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COMMISSION REPORT TO THE COUNCIL
ON THE CONDITIONS UNDER WHICH AID IS IMPLEMENTED
AND USED BY THE RECIPIENT ASSOCIATED STATES, COUNTRIES AND TERRITORIES

1973

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ANNEX

INTRODUCTION

The purpose of this report, which has been drawn up pursuant to article 21 of the 1969 Internal Agreement on the financing and management of Community aid, is to provide the Council of the Communities with information on the conditions in which this aid was implemented in 1973 by the recipients - the Associated States and the Overseas Countries and Territories - and on the use made of projects financed by the Fund.

I. In 1973 the implementation of aid continued at the same pace as during the previous year. Financing decisions taken in 1973 brought overall commitments from the resources of the third Fund to 70% of the total budget appropriation for the second Yaoundé Convention. In 1973 total contracts for the three Funds showed a substantial increase on the previous year. Disbursements also increased in 1973, thus confirming the increased rate of aid implementation.

Total commitments from the resources of the three Funds over the first 15 years amount to approximately 2 000 million u.a. while disbursements total approximately 1 400 million u.a.

In 1973 the Commission continued to adopt measures designed to reduce the frequency and extent of overspending on certain projects financed by the Fund for this has always been one of the Commission's main points of concern. Although in 1973 the additional funds required to cover these excess costs still amounted to approximately the same total as in 1972 and there was a reduction in the net extra cost arising from contracts, such favourable results should nevertheless be treated with caution, since they do not take into consideration contracts being performed.

The Commission has already adopted certain precautionary measures to make as much allowance as possible for the effects of widespread inflation and increased energy prices since these are bound to affect projects in progress.

II. During 1973 the Commission continued its study of the use made of projects financed by the Community in the Associated Countries and Territories. The value of this work, which is carried on continuously and in cooperation with the authorities of the recipient countries, lies in the fact that it enables the Commission to remedy any shortcomings and to draw lessons for channelling the aid granted and integrating it more effectively in the development strategies applied by the various recipient countries.

The second part of this report reviews seventeen agricultural development schemes carried out in nine different countries. In view of the complexity of the problems posed by the conception and implementation of agricultural development projects, the schemes have been arranged in three groups to enable the best possible comparison to be made of their conception, implementation and results. The conclusions which may be drawn from the analysis of these schemes are set out at the end of the chapters devoted to each group (or at the end of the section on projects not falling into any of the three groups).

All the schemes helped develop agricultural production, increased the market value of agricultural products and improve stock-breeding. From the technical, operational and functional angles, the execution and use made of these projects may be considered, in most cases, to have been in line with the objectives set. Although the results of the projects appear therefore to be mainly positive, some of them were not as fruitful as they might have been owing to bad and unpredictable weather conditions or to operating problems in cases where projects were not sufficiently adapted to the local situation.

In the case of bad weather, involving uncontrollable external factors, analysis of the results of projects is a difficult and delicate matter.

As regards operating problems, the authorities in the associated countries are striving to pay even closer attention to the conditions of leadership, supervision, information, marketing and project maintenance. This moreover backs up the Commission's efforts to seek to integrate EDF-projects as comprehensively as possible into the socio-economic context of the area or country of which they are to become part.

The Commission also considers it of the utmost importance that the associated countries should put up projects for financing from EDF resources within the framework of coherent programmes, which would take particular account of the need to ensure that projects function and are maintained properly by providing adequate financial resources and qualified local staff for them. With regard to the latter point, agricultural development projects are frequently supplemented - in accordance with the guidelines laid down by the Association Council - by technical assistance programmes, for example involving the supervision and training of African staff capable of running these projects. Similarly, in its programme of scholarships and in-service training grants, the Commission seeks to give priority to scholarships for trainings related to capital projects. Such trainings are in any case confined to agricultural, economic and technical subjects according to the priority scale of the Associated State in question. Approximately two-thirds of the scholarship holders or trainees receive their training in African institutes, study centres or universities.

PART ONE

CONDITIONS OF AID IMPLEMENTATION

In 1973 the Commission continued its efforts of the past few years to speed up the implementation of Community aid and to make it more effective.

The results obtained in the financing of projects show that these efforts have begun to bear fruit (Chapter I). The Commission continued to pay close attention to cases of overspending on certain projects financed by the three Funds, and the study of this phenomenon which it had submitted the previous year was brought up to date (Chapter II). Finally, the Commission adopted certain measures to counter, as far as possible, the effect of increased prices on the Fund's financing operations (Chapter III).

CHAPTER I - RESULTS OF FINANCING OPERATIONS

The implementation of Community aid in 1973 was marked, as in the previous year, by a particularly high rate of commitments from the resources of the third EDF.

1. Financing decisions adopted in 1973 in favour of the AASM and the OCT and OD totalled 201 million u.a. from the three Funds. Total commitments entered into in 1973 under the third EDF alone amounted to 200 million u.a. After three year's operations, total cumulated commitments from the resources of this Fund amount, therefore, to approximately 640 million u.a. or 70% of the overall appropriation for the second Yaoundé Convention. This result suggests that when the Convention expires on 31 January 1975, the funds earmarked for the third EDF will have been fully committed.

2. Total contracts placed in 1973 under the three Funds amounted to 214 million u.a. in other words an increase of more than 33% over the previous year.
3. Disbursements under the three Funds in 1973 amounted to approximately 160 million u.a., representing an increase over the previous year of 145 million u.a.
4. At the end of the fifteen years covered by the three Conventions, the balance-sheet of the three Funds might be summarized as follows : under the commitments entered into in favour of the AASM and the OCT and OD - amounting to approximately 2 000 million u.a. - 1 100 invitations to tender have been issued and 5 500 works supply and service contracts placed, performance of which has involved disbursements in the region of 1 400 million u.a.

CHAPTER II - OVERSPENDING

During discussion within the Council's AASM-FIN Working Party of the general study on overspending drawn up by the Commission in 1971, it was agreed that the Commission's annual report to the Council on the conditions of aid implementation and utilization should include a statistical study on overspending.

Two methods were employed in drawing up this study :

- First, a list was drawn up of those projects involving excess expenditure for which supplementary funds were committed during the 1973 financial year following a decision by the Chief Authorizing Officer or the Commission.
- Using a second, more comprehensive approach, the Commission attempted to establish for contracts performed under the three Funds the net extra cost resulting from the additional expenditure incurred as against any savings, both overall and by sector.

1. Excess expenditure covered in 1973

In the 1973 financial year, the Commission (after consulting the EDF Committee) authorized the commitment of an overall total of 13.8 million u.a. to cover overspending on 20 second and third EDF projects which had not yet been completed. These 20 projects, representing a nominal amount of 79 million u.a. included :

- 8 projects from the second EDF, representing a nominal amount of 32.5 million u.a. on which overspending amounted to 9.6 million u.a. (29%)
- 12 projects from the third EDF, representing a nominal amount of 46.5 million u.a. on which overspending amounted to 4.2 million u.a. (9%).

Total overspending amounted to 17.5% of the nominal amount for these projects.

This overspending was covered by 2.5 million u.a. from the second EDF and 11.3 million u.a. from the third EDF. Excess expenditure thus covered in 1973 totalled 7% of the overall amount involved in financing decisions taken in 1973 under the three Funds (201 million u.a.). If the total amount of excess expenditure covered in 1973 by the resources of the third EDF (11.3 million u.a.) is compared to the total for financing decisions taken in the same year under the third EDF (200 million u.a.), the percentage is even smaller, amounting to only 5.6%. This result should be compared with the 3.3% and 17% recorded in 1972 and 1971 respectively.

The improvement observed during the preceding financial year, due to the measures which the Commission had been recommending for several years to limit overspending was therefore confirmed in 1973.

2. Net extra cost

In drawing up the balance sheet of the net extra cost to the EDF resulting from the additional expenditure incurred and any savings made when the projects had been completed, reference was made, as in the preceding year, to contracts under the first, second and third EDF which had been finally closed.

- a) From this balance sheet, covering 4 825 contracts for which the accounts are closed, the following emerged :

- for 878 contracts (18%), representing a nominal amount of 336.4 million u.a., total expenditure was 400.4 million u.a., revealing overspending of 64 million u.a. (19.02%);
- for 1 516 contracts (31%), representing a nominal amount of 181.8 million u.a., total expenditure was 161.4 million u.a., revealing a saving of 20.4 million u.a. (11.22%);
- for 2 431 contracts (51%), expenditure (174.9 million u.a.) totalled the same as the nominal amount.

The above figures for overspending and savings show that the total net extra cost comes to 44 million u.a., which represents an average increase of 6.3% over the nominal total for the contracts (693 million u.a.). This result confirms the improvement during the preceding financial year, the net extra cost having declined from 10.04% in 1971 to 8.09% in 1972 and 6.3% in 1973.

b) Detailed examination of the net extra cost reveals that :

- supplementary expenditure resulting from price increases deriving from price variation clauses came to 19.5 million u.a., i.e. 2.8% of the nominal amount of the contracts and 45.0% of the total excess expenditure;
- supplementary expenditure resulting from additional orders necessary for proper execution of the projects or from technical snags arising while the projects were in progress amounted to 24.1 million u.a., i.e. 3.4% of the nominal amount of the contracts and 55.0% of the total excess expenditure.

These results are of interest for two reasons :

- Firstly, they show that the efforts made by the Commission to specify more precisely the conditions of execution of projects are beginning to bear fruit : excess expenditure resulting from technical snags declined from 71% of total excess expenditure in 1972 to 55% in 1973;
- Secondly, they reflect the growing impact of the increase in prices recorded over the last two years, the effects of which will be particularly marked during 1974 and 1975 : overspending due to price increases rose from 29% of total excess expenditure in 1972 to 45% in 1973.

c) As in 1972, it appeared to be of interest to provide a breakdown of the net extra cost according to the Fund's main sectors of intervention. The situation is as follows (in millions u.a.):

Sector	No of contracts	Original total (millions u.a.)	Overspending or net cost	
			millions u.a.	%
Urban construction and other work	1 430	171	5	2.9
Road infrastructure	334	188	23	12.2
General infrastructure and industry	378	136	13	9.6
Crops and livestock	1 317	120	2	1.7
Miscellaneous (1)	1 366	78	1	1.3
TOTAL	4 825	693	44	6.3

(1) Aid for production, trade promotion, etc.

Although there is evidence of a considerable improvement over the preceding year, the net extra cost remains highest, as in the past, in the field of infrastructure works.

It should be pointed out that the above examination was based on closed contracts on which work was in most cases begun some time ago. It is clear that the major cases of overspending have occurred especially during the last two or three years. It follows that this overspending does not figure in the statistics for concluded contracts since it relates to projects which are mainly still in progress.

It is with this in mind that the Commission has adopted measures to minimize such effects on the financial conduct of the Fund.

CHAPTER III - EFFECT OF PRICE RISES ON PROJECTS IN PROGRESS

The study of overspending set out above shows how far the efforts made by the Commission have enabled the situation to be improved during the last two years. It would, however, be misleading to draw over-hasty conclusions from these results. Widespread inflation and the increased cost of energy, which have made themselves felt much more markedly since the end of 1973, have had the effect of considerably swelling the cost of development projects under way in the Associated States.

The information which the Commission has been able to obtain has indicated substantial rises in all sectors. For example, by the end of 1973 the cost per kilometre of asphalt road (in open country, without constructive works or special obstacles) had risen by 24% in Niger. In six months, the price of concrete-reinforcing steel went up by 48% in Senegal, the cost of fuel doubled in Cameroon, cement went up by 30% in most States and the cost of African labour by 10% in one year and of expatriate labour by nearly 15%.

As indicated above, these increases are not yet reflected in the statistical study on overspending carried out by the Commission. It is clear, however, that they will have a serious effect on projects in progress in 1974 and 1975 and that the encouraging results recorded in 1972 and 1973 will not be repeated.

To minimize the adverse effect on the programming of Community aid for each State, the Commission is ensuring that projects under way are being carried out with the utmost economy. To achieve this, at every stage of execution, the Commission is doubly keen to find solutions which will involve the least expenditure without compromising proper execution of the projects (limiting studies and technical assistance to what is strictly necessary, choosing the technical solutions, selecting the contractors, additional works, etc)

Moreover, in so far as credit balances can still be obtained despite increased costs savings will not be used for providing aid not planned originally. All spare funds will therefore normally be earmarked either for covering overspending that will be inevitable on other projects in the same country, or for financing priority projects still on the programme for the State in question and which might otherwise have to be dropped.

PART TWO

USE MADE OF COMPLETED PROJECTS

In 1973 the Community continued to seek information on the use made of projects financed by Community aid. A start was made by evaluating 22 completed projects in the various sectors covered.

