 349)      | ( 399)      |
|  | (1194)          | ( 793)      | ( 910)           | ( 749)      | ( 832)      |
| NET FUNDS FROM OPERATIONS              | ( 633)          | ( 103)      | ( 13)            | ( 230)      | ( 817)      |
| INVESTMENT                             | -               | -           | (17942)          | -           | -           |
| NET BORROWING REQUIREMENT (CUMULATIVE) | (694)           | (103)       | (17955)          | ( 230)      | ( 817)      |
| POSSIBLE FERTILIZER CREDIT 30 days.    | 343             | 395         | 454              | 522         | 600         |

It became quite obvious looking at the Balance Sheet and the Cash-flow that there is no way in which the centre can become autonomous unless it either increases its fee income by raising tariffs, or reduces its fixed assets. In so far as improving the standard of living of the smaller farmers is concerned, increasing the tariffs for services is not desirable. The only possibility of keeping Nakaya operating as an independent autonomous institution will thus consist in finding a means of reducing the replacement cost of the fixed assets.

It has already been suggested that the Dikes Motor-Pump is unlikely to be utilized and that it could in fact be withdrawn. This would save CFA 680.157 from depreciation in 1984 and correspondingly more later on because of the 15% p.a. inflation factor. The transport solution of giving up the Toyota Land Cruiser and using a contractor would also appear to make sense. This would save CFA 1.490.000 from 1984 depreciation. It is also probably desirable to reduce the size of the other transport by replacing the Suzukis by Mobylettes which would represent a considerable saving. The unit cost in 1984 was CFA 820.000 as opposed to CFA 275.000.

It is likely that the winnovers and threshers can be used for a longer period than originally suggested and they may therefore be depreciated over 10 years. As a result there are only the motor-tillers and the huller/polisher to replace among the agricultural equipment in 1987. This is a much more manageable situation as revised projections show:

REVISED PROJECTIONS

PROFIT AND LOSS ACCOUNT

|                                      | CFA (000) |        |        |         |         |
|--------------------------------------|-----------|--------|--------|---------|---------|
|                                      | 1985      | 1986   | 1987   | 1988    | 1989    |
| TOTAL FEE INCOME                     | 7483      | 8788   | 10281  | 11311   | 12424   |
| Salaries                             | (1280)    | (1499) | (1753) | (2016)  | (2318)  |
| Agricultural machinery               | (1672)    | (1962) | (2300) | (2645)  | (3041)  |
| Transport vehicles                   | (1389)    | (1598) | (1938) | (2113)  | (2430)  |
| Depreciation                         | (1086)    | (1248) | (1434) | (1651)  | (1899)  |
| Other Expenses                       | (1849)    | (2127) | (2446) | (2813)  | (3234)  |
|                                      | (7176)    | (8434) | (9773) | (11238) | (12922) |
| NET PROFIT/(LOSS)<br>FROM OPERATIONS | 207       | 354    | 508    | 73      | ( 498)  |
| Other Income                         | 1000      | 1331   | 1647   | 1811    | 1992    |
| NET INCOME                           | 1207      | 1685   | 2155   | 1884    | 1494    |

REVISED PROJECTIONS

BALANCE SHEET

|                    | CFA (000)    |             |             |             |             |             |
|--------------------|--------------|-------------|-------------|-------------|-------------|-------------|
|                    | June<br>1984 | Dec<br>1985 | Dec<br>1986 | Dec<br>1987 | Dec<br>1988 | Dec<br>1989 |
| Cash and banks     | 1241         | 2340        | 4480        | 663         | 3449        | 6010        |
| Account receivable | 1479         |             |             |             |             |             |
| - clients          |              | 1247        | 1465        | 1714        | 1885        | 2071        |
| - farmers          |              | 160         | 1953        | 2285        | 2514        | 2761        |
|                    |              | 2910        | 3418        | 3999        | 4399        | 4832        |
| Inventory          | 2122         |             |             |             |             |             |
| - fertilizer       |              | 1030        | 1185        | 1363        | 1567        | 1801        |
| - paddy            |              | 233         | 256         | 282         | 310         | 341         |
| - rice             |              | 136         | 171         | 212         | 233         | 256         |
| - spares           |              | 486         | 558         | 642         | 351         | 404         |
|                    |              | 1885        | 2170        | 2499        | 2461        | 2802        |
| Fixed Assets       | 14543        | 14543       | 14543       | 6848        | 6848        | 6848        |
| (depreciation)     | (3286)       | (4472)      | (5720)      | ( 300)      | (1959)      | (3858)      |
| Net Fixed Assets   | 11157        | 10071       | 8823        | 6540        | 4889        | 2990        |
| Intangibles        | 1414         | 1414        | 1414        | 1414        | 1414        | 1414        |
| TOTAL ASSETS       | 17413        | 18620       | 20305       | 15115       | 16612       | 18048       |
| Project Aid        | 18138        | 18138       | 18138       | 18138       | 18138       | 18138       |
| items withdrawn    |              |             |             | (7345)      | (7732)*     | (7790)*     |
| Profit/(Loss)      | ( 725)       | 482         | 2167        | 4322        | 6206        | 7700        |
| Brought Forward    |              |             |             |             |             |             |
| TOTAL LIABILITIES  | 17413        | 18620       | 20305       | 15115       | 16612       | 18048       |

\* increase of 337 in 1988 and 58 in 1989 reflect withdrawal of shares no longer required for old transport vehicles, and corresponding adjustment in stock levels.