A brief summary of the results of these projects was presented to the Association Council in the Commission report on the management of financial and technical cooperation in 1973, which had been drawn up pursuant to article 29 of the second Yaoundé Convention. The conclusions of these evaluations largely confirmed those drawn from a previous examination of projects in the three sectors concerned. They will not, therefore, be dealt with here.

At the same time the Commission embarked upon a comprehensive evaluation of 17 agricultural development schemes, the utilisation of which has already been examined on various occasions over the past few years.

This sector is particularly important for the development of most of the associated countries, and it has always been one of the main areas covered by financial and technical cooperation. Approximately 16% of financial commitment under the first EDF, 37% under the second EDF and 30% of the funds committed up to 31 December 1973 from the resources of the third EDF were for agricultural schemes. This last percentage may well be considerably reduced, however, since financing decisions have already been taken on most of the agricultural projects coming under the third EDF.

Financing decisions : situation at 31 December 1973 (million u.a.)

	1st EDF	2nd EDF	3rd EDF
Total decisions	570.9	717.7	637.7
of which : rural production	94.1	266.9 (1)	189.0

(1) Including 25 million u.a. for agricultural price support

An analysis of the types of project financed in the agricultural sector reveals a distinct change of emphasis from the first to the third Fund. Hydro-agricultural schemes accounted for a large proportion of the funds committed under the first EDF, whereas there were relatively few projects involving industrial crops. However, under the second EDF, the greatest number of commitments involving the largest amounts were for the latter type of project, whereas hydro-agricultural schemes only accounted for roughly the same amount as under the first Fund. The trend towards projects involving industrial crops was further confirmed under the third EDF.

Breakdown of rural production projects at 31 December 1973

(million u.a.)

	1st EDF	2nd EDF	3rd EDF	Total
Total rural production	94	267	189	550
of which :				
hydro-agricultural schemes	40	32	44	116
industrial crops	19	111	139	269

Most of the hydro-agricultural schemes financed from the three Funds were for Upper Volta, Madagascar, Mali, Mauritania, Surinam, Burundi and Réunion. The most important projects carried out in the first five of the countries listed have been evaluated and are mentioned in this report.

Breakdown of industrial crop projects at 31 December 1973

(million u.a.)

	1st EDF	2nd EDF	3rd EDF	Total
Total industrial crops	19	111	139	269
of which :				
oil palms	11	62	27	100
cotton	-	19	34	53
tea	5	14	35	54

Oil palm projects account for by far the greatest percentage of commitments from the three Funds in the industrial crop sector, followed by cotton- and tea-growing schemes, each accounting for roughly 20% of total commitments. The large-scale project involving palm plantations in Ivory Coast is dealt with in this report. The 40,1 million u.a. required to finance it accounts for approximately half of all commitments for oil palm projects from the first and second Funds. The second largest commitment for industrial palm plantations was allotted to Dahomey. The Mono palm plantations project, which was financed under the first EDF, is analysed below, as is a project for the development of cotton growing in Senegal.

These few figures show that very generally the projects dealt with in this report can be taken as representative of completed agricultural projects as a whole.

They are, however, less representative of agricultural development projects financed by the EDF as a whole, and in particular of the most recent ones. Agricultural schemes take a long time to complete and a considerable period must elapse before their results can be properly evaluated. Consequently, the completed projects dealt with in this report bear the stamp of ideas which prevailed during the early years of the EDF. Experience and knowledge gained in this field since then have led to developments in the methods of appraisal and conception so that the projects examined reflect only a part of the whole series of problems which are now raised, and very often solved when an agricultural project is drawn up. This should therefore be borne in mind when conclusions are drawn from this examination.

One other reservation of a general nature needs to be made : the long period of drought in the Sahel countries has had a noticeable effect on the use made of certain completed projects. As this was an external factor and entirely a matter of chance, and it was not possible to predict how long or how severe the drought would be, the detrimental effects have not been taken into consideration and are not even mentioned in this report.

Most of the agricultural development projects which have been evaluated have several different, though usually complementary, objectives.

A comparative analysis of the objectives reveals that operations can be divided into three groups according to the priorities of the schemes :

- schemes serving as a basis for productive investment,
- hydro-agricultural schemes plus improvement to conditions of production,
- operations geared as a matter of priority, to the introduction and/or increase of industrial crops.

In the terms of the distinction made earlier on the statistical breakdown of agricultural projects, the first two groups of operations are, broadly speaking, "hydro-agricultural schemes" and the third group schemes involving "industrial crops".

CHAPTER I - SCHEMES SERVING AS A BASIS FOR PRODUCTIVE INVESTMENT

Projects in this first group are mainly to establish infrastructure and carry out construction work vital for achieving other objectives, for example improving the food situation in the countries concerned. More particularly they are to establish the rudimentary infrastructure necessary to cope with various adverse constraints which could well hold back economic development, without making any direct changes in the production process itself.

Ultimately, the development of the Sahel countries depends on water - for people, for agriculture, for irrigation and for livestock, migrant herds included. In these countries where water is of such capital importance, pre-production schemes - to build dams, to enlarge pools for watering livestock - are of first priority and seen as such by the Governments.

The idea behind pre-production schemes is not simply to provide the populations with the requisite water, but also to preserve and increase the value of another rare commodity, soil. The evolution of medical science, both human and veterinary, has brought in its wake a vast increase in population and greater numbers of livestock. The result is serious damage to plant life - grass, trees and bushes - by man through tree-felling, land-clearance and bush-fires and by animals through overstocked pastures. The potential of the earth to provide food becomes even lower and more **unreliable**, soil erosion is encouraged, and this contributes to the reduction of enormous tracts of land to desert.

The prime aim of projects in this first group is to make the necessary investments in water engineering to supply both people and livestock and to enable the land to be used in a more rational way.

1. Construction of rural dams (Upper Volta)

The Government of Upper Volta was anxious to provide a solution to the problems which meagre and irregular rainfall posed to its population, livestock and agriculture and as early as 1960 decided to make the construction of earth dams one of the mainstays of its investment policy.

This interest in water supplies was the reason for the construction between 1960 and 1966, of 40 dams financed by Community aid, in three successive projects. (1)

The first two projects were for the construction of 11 earth dams to create permanent reservoirs which would guarantee a supply of water for both population and livestock and for the irrigation and flooding of fields; they would also enable pastures to be better used and fish resources to be exploited. The first project, to construct 29 earth dams, was motivated by similar aims.

Most of the first 11 dams began to be used in 1962. Dams built as part of the third project were first used in 1964 and 1967 after some delays because of technical changes in design. The initial constructions were somewhat rudimentary and, on the basis of this early experience, far greater margins of safety were planned for later dams. These technical changes proved beneficial although the result was that Community financing could only cover the construction of 29 dams instead of the 64 originally budgeted for.

The result of the work was considerable reserves of water to guarantee the much-needed water supply for both population and livestock. Most of the reservoirs were working properly in 1971 when a check was made on how they were being used. As a general rule the dams were

(1) Total expenditure : 9.800.000 u.a.

in a fairly satisfactory condition although, due to lack of funds, the authorities had been unable to carry out any real maintenance.

The population made very little use of the possibilities of irrigation during the early years. Fish-breeding apart, very little agricultural development took place in the areas served by the dams.

In 1966, with an eye to making greater capital from the dams, the Government of Upper Volta carried out experiments to select more suitable varieties of rice and to define the minimum agricultural standards. This led to the yield being doubled and in some cases quadrupled (4 tons/hectare of paddy rice). At the same time, efforts to adapt traditional structures of rural supervision resulted in larger areas of land being put to use downstream from the dams. The eventual outcome was an improvement in results, as seen in higher yields and an increase in farmers' incomes.

With the same idea of increasing the effectiveness of investments, the Community, at the beginning of 1974, undertook to provide funds for improving and making better use of plains, of an irrigable area of 150 ha, downstream from existing dams. This operation, dealing with rice-growing and marshland, was an extremely important one, as is emphasized by its inclusion in Upper Volta's second Development Plan for 1972/1976, in which 500 ha of land downstream from the dams is scheduled for improvement.

An analysis of the results of these projects reveals that the construction of rural dams led to an improvement in water supplies. This of course was their prime objective. Although, owing to a lack of available funds, the Government was unable either to bring about an immediate improvement in the land downstream from the dams or to intensify production through rural training and information measures, the value of such rural infrastructure works is nonetheless clear. They are one of the means at the disposal of rural development policy and a condition of its success.

2. Hydro-agricultural schemes in the Brakna (Mauritania)

This project to control the supply of water was carried out in Mauritania as part of a Government programme, in much the same way as similar operations were carried out in Upper Volta and Mali. Five concrete dams were planned to increase the amount of water which could be retained after winter flooding so that millet growing in the region of the Brakna could be extended and expanded and the population could feed itself without the help of imports from Senegal and Mali. Another aim was to encourage the nomads of the region to settle.

The work was completed (1) between 1961 and 1963 and the five dams were first used in 1963. They were faultless in design and were still in good condition ten years later in spite of lack of maintenance due to the fact that the authorities had insufficient funds and that the population, for its part, did not act since it was expecting the State to do so. This lack of interest does not, generally speaking, seem to derive from conservatism or inertia on the part of the population, but rather to a failure on the part of the relevant authorities to make the users aware of the problem or to provide them with any follow up or support.

In 1971/1972 a survey was carried out on the use made of the five dams. Three proved to be fully operational; by increasing the water available they were boosting the vital agricultural development of the region. In two cases, however, the anticipated improvements did not materialize. This was due to existing dams and to the ingrained ways of using the land traditionally cultivated.

Although the theoretically cultivable land has not all been improved, total production does exceed the amount needed to support the population. The best results have been recorded for one of the improved areas where fertilizers, fungicides and insecticides were used.

(1) Total cost : 734 000 u.c.

The water points meant that the livestock was in better, though still mediocre, condition. The phenomenon noticed in Upper Volta was apparent there - nomads stayed near the three dams which were being put to use and either new settlements were founded or existing villages, shops, schools and dispensaries got bigger. Moreover, standards of hygiene were raised by better water supplies. Lastly, the attitude of the population to the scheme was positive.

The conclusion is that the dams are being used satisfactorily, at least in years when there is sufficient rainfall. However, the choice of site for two of the dams is questionable and this could well have been avoided by prior consultation with the people who were going to use it. The Commission now ensures that the local population is integrated in the preparation of further projects of this type so that they have an interest in seeing it work and the proper functioning and the success of the scheme is thus guaranteed.

3. Construction of dams in eastern Mauritania

When this project was drawn up, the accent was once again put on making the most of the rare sources of water in this sub-Saharan region. The aim was to answer better the needs of the population, whose principal means of livelihood were the traditional agriculture and stock-breeding.

The construction of 9 dams and the fitting out of two springs were intended to make several areas of open country suitable for growing food crops (millet), to improve the conditions for watering the livestock and progressively to encourage the population to settle around the resulting growth centres.

Work was begun in 1967 and completed in 1969. It involved building earth or concrete, or in one case pile/plank, dams.

The dams were checked in 1972 and found to be in only moderately good order. This was because of certain technical faults which developed during building and which had thus far prevented final acceptance; in fact the firm responsible was in compulsory liquidation. Nevertheless, the dams and springs have already provided better water supplies for the inhabitants and their livestock. Stockbreeding has reaped the greatest benefit from the scheme.

As regards the effects of the scheme on the economy, of the 1 450 ha which were to be made cultivable through flooding, approximately 1 100 ha are in fact being worked. For lack of available funds, the authorities have been unable to provide any supervision or training and the farmers are still using traditional methods without the aid of fungicides, fertilizers, etc. This means that the production potential of the dams is not being fully realised and that the yield, although greater than before the scheme was introduced, is not up to expectations.

It emerges, however, that the project has contributed to the creation of growth centres. The settling process has in fact resulted in the construction of semipermanent houses and villages. Farming conditions have been improved as regards food crops, although better results could have been obtained if some sort of rural training or organization had been instituted to better the project integrate into its socio-economic environment.

4. Enlargement of 16 pools in Mali

The basic aim of this project was to improve the watering facilities along the routes used by migrant herds at the beginning and end of the rainy season between the Macina and area into which the Niger floods - and the Sahel. The project was to increase the depth of 16 existing pools by a maximum of 1.50 m (so as to remain in the layer of clay) and both increase their capacity and lengthen the period during which they can retain rainwater.

The work (digging out a total volume of 70 000 m³ of earth, but with no special improvements, like waterproofing, etc), for a total cost of only 135 000 u.a., was carried out between 1960 and 1961.

An inspection carried out on the spot in 1970, eight years after the digging, showed that twelve of the sixteen pools were in good condition in spite of the almost total lack of maintenance due to the very limited funds available. In June when the thunderstorms begin, the pools fill sufficiently to retain water until the next lot of rain and the herds can return to the Sahel in safety and begin to use grazing grounds in this region at an earlier period. In November and December the herds are sure of finding water in the deepened pools and so on the way back they are able to spend more time in the Sahel waiting for the withdrawal of floodwaters from the pastures in the Niger delta.

There is water in the pools until January or February. How long it stays is a question of evaporation and permeability of the soil.

The project, on the whole, has been successful. Relatively little investment has brought about a considerable improvement in the conditions surrounding the watering of cattle and this in turn has led to the better health of migrant herds. Mention should also be made of the secondary but not negligible effect, which has been to improve water supplies to the village populations. Both farmers and villagers show considerable interest in this type of project.

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5. Conclusions

All the projects examined above have led to a noticeable improvement in water supplies for the populations and for livestock, and to progress in stock-breeding conditions. This was, above all, what they were meant to do.

It is however, useful to underline the socio-economic importance of such projects. By increasing the availability of water - the limiting factor of any economy - they encourage the agricultural development of the regions affected, create poles of attraction at which the nomads settle, and help to improve the health of the cattle and even of the population. They enable downstream land to be more rationally worked if the necessary improvements are carried out if suitable supervision is instituted and if, in the longer term, everyday maintenance of the dams is provided. The use made of the projects in the survey was less satisfactory from other points of view ; too few land improvements were carried out and the working of cultivable land was held back by a lack of supervision and failure to maintain the dams.

Because of lack of available funds the relevant authorities were, in fact, able to carry out hardly any maintenance on the dams and pools. The only solution to these problems would seem to be an additional effort over a long period to educate the recipient population so that they themselves can undertake elementary maintenance at least.

This is why more and more such schemes are being carried out through public works departments. This provides work for the population and is also likely to improve the conditions of maintenance by getting the cooperation of the users.

As regards the proper exploitation of the downstream land, better results could doubtless have been achieved by ensuring sufficient supervision on the cultivable areas. In practice lack of funds meant that no worthwhile supervision or rural training programme was possible. It should be borne in mind that in the early years of the EDF this type of project was drawn up more or less in isolation and the overriding aim was to provide the material investments needed for water supplies. Providing the population with such facilities was in itself supposed to encourage them to exploit the land and

increase yield, the authorities of the recipient countries had undertaken to provide the necessary follow-up. But experience proved that this idea did not really reflect reality. It became apparent that some relatively inexpensive action alongside the construction project could lead to investments in infrastructure being distinctly more profitable. Projects of this type are now designed to include not only pre-production improvements, but also all the development of the cultivable land through supervisory and advisory action which is put in the hands of local technical services or management firms. This is in fact the philosophy behind the second group of hydro-agricultural schemes.

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6. Hydro-agricultural schemes in Nickerie and Tijgerkreek (Surinam)

Both these projects can be classified with the first group, as they aimed at providing infrastructure to control enough water to increase Surinam's cultivable land rather than at supplying water.

Both projects were part of the ten-year plan to continue the large-scale creation of polders begun in 1949 for the purpose of supplying the food which the country needed, stepping up exports of agricultural products and increasing the number of jobs available. The amount of cultivable land at the disposal of the large and rapidly expanding rural population was to be increased. Reclaimed land could be given to smallholders so the drift to the towns, where there has insufficient employment, would be curbed.

The hydro-agricultural schemes in the Nickerie district were intended to provide an infrastructure of canals and roads for a total area of 14 000 ha (10 000 ha in existence and 4 000 ha planned) including the technical and socio-economic studies for the plan to develop the 4 000 ha and for the purpose of ensuring that water was more economically used. The crops in question were rice and bananas. Community financing of 1 988 000 u.a. covered the studies for the project and the work itself, and to this was added Netherlands aid of 3 662 000 u.a.

The work at Tijgerkreek West was part of the land reclaiming programme in the Nickerie district, which was due to be completed in 1967. The project was to provide canals and roads for a total area of 1 090 ha and roads for a further 190 ha. The crops in question were rice and vegetables. The EDF and the Netherlands Government were joint financiers of the operation, which included preparatory studies and supervising the work; each was responsible for roughly half of the cost (EDF : 443 000 u.a., Netherlands aid : 522 000 u.a.). Work was completed at the end of 1973.

The achievements of the two projects are typical of agriculture in Surinam - on the one hand large farms exploiting nearly 30% of the cultivated land, and on the other hand, independent smallholdings. Thus more than half of the 4 000 ha of reclaimed land was to be attributed to smallholders in plots of 6 to 9 ha. By the beginning of 1974 most of the reclaimed land had been attributed.

From a legal point of view, the land has been provisionally attributed for between 3 and 5 years until repayments on the land have been made and the plots developed. Thereafter, land will be attributed on long leases.

The Ministry of Agriculture has accepted full responsibility for the agricultural development and upkeep of the land. Its own officials on the spot will carry out agricultural research and experiments etc. A model farm has been set up in the area and an experimental station has tested a wide variety of vegetables. A special department is responsible for the water network and its upkeep. This has not always worked satisfactorily because the bank loans to be provided for the purchase of equipment were insufficient.

Enough details on the way in which these two schemes are working are not yet available for a full appreciation of their effect on the economy. The results do, however, seem most promising and have already brought about a rise in the farmer's standard of living. The new irrigation network has meant that two rice crops instead of one can now be grown. Both the studies and the work itself have led to better irrigation and control of water on the whole 14 000 ha of polder.

CHAPTER II - HYDRO-AGRICULTURAL SCHEMES, PLUS IMPROVEMENT TO THE
CONDITIONS OF PRODUCTION

The projects of this second group of investments have two aims : to carry out improvements to agricultural infrastructure, and thus to create, in a given area, the best conditions for agricultural production. Unlike the schemes of the first group, it is no longer merely a case of ensuring water supplies, but rather of controlling the water and systematically improving and intensifying production. Consequently, these projects complement and involve making the logical improvements to the basic development work; they consist of a main scheme (hydro-agricultural development), supplemented by a series of concurrent or subsequent additional schemes for modernizing the area on rational lines (land reforms, extension services, generating interest and involvement, providing advisory and supervisory staff, setting up a management body, marketing, etc).

1. Hydro-agricultural development of the Anony delta (Madagascar)

This project arose from the programme for the socio-economic development of the whole of the Lake Alaotra basin, which had the following aims : hydro-agricultural development, development of crops, principally rice, particularly :

- improving growing conditions in 5 000 ha of rice fields already under cultivation, of which only 1 000 ha were regularly irrigated;
- reclaiming 1 650 ha of new land;
- extending the rice-fields on to 1 600 ha of marshland.

The cultivated areas were to total 7 250 ha.

The project was designed to include :

- an attempt to increase each family's cash income;
- land reform (consolidation of holdings) ensuring a relatively egalitarian distribution of land to provide farms of 4 to 5 ha on average;
- the choice of a system of individual ownership, with title-deeds being issued after fifteen years;
- diversification of crops, especially by introducing out-of-season crops;
- modernization of the new farms (equipment, savings schemes);
- systematic repayment by the owner of the total costs of development schemes, consolidation of holding training and supervision, and other services provided, except for infrastructure costs.

The EDF bore the main part of the capital expenditure on infrastructure. The new charges (public works, extension services, national insurance..) borne by the Malagasy authorities, were to be covered by introducing a tax on water.

The total cost of the project, which was carried out between 1958 and 1970, amounted to 4.33 million u.a. (1); i.e. 597 u.a./ha for the 7 250 ha developed. The institutional framework for implementing the project was provided by SOMALAC (2).

The results of this project may be considered as a success for the following reasons :

- Consolidation of holdings was carried out as initially planned; more than 1 300 standard 4 to 5 ha farms being set up in 1968 in the Anony area;
- After completing the hydro-agricultural schemes in the area it was possible to implement the overall programme in 1970;
- The operating costs for the area are being met by local departments and the farmers themselves. It should, however, be noted, that contrary to the initial concept, the recurrent charges involved in maintaining the water supply schemes are not covered by a water tax imposed on the users, who themselves maintain the quaternary network;
- The socio-economic advancement of the farmers, on an individual and collective level, appears to be working well. The aims set as regards equipping the farms have been virtually achieved in four years. There has been a remarkable development of collective equipment (tractors, threshing machines, etc) thanks to the rural associations grouping together the owners, which receive contributions from their members and loans granted by the National Bank.

The internal economic profitability of the project has risen to a very high level, the net profit per ha having quadrupled compared with the situation prior to the scheme (3). There is no doubt either of the economic profitability at national level, the capital-output ratio being about 4.5 (4).

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- (1) 2 759 000 u.a. (financed by the 1st and 2nd EDF)
176 000 u.a. (financed by FAC - Fonds français d'aide et de coopération)
1 392 000 u.a. (SOMALAC contribution)
4 327 000 u.a.
 - (2) Société Malgache d'Aménagement du Lac Alaotra (Malagasy company for developing Lake Alaotra) a mixed-investment company created in 1961
 - (3) FMG 8 100 prior to scheme being carried out (for a production of 1.6 t/ha of paddy)
FMG 32 450 after completion of scheme (for a production of 3.4 t/ha)
 - (4) For an investment of FMG 1 127 000 the additional value of production when fully operating is of the order of 250 million

Finally, a review of the effects of the project reveals the following points :

- The accent was put on technically modernizing the means and methods required to develop a traditional food crop (rice) suited to the local region; the project therefore avoided running the risks inherent in innovation and the uncertainties occurring with industrial crops or with populations which might migrate.
- On that basis of modern farming community was created, the members of which own individually reasonably-sized farms enabling them to earn large cash income. However, the size of the farms and the possible yields are such that the owners are even led to make use of paid labour. In theory, the family working units available on the farms should be able to carry out all the farming operations without recourse to outside labour. In actual fact, in this region a middle class of owner-farmers is being created who are clearly better off than the average members of the Malagasy farming community. Their cash income, which is large compared with the regional average, enables them not only to overcome the hurdle of running into debt but also to set up a savings fund. However, the question may well be asked whether individual savings are not partially diverted into covering the cost of paid labour, which on certain farms accounted for more than a third of the total working time. It could be concluded that the size of the holdings has been made too large. On the other hand, given the collective equipment available this is certainly not the case.
- Despite these circumstances, one of the reasons for the operation's success is that it is being carried out in the region itself for the benefit of the holdings there so that neither migration nor the creation of a colony is involved.
- Efficiency and coherence in conceiving equipping and supervising the scheme were made possible by very thorough going preliminary studies and the coherence of the overall plan, which was followed very closely. The standard of SOMALAC's managerial staff and the foreign advisers was excellent.

- Finally, it should be emphasized that the capital outlay on the area was moderate : 597 u.a. per hectare.

All things considered, the project's results are quite remarkable as regards both production, where the anticipated changes have in fact been made and the integration of the project within the economy and society of the country. Well thought out coherent and adapted to the local situation, the project has generated undeniable social and economic change right across the population spectrum involved.

2. Hydro-agricultural development of the Soavina area (Madagascar)

The project (1) consisted in the hydro-agricultural development of the Saovina area in Fianarantsoa province, which is a valley where the traditional occupation is rice growing, and the rate of population increase (3%) is above the national average. On the basis of a fairly simple infrastructure (irrigation network, dam, water channels) the project involved the development of 1 066 ha in order to :

- increase rice production from 1.5 t/ha to 3 t/ha;
- create a small local marketing flow;
- increase the population's income.

An additional scheme, carried out by the Centrale d'équipement agricole et de modernisation du paysannat (CEAMP), was designed to :

- bring about consolidation of holdings (facilitated by the limited number of farmers in the area) and by using the newly-prepared land, increase the average size of each holding from 1 ha to 2 or 3 ha depending on circumstances;
- provide supervisory staff and advisers for the beneficiary population, enabling yields and productivity to be increased by means of improved techniques (selected seeds, manuring, etc).

The techniques used in creating the areas infrastructure were similar to the traditional system, which gave the farmers a real interest in the project, and the work of managing and maintaining the network of earth drains, carried out by the farmers themselves, is facilitated as a result.

(1) Cost of the project : 575 000 u.a., of which 516 000 u.a. was provided by the EDF and 59 000 u.a. by the Malagasy Government

The results of the project are such that it may be considered a success, and virtually all its aims have been achieved. The economic profitability of the project is undeniable : the net income per hectare has more than doubled (1). The economic profitability at national level also underscores the project's importance, the capital-output ratio being 4.1 (2). The effects that the project has had on production are reflected in the start of a local marketing flow resulting in increased income and - owing to redistribution thereof - an improvement in living conditions.

An analysis of the results obtained shows that the success is primarily attributable to the excellent way in which the project was thought out, providing for well integrated implementation at both operational and sociological level. Not only did this avoid upsetting the usual way of life but it provided all the means necessary for effectively modernizing the farming community, and it was endeavoured to ensure that the beneficiary population would participate from the start. Participation was welcomed by the Betsileo, who are highly proficient in growing rice by traditional methods and willing to organize themselves where the scheme is carried out progressively in the context of the family holding and relates to a traditional crop (rice). Thus the farmers undertook to take part in tertiary development work (digging channels, building bunds) and maintenance work (clearing of channels).