REVISED PROJECTIONS

|                              | <u>CASHFLOW</u> |               |               | <u>CFA (000)</u> |               |
|------------------------------|-----------------|---------------|---------------|------------------|---------------|
|                              | <u>1985</u>     | <u>1986</u>   | <u>1987</u>   | <u>1988</u>      | <u>1989</u>   |
| PROFIT                       | 1207            | 1625          | 2155          | 1884             | 1494          |
| DEPRECIATION                 | 1016            | 1248          | 1436          | 1651             | 1899          |
| GROSS FUNDS FROM OPERATION   | 2193            | 2933          | 3591          | 3535             | 3393          |
| WORKING CAPITAL REQUIREMENTS |                 |               |               |                  |               |
| • ACCOUNTS RECEIVABLE        | (1431)          | ( 508)        | ( 581)        | ( 400)           | ( 433)        |
| INVENTORY                    | 237             | ( 285)        | ( 329)        | ( 349)           | ( 399)        |
|                              | <u>(1194)</u>   | <u>( 793)</u> | <u>( 910)</u> | <u>( 749)</u>    | <u>( 832)</u> |
| NET FUNDS FROM OPERATIONS    | 1099            | 2140          | 2681          | 2786             | 2561          |
| INVESTMENT                   | -               | -             | (6498)        | -                | -             |
| CASH AND BANK BALANCES       | 1099            | 2140          | (3817)        | 1786             | 2561          |
| (COMPARATIVE CASH BALANCE)   | 2340            | 4480          | 663           | 3449             | 6010          |

| <u>ANNUAL DEPRECIATION TABLE</u> | <u>1984</u> |                  |
|----------------------------------|-------------|------------------|
|                                  |             | <u>CFA (000)</u> |
| Agricultural Machinery           |             |                  |
| 2 x Motor tiller Yanmar          |             |                  |
| depreciated over 5 years         |             | 256 p.a.         |
| 1 x Polisher/roller Yanmar       |             |                  |
| Depreciated over 5 years         |             | 488 p.a.         |
| 3 x Thrashers                    |             |                  |
| depreciated over 10 years        |             | 22 p.a.          |
| 2 x Winnowers                    |             |                  |
| depreciated over 10 years        |             | 13 p.a.          |
| <b>SUB TOTAL</b>                 |             | <u>779 p.a.</u>  |

| <u>Transport Vehicles</u> |                 |
|---------------------------|-----------------|
| 3 Mopylettes              |                 |
| TTC 275.000 unit price    | 165 p.a.        |
| depreciated over 5 years  |                 |
| <b>TOTAL</b>              | <u>944 p.a.</u> |

The revised projections demonstrate that by reducing the level of sophistication of the transport facilities and withdrawing the motor-pump the project becomes perfectly viable and in fact generates a healthy cashflow permitting it to finance its working capital requirements without recourse to external financing. It is at this point in time, 1989, when the project is running easily that the co-operative should be able to consider whether it is worthwhile to invest in Block A or not. According to the analysis presented above, the rice centre at Sakye is capable of functioning as an independent autonomous institution provided that production increases sufficiently and that the rice can be successfully marketed while the machines are properly maintained and looked after.

## F. CONCLUSION

In essence, Sakaye is not a grand sophisticated project. It is a simple rice centre that functions at a fairly basic level of cultivation. Grandiose schemes for its development do not seem appropriate and would only burden the centre with a top-heavy capital structure. It would, however, be difficult to over-estimate the importance of the personnel in such a simple structure. For this reason most of the considerations regarding action to be taken (apart from the rightening of the capital structure) are people and management orientated.

There are four main areas for action. Firstly there is the marketing problem. It is suggested, since this function is vital for the co-operative's future, that responsibility for marketing should be clearly entrusted to the centre's director who should be closely supervised in this task. It is by no means certain that the present director has any aptitude in this direction and it should be carefully considered as to whether he can with help (perhaps from DACCA) evolve in this direction or whether his replacement should be envisaged.

Secondly, there is the mechanical problem. The absence of mechanical expertise at the centre is of critical importance for the good functioning of the project. It is also desirable that responsibility for the machinery should be entrusted to one particular person with a clearly defined job description. Adequate training should be provided for the person selected. The preference is for someone who is already working at the rice centre and has some appreciation of the difficulties encountered in maintaining machinery in good working condition.

Thirdly there is the question of the maintenance of the irrigation system in good working order and the extension effort required to provide supportive technical assistance for the smaller farmers. It is obvious that much remains to be done in both directions. At the present time much of the effort in this direction is provided by the Peace Corps volunteers, but with an eye to the longer term it would be advisable to place these efforts in a more institutionalised setting. Although the individual concerned would have to work closely with the person responsible for the machinery, responsibilities should be clearly defined. Some training must be offered, particularly on the operation of the irrigation system, but to make a successful impact the person concerned will need to be capable of animating the peasant farmers and bullying and coaxing them into using better techniques.

Fourthly there is the whole question of the development of the co-operative and its increasing institutionalisation as it takes on more functions. In this context the need for control mechanisms is self-evident. The attempt has been made to start the introduction of financial controls with the help of DACCA, but this is only half the picture. The other half of the picture is the educating of the co-operative members into the exercise of their rights to control the Administrative Council and the management and the working out of a genuine management structure. Steps have been taken in this direction with the encouragement of one of the Peace Corps volunteers, but it is by no means an easy task and inevitably stirs up political controversy. Efforts should continue in both these directions and should be assisted, but it is difficult to identify precisely how these efforts would best be aided. It is hard to imagine courses tailored to meet these specifications. It is possible that DACCA has some experience that could be helpful but it appears that its activities are usually based on larger units than Sakaye.

In theory then there is nothing to prevent Sakaye functioning as a successful rice centre in the future once its capital structure has been lightened. It should not, however, be forgotten that unless the human, management problems are solved, its success will remain theoretical. Attention should therefore be concentrated on the problems identified and their solution.