Development of the infrastructures through CEAMP's combined schemes accomodated all aspects of the farmers' points of concern, without however establishing a burdensome and constricting supervisory system. Accordingly, the reallocation of land was carried out with respect for local traditions, during public discussions, and with the participation of the people concerned. The time taken up by this procedure was largely made up afterwards.

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- (1) Before development : FMG 19 000/ha (based on 1.5 t. of paddy
less the cost of seeds)
After development : FMG 17 000/ha up to 1968 (3 t/ha)
FMG 49 200/ha after 1968 (4 t/ha)
- (2) Total capital outlay : FMG 165 million; value of production
(when fully operational): FMG 40 million

The supervision is both light and efficient; advice and information have been provided not only on rice growing but also on other lines of production (orchards, dry crops, etc.), and the marketing cooperative has been assisted.

As regards the future forecasts for improving yields and incomes are excellent, owing in particular to the use of new methods, the generalization of animal-drawn tillage and the implementation by the Malagasy authorities of additional capital projects.

3. Hydro-agricultural development of Bas-Mangoky (Madagascar)

The aim of the project was to develop an area within the Bas-Mangoky delta, which has considerable agricultural potential provided it is irrigated. The development of this region was intended to attract immigrants - which would relieve congestion in the overpopulated areas of the country - and to create a growth point benefiting the peoples of the South - a particularly underdeveloped region. In view of the ecological conditions, it was planned to use the new arable land for growing cotton and rice. The first experiments had already been carried out on a pilot unit of 1 000 ha established between 1961 and 1965 and financed by FAC.

A first instalment costing 4.8 million u.a., financed from the first EDF, and carried out between 1964 and 1966, comprised an intake structure on the Mangoky river, a 20-km canal for conveying water to the area and a 16-km main irrigation channel (including a protective dike) to serve an area of approximately 10 000 ha.

In 1966 the work comprising the second instalment was begun, involving preparation of the agricultural areas and costing 9.7 million u.a. payable out of the second EDF. It was planned to prepare 3 750 hectares under this instalment.

As regards finance, the EDF, with its total commitment of 14.6 million u.a. (including technical assistance), has supplemented the contribution of the Malagasy Government, which has provided part

of the capital of SAMANGOKY (1) and covered attendant expenditure on roads and on social, medical, educational and administrative facilities.

It should first of all be pointed out that in 1969 and 1970 the area was struck by two cyclones, which did great damage to the water intake installations and embankments, and flooded much of the agricultural area. Consequently, the Commission decided to reallocate a portion of the funds committed for the second instalment in order to finance measures for protecting the area, with the result that the area under cultivation has remained limited to about 2 500 ha.

The project is based on a form of "association" where the work, costs and income are shared between SAMANGOKY and the "associated" farmers. SAMANGOKY is responsible for the technical and administrative management of the area, that part of the farming work which can be carried out by mechanical means and various goods and services, involved in production, such as water, mechanical ploughing, spraying insecticides and herbicides by aircraft, technical supervision, etc. The farmer, who does not own land but holds rights of user, only carries out manual tasks involved in part of the field work in accordance with general conditions and a timetable laid down by SAMANGOKY. He is closely supervised by the management staff of SAMANGOKY and works a plot. The location of this varies according to the crop rotation requirements and its size is governed by the requirement to obtain the highest possible productivity from the land available.

In order to cover all its costs, SAMANGOKY takes half the cotton crop, the other half being bought at a unit price of FMG 40/kg of cotton seed (1973). It also takes half the rice crop, the other half being left to the farmers. The farmer's income therefore depends partly on the yield and partly on the plot which he is allotted.

(1) Société pour l'Aménagement et la Mise en valeur de la Vallée du Bas-Mangoky

Since demand has always largely exceeded the plots available, however, SAMANGOKY has been compelled over the years to reduce the size of the plots, particularly as the cultivable area has been extended at a slower rate than forecast because of the damage caused by the cyclones.

The production results obtained in the area may be considered satisfactory, the yield having far exceeded the forecasts (1).

The conception of this project raises a few problems of principle. Its aim was twofold : firstly, the regional objective of developing a virgin area, very sparsely populated and prepared in order to attract immigrants from the South and, secondly, the value of an increase in cotton production for the national economy. The choice of the site was governed by considerations of regional development and raised virtually no land problems. On the other hand, opting for an area where the production factor in shortest supply was labour has proved an awkward solution, for most of the associates arriving in the area are not true farmers, and it is they who are entrusted with the cultivation of cotton, which requires rigorous discipline and perfect execution of every aspect of field work at the appropriate time. They are given certain responsibilities as a result of the sharing of work with SAMANGOKY. In such a system, which is perforce intensive, any shortcoming involves consequences which are much more serious than in a traditional set-up.

It is questionable whether the farmers are sufficiently interested in a venture where they are neither owners nor wage earners. Cut-off from their traditional environment, they move from one cotton plot to the next. If, however, the associate fails to carry out the essential field work at the appropriate time, SAMANGOKY is compelled to intervene and put paid labour to work on the plots of the defaulting farmers, the cost of this labour being charged to those concerned.

(1) The average cotton yield for the period 1960 to 1971 was 2.6 t/ha of cotton grain; in certain years production even reached 3 t/ha. In the future it is hoped to achieve an average yield of 2.8 t/ha, which would be among the best in the world. Rice production, based on a single crop per year, was 3.3 t/ha for the period 1960 to 1971

The consequences are, however, more serious for SAMANGOKY than for the farmer who can escape attention and produce traditional crops outside the area or, if he is too heavily in debt, may leave the area overnight. **There** is in fact a migration problem : the peoples of the South come to the area in the first instance to earn money with which they can buy cattle after a few years and return to the region they came from. When they have exhausted their savings they come back to the area. However, as the years go by, their average stay in the area gets longer and they **return** less frequently to their regions of origin. Since this trend shows that the emigrants are becoming interested in a prolonged stay, it would seem that a system consisting entirely of wage earners in an industrial plantation is not necessarily the best solution, even though financially more advantageous to SAMANGOKY thanks to the higher productivity of the labour force. It appears difficult, however, to use a wage-earning system for rice growing. Taking into account the aim of developing a poor region, it is moreover questionable whether the system of "allocating" land on the basis of rights of user is sufficiently attractive and gives the farmers enough sense of responsibility to induce them to settle in the area for good.

Tackling the question of **allotting** the land of the farmers as their private property necessarily involves raising that of the cost of the infrastructure and of preparing the area. However, the development structures have been conceived on practical and modern lines, taking account of the possibility of future expansion, and from the technical standpoint alone they may be considered as a model for large-scale irrigated schemes. Now that the area's protective structures have been reinforced against heavy flooding, such as that caused by the cyclones which submerged the project, they may be considered as **providing** an adequate safety margin. Since the quality of the soil in the catchment area is **steadily** deteriorating and it is not possible to know the flow pattern of the Mangoky river, the result is an average cost per hectare for the project.

which weights heavily on any calculation of profitability and it would be difficult for owners to bear even part of such coasts.

It should also be noted that the SAMANGOKY's headquarters are at Tananarive, which is too far from the project, and bad communications further aggravate the situation. This problem is closely linked with the general question of the force of attraction exercised on the management staff by the town, which in the long run risks hampering very seriously the balanced and harmonious development of the areas concerned.

In any event the political and economic interest of the project seems undeniable, given the possibilities for expansion and regional development, employment and production. Basic development having been carried out, and in order to increase the total area sufficiently for SAMANGOKY to be self-financing, the Commission took a financing decision in 1973 to extend the area to cover 3 000 ha of new agricultural land and thereby increase the useful agricultural area from the present 2 500 ha to 5 500 ha.

4. Development of three rice-growing areas in Mali

The purpose of this project was the hydro-agricultural development of three areas aimed at controlling the water required for growing rice and other food crops (sorghum) locally by digging channels and building structures for regulate inflow and outflow. The building of protective dikes and certain additional roadworks were designed to extend, intensify and regularize the crops in question and this is of vital importance to a dense population which is sometimes underemployed and handicapped by its inability to control very difficult irrigation conditions without help.

The project consisted in the development of the following areas :

- Mopti-Sud plain : creation of a rice-growing area of 4 500 ha,
- Sarantomo-Sine plain : launching rice cultivation on 6 800 ha,
- Kobero marsh : launching cultivation of sorghum on land irrigated with flood water and of rice on flooded land, over an area of 2 000 ha.

The schemes were carried out in 1964 and 1965 (1), partly by firms and partly by public works departments, and with the help of the local population in the case of the Kobero marsh.

An examination of the area the prepared land is being used shows that the results of the project are very satisfactory. The land is in good shape except at Sarantomo, where considerable damage was done to the area by the Niger floods in 1967/68.

The Kobero scheme has special features, since it was designed to cater for the cultivation of sorghum on land irrigated with flood water. In a poor and very densely populated area it was important not only to control the flood water but also to extend the available land. The scheme in Mopti-Sud was already fully operating in 1968 - five years after completion of the work - and the results are particularly good (2). At Sarantomo, however, the launch was delayed owing to inefficiency on the part of the national technical departments as regards bush-clearing and land preparation prior to development - work not covered by EDF financing. The situation was further aggravated by the damage caused by the Niger floods. The anticipated results have not therefore been fully achieved.

An analysis of the results shows that the satisfactory ones are attributable to the fact that the beneficiary farmers were already conversant with the irrigation technique and the crop selected. Working on the basis of this knowledge, the scheme was aimed at controlling the water and extending the cultivable land and at intensifying cultivation of it by modernizing the techniques while at the same time retaining the structure of traditional village-based production.

(1) Total cost : 1.9 million u.a.

(2) The 4 800 ha of prepared land; 300 ha more than planned) was shared among 600 farmers; yields rose from 0.6 t/ha to 1.5 t/ha in 1968/69

The population's attitude toward this type of project is very positive which is one of the main reasons for its success. But it should also be emphasized that the farmers' willingness to adopt and apply improved farming techniques is appreciably **enhanced** by national supervisory staff whose ability is proven.

The three rice growing schemes are a first step towards **broadening** the scope of this type of food crop project to cover more complex arrangements. The purpose of these schemes is to increase food crop production in order to meet regional or national demand. In the last few years the EDF has financed a number of projects of this type in Mali, Niger, Mauritania and Senegal. From experience gained on hydro-agricultural schemes financed previously, the Commission has progressively perfected its approach, particularly as regards supervision, for the quality of supervision and extension work can largely determine the effectiveness of such projects. (1)

In Mali the EDF's efforts were combined with commitments by the Government, which in 1969 launched an initial scheme for supervising rice growers in the Ségou and Mopti regions, which enabled the conditions for supervision of rice growing under controlled flooding to be tested. On the basis of the experience gained there were conceived a project for developing rice growing in the Ségou region, financed by the EDF, and a similar project in Mopti currently being carried out with IDA financing.

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5. Conclusions

An examination of the results obtained from the hydro-agricultural schemes in Madagascar shows that the Anony and Soavina projects have been a success for the following reasons :

(1) see Chapter IV

- the planning was thorough going; extremely comprehensive preliminary studies (in the case of Anony) made for coherent and well-integrated implementation;
- while adhering to the principle of private property, the schemes were carried out in the context of the traditional family holding;
- the modernization of production techniques is designed to be carried out progressively and is initially based on traditional crops (rice) and existing facilities and methods;
- the improvements in production methods have avoided upsetting the traditional way of life;
- the supervisory staff had to deal with a population which was very receptive to the technical ideas proposed, which no doubt reinforced its efficiency;
- participation by the population was ensured from the start of the scheme (Soavina);
- the size of the new plots has enabled them to be farmed very systematically; the increase in cash income has even led to the use of paid labour in the case of Anony.

Broadly speaking, the same reasons hold good for the project in Mali, where the improvement and modernization of farming techniques were based mainly on the traditional village-based production structure. The improvements brought about by the hydro-agricultural schemes (water control) and by the provision of intensive and efficient supervision are in connection with food crops, in which the population has always displayed a run interest.

However, the Bas-Mangoky project in Madagascar raises a number of problems :

- the cost of regional development of a virgin area to relieve the overpopulated southern regions has been high. The capital outlay on the project however, is such as to permit enlargement of the holdings - both in the future and already under way - and subsequently crossing the economic **profitability threshold**;
- on the other hand, this project emphasizes the fact that immediately assessable economic profitability cannot be the only criterion for decisions regarding agricultural development schemes; other factors must be taken into account, such as education, transformation of the environment, training, etc.

- this project in a very sparsely populated area raised virtually no land problems; however, only some of the immigrants from the South decided to settle;
- the farmers coming to the area as wage earners were in general not familiar with cotton growing, but thanks to intensive supervision they were able to adapt rapidly to the manual tasks they were given. On the other hand, the system chosen - that of association (allocation of plots) - has its weaknesses; it fails to generate a big enough sense of responsibility in the farmers, with the result that the productivity of the scheme may be adversely affected.

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The following two projects are somewhat similar to the second group of schemes, though they have different features. What is involved here is the development of areas without preliminary hydro-agricultural preparation. In Upper Volta, where the area in question has already been the subject of anti-erosion measures, the project is limited to developing the potential of the area by financing technical assistance. In Rwanda, road and social infrastructures are being developed concurrently with and subsequent to, the setting up of farming communities. Generally speaking, these projects are covered only by the second part of the schemes of the second group, as basic preparation has already taken place (Upper Volta) or is not required because it is planned to grow dry crops (coffee in Rwanda).

6. Development of the Yatenga region (Upper Volta)

On the basis of anti-erosion measures undertaken previously in Yatenga, Community aid was provided to finance a technical assistance project, involving the provision of supervisory and advisory services by a regional development body in accordance with Upper Volta policy.

The scheme, which started in March 1965 (1), was mainly concerned with:

- establishing the regional structure and training the staff of the ORD (Organisme régional de développement),

(1) Total cost, 1.5 million u.a. of which 37% was financed by Upper Volta

- improving productivity by the dissemination of simple cultivation methods, which could be assimilated easily by the farmers and involved the use of fungicides, fertilizers, selected seeds and animal-drawn tillage.

This scheme was completed in 1970, with technical assistance from a team of five financed out of EDF resources. It was divided into three stages :

- provision of supervisory and advisory staff for an area approximating to the administrative district of Ouahigouya (1965-1967);
- establishment of the Yatenga ORD and extension of advisory services to the whole of the Yatenga region (1967-1968);
- continuation of assistance to the ORD and a reduction in the size of the technical assistance staff (1968-1970).

Following the Decree setting up the Yatenga ORD, the body became operational in 1967. The ORD's institutional structure, which grouped together functions previously performed by non-coordinated departments and was capable of incorporating other activities, has proved to be well-conceived. The ORD has become a valuable instrument which has given ample proof of its efficiency in the rural development of the region. As far as technical assistance was concerned, the aim was to replace expatriates by Upper Volta staff. This was accomplished - even ahead of schedule in certain cases. The Upper Volta authorities assigned staff of excellent quality, to the ORD, and the number of basic supervisory staff was greater than anticipated.

The advisory services provided by the supervisory staff offered topics arranged in progressive order and aimed in particular at increasing food crop yields. It would seem that the various topics and techniques were very well received by the farmers concerned. The effects of the systematic introduction of improved farming techniques are reflected in a 20% increase in production for millet and sorghum, 26% for groundnuts and 51% for sesame between 1967 and 1969. The result would no doubt have been even better had the rainfall been normal or at least sufficient. Animal-drawn tillage was adopted in many cases.

There is no doubt about the usefulness and the efficiency of the project : carried out in a specific region and based on an established infrastructure which was not modified. This EDF operation contributed to the creation of better conditions for increasing production. Efficient technical assistance and the supervisory staff provided by the ORD made a major contribution, which was well thought out and well executed, to the effort undertaken by Upper Volta to make the greatest possible use of the land available and to improve the conditions for the rural development of the Yatenga region.

Accordingly, the Community decided in 1970 to finance a three-year extension of the technical assistance, involving intensification of the advisory services provided by the ORD and certain additional work aimed at further development of completed projects in the Yatenga region.

7. Farming communities in the Mayaga-Bugesera region of Rwanda

This project, involving the establishment of farming communities, fits into the context of the country's general aims of relieving congestion in the overpopulated areas and of stepping up and diversifying agricultural production (export crops, food crops, stock-breeding).

The project, part of phased overall plan to develop Mayaga-Bugesera, provided for settling 12 000 families in ten areas (1) using a modern and rational approach. The EDF scheme was mainly concerned with establishing and developing the farming communities, but also involved studies and research, the development of road infrastructure, an anti-tsetse fly campaign and improvement of the social infrastructure.

The farming community is the keystone of the programme : the peasant families have been settled on plots covering two hectares, systematically laid out leaving sufficient room for grazing and afforestation.

(1) Three other areas had already been developed by means of Belgian aid

The peasants are given help with settling in and planting coffee and are expected to keep to a given programme in developing their plot. The farming techniques applied are designed to increase and improve the production of coffee and to intensify food crop production. The different forms of assistance are coordinated by the Office du Bugesera-Mayaga (OBM).

Much of the cost of providing supervisory staff, both expatriate and local, was covered by the EDF. In principle, this staff has the task, during the phase of setting up the farming communities, of stocking the plots and coffee plantations, settling in the farmers and setting up cooperatives and, during the intensification phase, of supplementing and supervising work carried out under the programme, and organizing agricultural credit and the operation of the cooperatives and the marketing system.

Execution of the project was phased between 1959 and 1973 (1). Technical assistance will remain on the spot until 1975/1976.

The results and effects of all the projects were examined in 1972. This revealed that, in all, approximately 13 000 plots had been prepared and nearly 14 000 families settled in the areas financed by the EDF. The flow of migrants exceeded forecasts. Much of what has been achieved is attributable to the supervision, which was more intensive than initially forecast and is in much greater evidence in the farming communities than elsewhere. The methods of supervision used initially - based on a few farmers chosen from among the most progressive - were not imitated as had been anticipated. Later on, greater success was achieved by adopting the system of rural training which was aimed at all the peasants and took the form of demonstrations or regular contacts to encourage the use of certain techniques.

(1) Total expenditure for the whole of the Mayaga-Bugesera programme: 7.6 million u.a. of which 75% was provided by the EDF

The special additional aims have mainly been met, particularly the studies and research and the anti-tsetse fly campaign in the Bugesera region. The efforts made in respect of the social and economic infrastructure (schools, dispensaries, sheds, warehouses, pest control, etc.) have given the farming community much more equipment than is usual in this type of environment.

An examination of the use made of the project shows an appreciable improvement in the standard of living of the population settled in the farming communities. The production of coffee in the latter has developed very satisfactorily; approximately 75% of the targets fixed had been reached in 1971 both as regards the number of coffee trees planted and production per tree. As regards food crops, the amounts produced and marketed are above those produced outside the farming communities. The yields, however, remain small.

Moreover, the areas devoted to banana-plantations are expanding steadily and even more rapidly than those devoted to coffee plantations. The banana plantation is the best form of investment for the farmer and his greatest source of cash income through the sale of banana beer, with coffee taking second place. However, banana production takes up the best land, requires an appreciable amount of work, and creates an imbalance in the farmers' production. The tax system, however, would seem to encourage the farmers to produce beer rather than coffee, since only the latter product is taxed when it leaves the country; in 1971, tax accounted for a good quarter of the producer's income.

On the whole, the use made of the project may be considered satisfactory, despite a deterioration since 1972. However, the results obtained call for certain comments on the general thinking behind these projects :

- an integrated approach, such as that used in the Mayaga-Bugesera farming communities is worthwhile - that is every aspect of the development of producers' holdings must be catered for;
- for modernizing the traditional agricultural economy, the provision of supervisory staff and technical assistance is at least as important as equipment and land improvement.

In the project emphasis was placed - with success - on establishing the farming communities, creating infrastructure and carrying out land improvement. Development of the potential of the project and particularly management matters were somewhat neglected. Consequently, the OBM, having no resources of its own, is unable as yet to engage in all the activities **earmarked** for it and the cooperatives planned have not yet assumed the role they were assigned.

CHAPTER III - INTRODUCTION AND/OR INCREASE OF INDUSTRIAL CROPS

In this group of schemes, projects are in the main directly concerned with developing the quantity and quality of agricultural crops intended for industrial processing in order to meet the needs of local consumption, develop exports and diversify production. Their essential aim is to exploit as fully as possible the resources of the soil and climate of the associated countries where the natural, economic and social conditions lend themselves particularly well to the development on a massive scale of industrialized crops by combining plantations with processing factories. This type of project may be aimed at the substitution of local products for imports or alternatively the export of processed or semi-processed products.

The Associated States, aware of their opportunities in this field, have undertaken industrialization programmes directly linked to their agricultural potential. The Community has constantly encouraged these efforts and helped to finance projects of this type.

1. Development of cotton growing (Senegal)

This project is part of the attempt to reduce Senegal's reliance on exports of a single crop - groundnuts - which represented more than 80 % in value of the trade balance. Cotton growing chosen to offset at regional and national level, the economic preponderance of groundnuts, was to do more to mobilize the manpower available in the outlying rural areas and procure higher incomes.

- ii the marketing of the product at the primary stage (buying from the local farmers);
- iii the introduction of industrial techniques (cotton ginning);
- iv sales on the domestic and international markets.

All these tasks were entrusted to the Compagnie Française pour le développement des Fibres Textiles (CFDT).

In 1973 the project was examined in operation and the results show that it was well conceived. The objectives have been attained as regards area under cultivation and yield; in 1973/74, Senegal cultivated over 29000 hectares, producing 33 000 metric tons, in the three areas. Cotton growing is therefore established in Senegal, whereas production was nil in 1964. Senegal's textile industry has not imported cotton fibre since 1969, and, in 1970 Senegal became an exporter of this raw material.

An assessment of the project shows it to be an undoubted success, due to the combination of a series of favourable factors:

the advisory body (CFDT) had wide experience of intensive cultivation methods in similar regions; further experience was gained with advance initiation campaigns undertaken with success in the areas concerned;

the initial areas chosen for plantations, Senegal and Upper Casamance, proved particularly suitable for developing cotton, with very favourable natural conditions and inhabitants eager to increase their cash incomes;

the organization of the operation was particularly well co-ordinated, the CFDT monitoring all the activities required for the success of the project: finance, production, processing and marketing.

It was ably supported by the IRCT (Institut de Recherches sur le Coton et les Textiles), the body responsible for research related to the operation.

The operation is financially sound; it pays for the real costs of the factors of production (without subsidies) except for expenditure on organization of local supervisors.

However, the project made only a small contribution to the growth of the national product, as the opportunity cost of cotton cultivation in an area of groundnut production is fairly high. This is particularly true in Siné-Saloum, where groundnuts are grown very extensively; there is a more marked contribution to the national product in areas where groundnuts are grown on a small scale.

The main purpose of the operation was to diversify the Senegalese economy, and in this respect the project constitutes a valuable insurance against the risk of a collapse of the market in groundnuts, particularly as this diversification is flexible in as much as a switch from groundnuts to cotton, or vice-versa, is always possible at moderate cost.

A few particular points deserve attention:

- i The sectoral approach, by single product, has undoubtedly been the most effective method of attaining the objective diversifying the economy. Based on the wide dissemination of relatively simple techniques of intensive cultivation, chosen solely with a view to producing the greatest possible quantity of cotton, the operation seems to represent, in the present situation in Senegal, a better solution than the overall approach aiming to transform all systems of traditional farming. However, as the method applied was chosen in the light of short-term requirements, it implies that the present measures constitute only one stage in the longer-term overall development of the country.
 - ii The vertical integration of operations entrusted to the CFDT represents a considerable advantage, enabling it to coordinate all its services: promotion of interest in cotton-growing, organization of local supervisors and marketing. The CFDT also monitors requirements of intermediate products and ensures their supply. Deducting a fixed amount of the return on the marketed product, it has no difficulty recovering debts.
 - iii The ratio of local supervisors for the cotton project was high and they were in close, direct contact with the local farmers themselves. Technically, the advisory work involved was relatively simple, being centred on the observance of a cultivation discipline, for the key to success lies in the rural promotion programme, which had first of all to win the local farmer's support for cotton growing, and then persuade him to plant cotton on his best land and give priority in his time-schedule.
- The risk involved in this sort of operation is obviously the re-introduction of a form of one-crop system. For this reason stress is being laid more and more on promotion of the need to integrate cotton in the farm, the ultimate objective being to transform the growers into genuine entrepreneurs capable of making economic choices at farm level.

iv Although the project has got off to a good start, it still has to overcome a number of difficulties, the main one being the Senegalization of managerial and supervisory staff and of the company itself. The process of replacing staff is well under way and an apparently satisfactory method of training African supervisory is being applied. Unlike the traditional system of understudies, where an expatriate is flanked by his eventual successor for a fixed period of time, the CFDT integrates candidates in the project by assigning them to a series of posts of increasing responsibility directly connected with its operations. In this way its future administrators feel themselves involved in the project from the beginning.

The development company was converted into a national body during the first six months of 1974 by the creation of SODEFITEX (1), a semi-public company of which the CFDT and the State are shareholders responsible for all aspects of the project from production to marketing.

2. Selected palm plantations (Ivory Coast)

The principal objective of the Oil-Palm Plan, launched in 1961 by the Government, was to diversify Ivory Coast's agriculture, which relied too heavily on coffee, cocoa and bananas, these three products then representing 80 % of the total value of Ivory Coast's exports. This diversification of agriculture, which reflected several sources of concern, was intended to:

(1) Société de Développement de Fibres Textiles

- (I) attenuate the ever-present risks of sharp fluctuations in the price of coffee and cocoa;
- (II) redress the regional imbalances resulting from the natural features peculiar to the various geographical areas.

The aim of the Oil-Palm Plan was a plantation of 76 000 hectares of selected palm trees which, when fully operative (from 1976), would produce 150 000 metric tons of palm oil and 38 000 metric tons of palm nuts and kernels. The EDF contributed to the aims of this plan by implementing two projects with similar objectives.

The first project (financed under the first EDF and carried out between 1963 and 1969) comprised:

- i the creation of 2 200 hectares of industrial plantations and 2 500 hectares of village based plantations;
- ii their maintenance for 4 years;
- iii the construction of two palm-oil mills;
- iv the associated infrastructure and equipment.

The second project (financed under the second EDF and implemented between 1965 and 1972) comprised the planting of 32 000 hectares with selected palms. The work involved in setting up the industrial plantations was spread over 8 years and included:

- i plantation infrastructure, land clearance by mechanical deforestation;
- ii directing and supervising the works;
- iii planting and maintenance for two years;
- iv provision of associated equipment;
- v provision of social infrastructure.

The location of eight regional centres constituting the production areas considered to be most suitable for oil-palm cultivations was decided and each centre was provided with one or more industrial-scale blocks to ensure that the mills to be built were supplied regularly.

A vigorous promotion campaign was conducted with the aid of Sodepalm (1) to encourage village planters to set up family units of production.

The two projects were to make it possible to:

diversify producers;

satisfy the requirements of domestic consumption, which were not fully met before the implementation of the first project;

develop exports.

The two projects were planned to comprise a number of measures together with the installation of several management companies, which constitute a valuable and effective element for the operational integration of the project.

Serious preliminary studies (2) provided valuable information and an indication of the technical resources required;

organization of local supervisors for plantations, promotion and advisory services was entrusted (for the first project) to Satmaci (3);

the running of the two oil-mills was assigned to Palminindustrie (4);

Sodepalm programmed and directed the work; as a plantation company, it produces and transplants the plant stock, and looks after upkeep (until the palm trees become productive) and harvesting; it also organizes local supervisors for the village plantations and collects their production;

Palmivoire (5) is responsible for managing both the plantations and the mills and for marketing production.

(1) State company, set up in 1963, implementing Oil-Palm Plan

(2) Studies carried out by the Institut de Recherches pour les Huiles et les Oléagineux (IRHO);

(3) Government agency responsible for undertaking plantation infrastructure works, financed for 8 years by the EDF

(4) Semi-public company, in which the State has a majority holding, set up in 1969

(5) A company in which private interests have a majority holding.

The examination, undertaken in 1972, of the use made of the investments shows that the inclusion of the two projects, the second of which is almost completed, in the Oil-Palm Plan, enabled the projects to be carried out with very effective means and results. Overall, the two projects can be considered an undeniable success; the investments have contributed to a large extent to the diversification of the country's production, to the development of exports and to satisfying the demands of domestic consumption.

As regards production, the results appear satisfactory; the industrial plantations planned now exist. The socio-economic effects are indisputable: the investments have created 7 000 new agricultural jobs. Under the general supervision of Sodepalm, more than 10 000 Ivory Coast planters are now working more than 25 000 hectares of village plantations. There has been a veritable explosion in the number of these village plantations in recent years.

85 % of the agricultural workers on the industrial plantations come from the Upper Volta. Their possibilities of promotion are very limited; the result is a certain social imbalance and instability among the least skilled workers, although their income is far higher than anything they can expect in Upper Volta. The system of remuneration applied by Sodepalm for this crop encourages the worker to earn even more than the minimum guaranteed wage. The average weighted wage of a harvester is consequently 140 % of the annual minimum guaranteed salary.

The plantations have led to a considerable improvement in the social infrastructure. A programme to provide houses and social facilities at a cost of more than CFAF 2 000 million is under way.

The undoubted success of the operations owes much to the efficiency of the management companies, which display great competence in the exercise of their functions. The formula of combining the setting up and operation of the industrial plantations with vigorous promotion efforts and organization of supervisors among the village planters

has proved particularly successful. In 1973 more than 20 % of the total production of fruit clusters came from village plantations. Could the objective of the operation have been achieved with village plantations only ? This is doubtless a valid alternative ; however, it has the disadvantage of not being able to provide a regular supply for the oil mill now installed. Moreover, a programme on this scale can only be carried out in the time required by means of a modern, rapid technique based on industrial methods. Consequently, the industrial plantation, which can have recourse to an additional mass of labour, is necessarily the best alternative for this type of perennial cultivation. Scheduled quantities can be produced on industrial plantations, labour is more productive and the yield from the soil is higher,⁽¹⁾ but extending the system to the traditional farming community has clearly intensified the operation's economic and social effects.

It must be noted, however that the success of the project is also due to the favourable state of the international market in vegetable oils.

3. Palm plantation and oil mill at Mono (Dahomey)

The aim of the project was to restore and maintain the production of vegetable oil, which is one of the main resources of the country's economy. This general objective is embodied in the Oil-Plam Plan, which was drawn up in 1947 and aims at a better exploitation of palm plantations by improving the plan stock, cultivation techniques and methods of processing and disposal.

This general aim resulted in an initial large-scale project :

- Creation of a plantation unit of 4.000 ha of selected palm trees, to replace the natural palm groves,
- Creation of an oil mill with a production capacity of 6.000 metric tons of oil.

(1) In 1973 the respective yields of industrial plantations and village plantations were 8.3 t/ha and 5.6 t/ha.

The 4,000 ha site in the Mono valley was chosen to put an end to the isolation of a poor region ; at the same time it reflects the authorities' concern to avoid antagonizing the local population by taking over too much privately owned land. The site was chosen because of the quality of the soils, the low-lying ground and the most humid areas being avoided.

The self-contained agro-industrial complex set up by this project, comprising the plantation and the oil mill, was to be managed by one body along the lines of a cooperative. The system of compulsory cooperative association attempted to reconcile respect for individual property with the decision to create a large industrial-style plantation. Landowners received, in exchange for the land they contributed, "A" shares in the cooperative, whilst work was paid partly by an advance in cash and partly by "B" shares constituting capital. One "A" share allotted for 1.5 ha represented a nominal value of CFAF 30 000 and was to bear an interest of 3 %. A "B" share implied the provision of at least 200 days work per year at the cooperative valued at 300 francs per day, an advance of 150 francs per day having been paid.

The utilization of this project was thoroughly examined in 1972/73. The results showed that 4 100 ha were planted with selected palm trees between 1962 and 1966 as scheduled. The plantation began operating under good conditions. The income distributed during this period improved the living conditions of the inhabitants of the region.

On the other hand, production did not reach the level intended. In 1971 and 1972 the production of fruit clusters on selected plantations was far below forecasts, because of insufficient rainfall. Yields were less than 3 t/ha on average. In addition, a number of palm trees have died and fallen as a result of the still more inadequate rainfall of the 1973/4 season. The 1974 yield will as a result scarcely reach 2 tons of fruit cluster per ha.

As regards the cooperative, with labour and other costs remaining roughly equal to forecasts, the accounts for 1971/72 show a deficit of CFAF 8 million, on a turnover of CFAF 48 million, although interest on "A" shares and amounts due on "B" shares were not paid.

The oil mill was not put into operation until 1971, two years behind schedule, because of technical modifications which proved necessary. Despite adjustments and technical improvements, the mill continues to be a fragile unit requiring constant maintenance by a highly skilled staff. Economically, the rise in the price of oil on the market and of palm kernels partially offset the reduction in the tonnage treated. Financial returns from the mill in 1971/72 amounted to 76 % of forecasts, i.e. a profit of CFAF 61 million, but in 1972/73 losses were recorded.

The cooperative farmers, after a period of relative prosperity, were hit all the harder by the harmful effects of the lack of rain. Their average annual income from the plantation amounted to CFAF 21 000 in 1972. Because of the lack of land available for food crops on the plantation, their standard of living depends to a large extent on this cash income, which in turn depends mainly on the employment which the cooperative can offer. This, however, fell from 260 work days in 1969 to 140 in 1973 for each member of the cooperative, which has had unfavourable consequences. The preparation of land for food crops, which was not provided for in the cooperative structure, would have made it easier for them to live off their own production when their cash incomes were low.

Leaving aside the questionable choice of the site of the plantation, the examination of the ways in which this project has been used reveals that the conversion of a peasant economy at the subsistence stage into a cash economy is not a simple task. It is further complicated in the present case, where this cash economy is based solely on one agricultural crop and is therefore entirely at the mercy of unfavourable rainfall conditions, for only is rainfall inadequate, but also it is badly distributed ; as a result the region is unsuited to the cultivation of selected palm trees, despite the presence of natural palm groves.

Although, when this first large oil-palm plantation in West Africa financed by the EDF was planned, insufficient thought was given to rainfall conditions, the Commission has nonetheless learnt from the experience gained. In order to provide the cooperative farmers with additional cash incomes and in view of the fact that a marked improvement of the situation cannot be expected, a rural development project is at present being studied. Situated in an adjacent area, it is intended to intensify food crops, especially maize, and to obtain better results from the natural palm groves, by the dissemination of improved methods of production and complementary measures to provide rural equipment.

What the Commission learnt from the experience acquired in the Mono project also influenced the conception of two similar projects in Dahomey : agro-industrial improvements in the Agonvy area and the Ouémé département. Starting with the same objectives, namely planting selected palm trees in the form of industrial units on the basis of cooperatives of a type similar to that at Mono, the plan provided for the simultaneous preparation of land for food crops. This land the cooperative farmers can use to satisfy their subsistence needs and even to increase their cash incomes.

The first results obtained in the Agonvy area, which was prepared between 1967 and 1974, are instructive. Initially, the cooperative farmers used only a small part of the land available for food crops. Following a sharp increase in the demand for manioc flour they have shown a marked interest in farming this land.

In the Ouémé area (Pobé-Sud), on the other hand, the cooperative farmers showed much greater interest in food crops from the start, especially maize and groundnuts, than in the plantation of selected palms, which has been in preparation since 1973. The reason is that maize was selling at CFAF 23/kg and groundnuts at CFAF 55/kg in May 1973, and that still higher prices can be expected providing that the products can be stored, with markets in Nigeria continuing to expand.

This shows how the prices which the producer can obtain for various crops, either on industrial plantations or on peasant holdings, influence his choice between different crops ; these prices can play a decisive role, but they can also upset a whole rural development policy. Consequently, if it is admitted that it is necessary and useful to define a rural development strategy to attain certain specific goals, the disturbances which can occur while the strategy is being applied and can jeopardize the achievement of these goals must also be taken into consideration.

It would be interesting to study this problem in depth, to learn more about the conditions in which agricultural development projects are carried out and which can have a decisive influence on the motives of producers and the decisions which they take in the short and long term.

4. Conclusions

Analysis of the three projects concerning agricultural crops for industrial processing shows that the Senegal and Ivory Coast operations are undoubted successes, since their objectives, namely diversifying production, satisfying domestic demand better and improving the trade balance, have been largely achieved. On the other hand, the Mono project in Dahomey has proved a failure, attributable to the fact that the region is unsuited to the cultivation of selected palm trees and that the rainfall conditions of the past few years have been overwhelmingly bad.

The results should however be differentiated and the problems which can arise when projects of this type are planned should be outlined.

i. The choice which has to be made between an industrial plantation (Ivory Coast) and peasant holdings (Senegal) depends on the crop selected. Palm trees call for an industrial plantation, which alone can enable production to be rationalized as much as possible by controlling cultivation, organizing the collection of products, processing them, etc. Only an industrial plantation can produce sufficient quantities to supply the oil mill on an economic scale with fruit clusters for processing. Obviously this type of farming does not exclude the parallel or subsequent development of peasant holdings. Indeed, extensions to the traditional farming system can increase the beneficial effects of the plantation (Ivory Coast).

Cotton, on the other hand, is an annual crop and does not require the industrial plantation system; subject to regular crop rotation and being quickly and easily replaceable, it lends itself better to small-scale farming. Thus, cotton growing in Senegal, as in the case of other cotton projects financed by the EDF, is undertaken solely on peasant holdings.

ii. Industrial plantations seem more suitable for observing the cultivation discipline required to develop a new crop (palm trees in Ivory Coast and Dahomey).

This approach has also been applied successfully, to tea growing projects financed by the EDF in Rwanda and Burundi. If the new crop selected does not lend itself to the industrial plantation system, the need for cultivation discipline must be satisfied by intensive and efficient supervision (cotton, Senegal).

iii. Supervision is therefore of considerable importance in the case of peasant holdings. The first step in the introduction of cotton in Senegal was a promotion programme, which has been very effective and is no doubt the basis of the project's success, whereas an advisory service was responsible for disseminating techniques which were relatively easy to adopt in order to achieve progressive changes. For the extension of palm plantations (Ivory Coast) the company responsible has organized a dense network of local supervisors among the village planters, and its success was consolidated by a vigorous promotion programme.

- iv. In Ivory Coast and Senegal the promotion and advisory work undertaken has produced secondary effects, namely improvements in the whole system of cultivation and the training of responsible peasantry.
- v. The vertical integration of all operations - production, supervision, processing and marketing - in one company (CFDT in Senegal), or in several companies working closely together (Ivory Coast), has proved to be one of the conditions of success, subject however to the reservations expressed about CFDT's activity.
- vi. The cooperative formula used at Mono (Dahomey) is not necessarily questionable. Under normal conditions (Ouémé and Agonvy) it appears to function without any particular problems.
- vii. One of the faults of the Mono project (Dahomey) was that it was based on a single industrial crop and insufficient thought was given to food problems. Subsequent projects financed in Dahomey plans have already been designed to permit the simultaneous preparation of land for food crops.

CHAPTER IV - OUTLINE OF SOME GENERAL PROBLEMS

What general conclusions may be drawn from the study of the agriculture development projects which have been under review? The particular lessons which the Commission has already been able to draw from the study have been set out at the ends of the various chapters or of the detailed study of the projects themselves. Given, first of all, the complexity of agricultural development operations and, in addition, the limits of the sample chosen - 17 schemes financed in 9 associated countries - one cannot claim to deduce from the cases examined all the problems that may arise during the conception, implementation and operation of agricultural development projects, particularly since the information so far collected on the use of the projects examined is not always complete and sufficiently detailed. For these reasons this chapter makes no claim to deal exhaustively with the problems of agricultural development, but merely constitutes an outline of the problems connected with some factors having a bearing on the success of agricultural projects¹.

Generally speaking, agricultural development projects aim at raising the level of agricultural productivity (and sometimes at satisfying certain internal requirements in the matter of agricultural products) and, in addition, at improving the living conditions of the rural population. It is usual for the latter aim to be pursued through the increase in incomes resulting from immediately productive projects. There is a risk, however, of such efforts being compromised unless they also aim at maintaining a social and geographical balance by counteracting the disturbing phenomenon of rural depopulation. Agricultural projects should therefore be combined with social measures aimed at conferring upon rural society certain attractive advantages which are usually limited to urban centres: diversification of non-agricultural activities

(1) The Commission is endeavouring to fill out its own experience in this respect by exchanging information with the departments responsible for evaluating rural development projects within other aid bodies, in particular those in the Member States. Such contacts are still spasmodic, however, and should be extended and placed on a more systematic footing in order to enable the best use to be made of all the experience gained in this sphere.

(craft industries, commerce, building, etc.) with the object of increasing the range of job opportunities and the spread of basic welfare facilities (water supply, rural medical services, improved housing, etc.), helping the peasants to come to terms with modern life (cultural measures, socio-economic promotion) and adapting education to the requirements and aspirations of rural society.

The conception of any agricultural development operation should, as far as possible, take into account the needs of such integrated development. With regard to individual projects, two factors will receive particular attention, since their influence on results is immediate and direct; first, additional income for the grower and second, supervision methods. Other factors likely to influence the results of agricultural projects may be the subject of a further detailed study, based on a greater variety of finished projects.

1. Income and prices

The projects carried out in the agricultural development sector show that the soundest conception and the most careful implementation may come to nothing if the peasant is unable to derive sufficient additional income from a proposed scheme. Contrary to what people are sometimes to think, analyses of the effects of agricultural projects prove that the expectation of increased remuneration is the best incentive for the peasant to work harder in order to increase production and improve quality or to choose, from among the various possible crops, those which are most advantageous for the national economy as a whole. Moreover the extra income hoped for influences the sale of products and, consequently all other activities. Furthermore the peasant must really be able to enjoy his increased income, in other words he must be able to acquire in normal fashion such capital and consumer goods as he desires. There is therefore a link between income from production and the efficiency of commercial networks.

In the light of all this, the conception of agricultural projects should take into account:

- i the price paid to the farmer for his products;
- ii the price of the means of production;
- iii the yield or the improvement of quality that the proposed measure lead to
- iv the opportunity cost (including the subjective value of social activities) of the factors involved in new techniques or crops;
- v the risks inherent in the changes contemplated in the structure production and, where appropriate of marketing.

(a) Prices

The producer price is one of the principal factors which, at the level of the grower, determine the quantity and quality of production and govern the choice of crops and possible substitutes.

The incentive to increase and improve production is restricted however by the possibilities of extending cultivated land, the extra effort and hours of work required, possible supplies of the means of production (fertilizers, etc.) and the yield of the factors involved.

The choice between different crops, where technically possible, is also governed by price. In Upper Volta, for example, in an ORD (regional Development Organization) area of influence, the income from cash crops (groundnuts and cotton) was insufficient in many cases to cover operating costs. It was observed that, consequently, 95 % of peasants grew the traditional, remunerative crops - millet, sorghum and maize - but only half of them produced groundnuts and cotton.

In this context, one cannot overlook the fact that it is usual for producer price to be extensively influenced by government policy, for, in most associated countries, official purchase prices are fixed by reference to:

i in respect of food crops, the authorities' concern with feeding the mainly wage-earning urban population at the lowest possible prices. The official consumer price is sometimes even lower than the price of identical products imported and delivered to the consumers ("real price" level);

ii in respect of export products, budget requirements, particularly in those countries in which there are practical difficulties in the way of direct taxation of all income.

As a result of the priority often given by the governments to these objectives, the prices paid to the growers do not always provide sufficient encouragement for their efforts; in some cases they may even indirectly hinder the effects sought after in a project.

It is a matter therefore of finding, for each country, a point of balance between the various competing objectives of its economic policy. It must be considered in particular whether it is not too uneconomical to subsidize, for example, the imported quantities of a product in order to keep the consumer price down, by comparison with the advantages which could result from increasing the domestic purchase price of the product ¹. For example, certain projects to develop rice-growing in Senegal ran into difficulties arising from the policy of excessively low food prices pursued by the Government. In contrast, fixing the purchase price of groundnuts for direct consumption 50 % higher than the price of groundnuts for oil prompted the peasants of Senegal to substitute the former type for the latter - all other factors remaining equal.

It must be acknowledged, however, that the peasants' reactions to price changes are not always wholly rational; they seem to be dictated chiefly by immediately perceptible effects and to take far less account of long-term aspects, for instance the future income which might accrue from immediate investments and the capital losses which might be a long-term consequence of over-production.

¹ This problem should of course be considered not only in respect of each product, but also in a wider context, so that total levies on exported products continue to be appreciably higher than subsidies granted for imported products.

The Commission's conclusion from this analyses was that the manner of fixing the prices to be paid to producers should be included among the elements of agricultural projects, in order that the success may be ensured as far as possible of projects which it has been agreed to finance.

(b) Profitability and substitution

Increasing the price to the producer is an incentive to produce more, from the point of view of the grower, only in so far as additional net income increases too. So it is not sufficient merely to increase the producer price without paying attention to the circumstances in which the desired increase of production can be obtained. These circumstances relate to the cost of the factors of production, in particular labour or additional labour costs, and the cost of the intermediate products (fertilizers, selected seed, equipment, etc.) required to increase the yields from the soil, to extend the area under cultivation or to improve the quality of the products. However, an economic calculation must be made, ultimately at least, based on the real scarcity of the factors¹. This is why instead of continuing to distribute fertilizers gratis, as was done under certain programmes of aid to production (second EDF), the Community and the AASM considered it more realistic, under the third EDF, to provide a temporary diminishing subsidy for the introduction of the use of fertilizers, and only within the framework of projects having well-defined objectives.

Obviously, however, a project's viability depends on the peasant's continuing to use the intermediary products. Since he must purchase these products at his own expense, once the introductory phase has ended the establishment of an agricultural credit system is particularly important and should, where necessary, be included in the project.

¹. The price of the intermediary products should therefore be as objective as possible. Where the cost of such products is charged, in the form of a fee, by a development or marketing company, care must be taken that the producer nevertheless has at his disposal data on which to base the calculations relating to his farm.

The ratio of net additional income to the extra effort required also governs the grower's choice where it is a question of replacing traditional production by a new crop or introducing a new crop in addition to the customary ones.

Thus, in Senegal, the farmers of Siné-Saloum were rather reluctant to introduce cotton as a substitute for groundnuts, since the net additional return was not sufficient to encourage them to make the change, with all the risks that would entail in the eyes of uneducated peasants, for cotton requires strict cultural discipline and more hours of work than groundnuts. In contrast, in Haute-Casamance and in eastern Senegal, the same operation was undertaken in identical conditions and was successful thanks to the high yield of cotton and the lower cost of substituting it for groundnuts, which combination provided a distinct increase of income for the producer.

This example demonstrates that the optimum producer price depends on the economic situation of the country and the region in question, and that it is also dependent on production alternatives and calculation of the "psychological" price which the peasant puts on his own labour, together with the risks bound up, in his eyes, with any innovation.

To sum up, in the light of experience gained from finished projects with regard to the influence of price and income the Commission has exerted its influence on the governments of the associated countries to persuade them in planning new agricultural projects:

- i seek to reconcile the competing economic aspects in fixing the producer price,
 - (a) by fixing the producer price at a sufficiently remunerative level,
 - (b) by taking into account the opportunity costs of production in the various areas concerned;
- ii concern themselves with the price of the means of production, so that the peasant has an adequate margin of economic profitability;

- iii concern themselves with the supply of the means of production and facilitate the purchase of intermediate products by setting up an agricultural credit system;
- iv concern themselves with the marketing of additional production
 - (a) by taking overall demand and its trends into account when drawing up the project,
 - (b) by providing the producers with a guaranteed market within reasonable limits;
- v concern themselves especially with management training methods in order to permit an improvement of the return on the producer's labour and in his fixed capital.

2. Supervision

The aim of supervisory work is to increase agricultural productivity, on the one hand directly by informing the farmers of the possibilities offered by new techniques, means and crops and encouraging them to adopt them and, on the other hand, by encouraging the farmers to adopt such attitudes and management methods as will enable them, independently, to make progress in the future. Supervision schemes must therefore also identify any obstacles particular to agricultural activity or that provides social, economic, ecological or cultural environment and which hamper changes making for greater agricultural productivity. Once identified, these obstacles must be eliminated as far as possible by appropriate efforts on the part of the farmers themselves or by systematic action by the public authorities (research, structural reforms, major investments, etc).

Supervision must be oriented towards these functions as a whole and not, as was often the case before, confined to the first of them. Furthermore, the conception of supervisory work must be adapted to each individual project and fitted into the general context of the operation. The effectiveness of any supervision scheme depends on the real availability of other means leading the same good, for instance the supply of

means of production and finance, the proper functioning of the marketing system, and stage-by-stage programming towards a more modern and dynamic farm structure etc¹.

The nature of the supervision work is also dependent on :

- i the type of agricultural development scheme planned;
- ii the many technical, economic and social aspects affecting the development in question;
- iii the expected rate of change in the rural environment.

The conception of the supervision work must go even further and take into account action in other sectors which affect rural development - in some cases with unfavourable results : these include public health services, elementary and technical education, social services (adult education for example), public works, water engineering, etc.

(a) Sectoral or regional schemes

The sectoral scheme aims to increase the production of one particular crop. The main aim of supervisory work here is to give instruction only in those techniques which relate to the crop in question. Experience in Senegal has shown the limits of such a method. Contrary to what was thought, such techniques cannot simply be extrapolated from other agricultural activities unless they are modified through a range of accompanying measures. Furthermore, all new schemes of this type now include food crops, which must be given priority in any agricultural development project.

Regional schemes aim to transform traditional farming systems : an example of this is the ORDs (Regional Development Organizations) in Upper Volta. Supervisory work in such schemes must involve advice on and instruction in general techniques in order to create modernized

¹The many problems relating to these other means are not dealt with in this summary chapter.

farms which can make their own choices as to crops in the light of the actual possibilities and on the basis of technical and economic criteria aimed at making the work done and the production factors as profitable as possible.

The gaps in supervision of sectoral schemes can be narrowed if the techniques taught also bring in all other aspects of the farm. The sectoral scheme can almost become regional in scope. The problems of the regional scheme, however, are more complex and harder to solve; they will be dealt with below.

(b) Technical, economic and social aspects

The conception of supervisory work in rural areas-governed by the diversity and complexity of the factors involved - requires the whole programme of action to be precisely defined ¹.

¹ The main features of the programme should be:
the techniques to be taught, on a crop-by-crop basis and in a given order;
the possibilities of regular and adequate supplies of the means of production;
the means of processing to be installed at the level of the producer and/or the scheme;
the organization of marketing, on a product basis;
agricultural credit organization and resources;
a precise and detailed timetable for implementation of the programme;
the organization of supervisory work and the tasks to be carried out at each level;
the amount of supervision required, in terms of the number of instructors and the number of meetings with the farmers;
the methods which are suitable for ensuring that the techniques are really understood and that instruction is given under the best psychological conditions;
the approach to be adopted by the supervisor towards the farmers -either the selection of individuals to act as leaders or mass instruction;
supervisory staff - numbers and composition grassroots advisers, instructors, sector heads, regional organizers, technical assistants - schedules for establishing the supervision machinery and for replacing expatriot officials;
the training programme for supervisory staff;
the system whereby the supervisory staff assess their own work.

Thus, supervision in rural areas can only be useful provided that the new techniques are assimilated by the people in question and there is no longer any conflict with traditional values and methods. A scheme will be much more effective if it starts off by meetings the urgent needs and harnessing the motivation of the farmers, motivation and takes account as far as possible of existing social, cultural and occupational structures, using the impetus of the latter to work towards its own aims ¹. A well-conceived supervision scheme will therefore be one which gives top priority to satisfying a need which the population feels to be urgent (water supplies, a reduction in commercial farming, a greater variety of food crops, etc.) and only second place to the scheme's specific aim (increased market production, the fight against soil erosion, the development of unexploited resources, etc.).

The outlining of a basic strategy for supervision is well beyond the scope of this report, which can go no further than clarify certain specific points which are of particular importance for improving the conception of supervision. These improvements are the fruit of the experience acquired in previous projects and the Commission is devoting the greatest attention to them.

¹ Account will therefore be taken in the conception of supervisory work of the following:
demographic and ethnic structures;
local authorities and their powers, particularly as regards rural development;
system of land tenure;
social structures, in particular the role of traditional and modern authorities and the division of the workload between the sexes and the different age groups;
existing occupational structures;
traditions, customs and religions;
factors affecting the supervisor's image with the population;
the role and image of the massmedia (radio, films, etc.).

For a project to develop rice-growing in Mali supervision was planned in clear-out stages. The method of cultivation was a virtually new one and instruction needed to be given to farmers who were familiar only with traditional methods of rice-growing. The supervision was extremely well planned and took account of the need for a gradual progression through the various stages of theoretical and applied knowledge. Instruction was given in four stages, each corresponding to a different degree of technicality : observance of the crop calendar; preparation of the seed bed and introduction of the harrow sowing in rows with animal-drawn seeders and weeding machinery, mineral fertilizers.

In Senegal the success of the cotton scheme was due to the large number of instructors dealing with the farmers direct and teaching them relatively simple techniques. However, it has emerged that the four years of intensive supervision planned are insufficient to convert the farms, but this is hardly surprising given the time needed to bring about structural change even in advanced economies.

In Upper Volta (aid for the ORD - Regional Development Organization) the main advice which the farmers have adopted from the instructors is the use of fertilizers and plant protection products and also sowing in rows, although the sowing timetable is rarely kept to. The farmers prefer to devote most of their efforts to food crops, which are their major concern. Generally speaking, the schemes proposed should fit in properly with the farmer's programme of work and should take account of all his needs (including food requirements) and his social activities.

The effectiveness of supervision is determined by the number of times the farmer is contacted. In Upper Volta frequent and regular contact has led to a noticeable increase in the use of more productive methods (fertilizers, animal-drawn tilling, etc.) and yields have therefore risen. Irregular contact on the other hand has the effect of considerably reducing the effectiveness of supervision. It is thus important to provide not only a sufficient number of supervisory staff but also the means to ensure that contact with the farmers is on a regular basis and at reasonably short intervals.

If supervision is to be effective not only must new techniques be taught but importance must be attached to the way in which they are applied. In Upper Volta, for example, after a national information campaign and increased instruction in the protection of seeds and crops, an average of six farmers out of ten were using plant protection products, but only four out of ten were aware of the exact quantities needed.

The instructor is often justifiably anxious about job security and status (ill-defined functions within the project, inadequate remuneration, the lack of a statute, etc.). This leads him to concentrate on quantity and spectacular results to the detriment of quality. The project must, therefore, be thought out in such a way as to provide a reasonable framework for supervisory staff to work in. In certain countries such a framework has been provided by integrating supervisory staff into the civil service of the country in question.

Since the number of field workers is limited by cost, in-depth activities must be encouraged as far as possible, and care must be taken to ensure that their duties consist of supervision alone and do not entail others, such as accounting, stock control, recovery of funds, etc. Moreover,

the impact of supervisory activities can be enhanced by selecting farmers to act as "linkmen" by demonstrating the results obtained when advice on new methods is followed ¹.

Supervisory activities should also be helped by the media. Although it sometimes comes up against the problem of countries where a large number of languages are used, radio is a privileged medium in that it can broadcast messages to all areas at low cost. While the instructor gives advice and demonstrates new techniques in the field, radio can put the farming population as a whole in the picture and repeat the information provided. These means of communication will be most successful when used together, providing they are properly coordinated.

Supervisors often tend to give priority attention to these at the top of the traditional hierarchy, namely the biggest landowners and local notables. However, the latter do not necessarily set an example for the rest of the population, in many cases they hamper or even bring about the rejection of the proposed innovation. On the other hand, if the real leaders of the farming community adopt the new methods so will the majority of the population, although the sociological investigation needed to pinpoint these leaders and to select those farmers who should be given instruction as a matter of priority has not so far been sufficiently methodical.

In this connection there is one factor that is overlooked too often - supervisors lodge at the homes of important people in the Community and are therefore classed by the rest of the villagers as being more or less tied to their hosts.

¹ A system whereby a large number of farmers supervise and train themselves with the help of farmers picked to demonstrate techniques and auxiliary advisory staff has been tried out, for example, in a rural development project in Niger. Its success depends on how far the population participates, although this is ensured by the farmers collective albeit free, membership of the existing cooperatives.

There is a danger, therefore, of their becoming caught up in the social tension of the village and thereby losing part of their audience. This shows the importance of adopting a psycho-sociological rather than a purely technical, approach to matters of supervision.

The directives given to instructors are often inadequate at all levels of the operation. In order to avoid misunderstandings and effects contrary to those intended, the language and concepts to be used at each stage should be made clear and there should be systematic checks to see that the message has been understood at every level.

Supervision of agricultural projects should be worked out in such a way as to take account of other structures connected with various aspects of the development of the rural environment or which have a strong, though perhaps indirect, influence on such development : political and administrative organization (way in which the village authorities are appointed, system of land tenure, etc.), social services (instruction for women, teaching adults to read and write, etc.), teaching (the part it can play in stopping young people from leaving the land), health (the reduction of endemic diseases in particular), public works department and water board (in particular for the provision of good quality drinking water). The influence exerted by these various structures should be made to have convergent effects and they should be coordinated, particularly at village level, by reference to the objectives set in the development programmes.

The organization of supervision implies finding a solution to the problem of the specialization of supervisory staff. Even if teams of instructors covering several subjects are formed (as in the ORDs Regional Development Organizations) in Upper Volta or in the Niger project referred to above) there is no reason why each of them should not specialize to a certain extent. If techniques need to be taught, specialization may even be essential.

The selection of senior supervisory and technical assistance staff, must clearly be based on technical ability, but just as important a criterion is their ability to teach, since supervision necessarily involves the systematic and continuous training of junior and middle management.

The list of findings and practical conclusions on the subject of supervision could well be extended; it serves to show the diversity of the problems involved, which must be examined systematically and in detail so that the conception of projects can be improved with full knowledge of the facts.

(c) Rate of change

The conception of supervisory work necessarily depends on the rate of change expected. How long supervision lasts depends on the complexity of the changes to be brought about and on the knowledge and adaptability of the farmers themselves. In Senegal, for example, the CFDT envisaged an intensive supervision period of four years for the introduction of cotton growing alone. But is this long enough to bring about the desired change in farming methods? It is perhaps only if prices are sufficiently attractive to encourage the farmers to make the change. In the light of such questions there should be some systematic thinking on how long supervision must continue in order to transform the traditional rural set-up, given the perpetually rising costs of supervisory work¹ and technical assistance².

¹ Annual cost of CFDT advisory services in Senegal : approximately CFAF 10 000 per hectare

² Calculations made by the EDF show that the cost of technical assistance in 1975 will be 45% higher than in 1969.

It is at all events certain that any programme must provide for the Africanization of supervision and the institutional organization. It is therefore important for technical assistance to:

- i be involved in the execution of the project only where national staff are not yet available;
- ii prepare for its departure by training nationals to replace it. The traditional approach is that whereby each expatriate works side by side with the national who is to take over from him after a given period of time, but what the Commission is advocating is a system which, as far as possible, integrates nationals in the running of the project and entrusts them with direct responsibility which will gradually be stepped up so that, ultimately, the more capable among them can take over the jobs provisionally carried out by technical assistance staff.

Furthermore, the conception of the project should attempt to establish the technical, economic and administrative structures which will be required to continue the development scheme as a viable venture after Community aid has ceased.

To sum up, it transpires from what has been stated above that any agricultural project must pay particular attention to supervision and the farmer's income, which are determining and complementary factors. Any increase in agricultural production, whether by transforming structures or increasing yields, can only last if effective supervision brings about a forward movement generated by the farmer's convictions about the new techniques he has assimilated. Supervision must not, however, be confined to introducing new techniques; it must also ensure that the new methods of production which it propagates provide the farmer with sufficient additional income - the only lasting incentive - and ensure that he does not abandon the technical improvements or new crops once supervision tails off. This is the only way of ensuring the long-term success of the project.

Supervision must, therefore, concern itself with the way in which producer prices are fixed, with the prices of and the possibilities of supplying intermediate products, with the availability of basics such as land, water, etc. and also with the organization of marketing and credit. The conception of supervisory work in all its complexity must occupy a key place in the preparation of each agricultural development project.

ANNEXE

Liste des projets dont les conditions d'utilisation font l'objet
d'une présentation dans ce rapport

	<u>N° comptable</u>	<u>Intitulé des projets</u>	<u>Coût des projets</u> (000 UC)
<u>COTE D'IVOIRE</u>	12.21.508	Palmeraies à huile	5.169
	215.006.04	Création de 32.000 ha de palmeraies sélectionnées	31.674 ^(*)
	225.006.12	Création de 32.000 ha de palmeraies (prêt spécial)	3.239 ^(*)
<u>DAHOMÉY</u>	12.21.602	Palmeraies et huilerie de palme	5.241 ^(*)
<u>HAUTE-VOLTA</u>	12.21.701	Construction de 3 barrages	380
	12.21.703	Huit barrages en terre	1.599
	12.21.705	Construction de barrages ruraux	7.793
	211.009.09	Mise en valeur région du Yatenga	939
<u>MADAGASCAR</u>	12.24.103	Aménagement hydro-agricole du delta de l'Anony	2.372
	211.010.21	Extension mise en valeur delta de l'Anony	387
	12.24.109	Aménagement hydro-agricole du périmètre de Soavina	516
	12.24.120	Aménagement du Bas-Mangoky	4.835
	211.010.15	Aménagement du Bas-Mangoky	9.716 ^(*)
<u>MALI</u>	12.21.301	Aménagement de 16 mares	135
	12.21.303	Trois aménagements rizicoles	1.906 ^(*)
<u>MAURITANIE</u>	12.21.202	Aménagements hydro-agricoles dans le Brakna	734
	215.012.01	Barrages dans l'Est de la Mauritanie	1.332 ^(*)

(*) Montant global des marchés

<u>RWANDA</u>	11.12.001	Etude mise en valeur du Mayaga-Bugesera	682
	11.12.005	Carte pédologique du Mayaga-Bugesera	40
	12.12.005	Mise en valeur du Mayaga-Bugesera	235
	12.12.007	Mise en valeur du Mayaga	257
	11.12.006	Etude aménagement Nyawarongo	273
	15.12.000 A	Direction des travaux mise en valeur du Mayaga-Bugesera	55
	12.12.013	Mise en valeur du Bugesera (1er périmètre)	261
	211.014.10	Mise en valeur du Mayaga (4 nouveaux périmètres de paysannat)	699
	211.014.28	} Infrastructure sociale des paysannats du Mayaga	1.043 (*)
	212.214.41		140 (*)
	211.014.35		Développement régional du Mayaga-Bugesera
<u>SENEGAL</u>	215.015.05	Développement culture du coton Sénégal oriental et Haute-Casamance	1.061 (*)
	215.015.19	Développement de la culture cotonnière intensive au Siné-Saloum	3.036 (*)
<u>SURINAM</u>	12.41.101	Aménagements hydro-agricoles Nickerie	1.988
	12.41.103	Aménagements hydro-agricoles de Tijgerkeerk-West	443

(*) Montant global des marchés