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THE ECONOMIC FEASIBILITY OF THE WEST AFRICAN  
REGIONAL POULTRY PROJECT

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## ABSTRACT

Since 1970, the U.S. Agency for International Development (USAID) has been assisting a West Africa Regional Poultry Project associated with the Organization pour la Mise en Valeur du Fleuve Senegal (OMVS). OMVS countries include Mali, Senegal, and Mauritania; Guinea was also a member, but withdrew from the project shortly after its inception. The regional project has been plagued with numerous problems, especially problems relating to management and a recurring feed grain supply crisis. Consequently, the USAID/U.S. Department of Agriculture team preparing this report, after evaluating these problems in an economic feasibility study of the project, concludes that USAID should terminate its involvement in this project soon, by December 31, 1973, if possible.

Key Words: OMVS, West Africa, Poultry, Developing country, Foreign aid

## CONTENTS

	<u>Page</u>
Summary and Recommendations.....	iii
Introduction.....	1
Project History.....	1
Project Objectives.....	1
Background on Current Feasibility Study.....	1
Priority for Feed Grains.....	3
Related On-going Work.....	3
Country Analyses.....	3
Mali.....	3
Mauritania.....	9
Senegal.....	14
OMVS Overview.....	18
Poultry Consumption.....	18
Poultry, a Luxury Item.....	18
Management.....	19
Security Management.....	20
Hatching Activities.....	20
Self Help Program.....	20
Miscellaneous Additional Information Requested by USAID.....	21
Conceptual Marketing System.....	21
Appendix 1--Modified English Version of OMVS Decision No. 00009.....	25
Appendix 2--Selected Food Prices in Bamako.....	27
Appendix 3--Projected Poultry and Egg Demand in OMVS Countries.....	29
Bibliography.....	30

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## SUMMARY AND RECOMMENDATIONS

This U.S. Department of Agriculture/U.S. Agency for International Development (USAID) team, following a 4-month evaluation of USAID's assistance to the OMVS (Organization pour la Mise en Valeur du Fleuve Senegal) regional poultry project in West Africa, recommends that the USAID program be terminated. Specific recommendations to USAID and OMVS follow.

### RECOMMENDATIONS TO USAID

1. USAID support for the OMVS regional poultry project under existing management arrangements should be terminated as soon as practicable, by December 31, 1973, if possible, and by June 30, 1974, at the latest. The USAID poultry production specialist at Sotuba should be reassigned to AID Dakar as soon as possible, with his technical guidance available, on request, to all OMVS poultry centers until all project activities are terminated. Other types of USAID technical guidance should be made only by request from OMVS. If requested, AID technical assistance for the installation of the feed mixing facility at Sotuba should be expedited. Feed mixing has proven to be one of the most serious shortcomings at this facility.
2. USAID should reconsider proposed out-of-country training for OMVS poultry center directors. The proposed training program and site should be carefully reviewed to ascertain if the objectives of such training will be adhered to and met.
3. We concur with USAID audit findings relative to the lack of satisfactory cost accounting procedures. We note, however, that the Tuskegee Institute/AID technicians have initiated a data collection system whereby some information on production costs and performance will be available to help fill the need for this type of management information on a continuing basis, if the system is maintained.
4. The economic study team did not have time to evaluate in depth the relative economics and quality control of buying a good feed premix from some outside supplier rather than having the poultry centers prepare their own. However, preliminary investigations suggest that OMVS countries would be well advised to buy premix from private sources.
5. OMVS countries might seek to work out mutually satisfactory arrangements with select, successful, independent, commercial poultry producers whereby extension workers can use their operations as a type of demonstration project. During the phase-out process USAID might help extension workers arrange poultry workshops whereby successful producers and professional poultry workers share some of their expertise in an open session with extension workers. This could be especially helpful in communicating to the industry information on new developments in the poultry field.
6. OMVS countries, especially Senegal, should consider the option of utilizing the expertise and resources of existing firms in the private sector. One such possibility would be for purchasing of feed ingredients and/or

ready-mixed poultry rations from privately-operated feedmills on a contract specification basis. Government laboratories could monitor the quality of such feeds. Another possibility would be for the private sector to supply baby chicks. The economic feasibility of a private, U.S.-owned commercial hatchery (based in Dakar) should be explored with appropriate government officials. It is recognized that, in the short run, this option is not fully in keeping with a national policy such as Senegalization of productive resources.

#### Recommendations to USAID Regarding Mali (Sotuba)

7. The present USAID technician should be removed from Sotuba immediately, and USAID funding for the Sotuba center should cease because of the serious management situation.

#### Recommendations to USAID Regarding Mauritania

8. No additional USAID investment should be made in Mauritania's OMVS poultry center at Nouakchott under existing management and grain supply conditions. The Government of Mauritania, if it wants a poultry center, should consider supporting a study concerning the possibility of moving its poultry center to a site near Rosso. Such a site would be closer to grain production areas and proposed storage facilities for grain market stabilization; this might reduce transportation costs.

#### Recommendations to USAID Regarding Senegal

9. USAID should not support nor encourage construction of a new OMVS breeder/chick production facility adjoining the national poultry center at M'Bao. Security management for disease prevention is a great risk. In fact, the Government of Senegal should be discouraged from embarking on the development of a new breeder facility for chick production at this time.

10. The present M'Bao poultry center should be operating effectively before USAID-supplied incubators now in storage are installed.

#### RECOMMENDATIONS TO OMVS

11. The OMVS poultry program needs to place more emphasis on marketing. OMVS countries should give more consideration and support to an extension program designed to enhance the potential demand for broilers and eggs, develop market outlets, and help private enterprise set up and maintain an orderly marketing system. The development and maintenance of a reliable, current statistical data series by OMVS countries would be a valuable assist.

On the production side, OMVS extension efforts should strive toward lowering the selling price of broilers. Among the OMVS countries, broiler prices are lowest in Mali and highest in Mauritania. Lower selling prices could continue to yield profits if accompanied by lower unit production costs.

Production costs can be lowered by increasing the scale of operations and improved production efficiencies that can be realized through improved management practices. It should be noted that many Malian producers in the Bamako area who were raising commercial broilers now raise only laying chickens; this is partly due to preference and partly to the lack of broilers from Sotuba. An improved market development program for commercial broilers would call for developing market outlets, improving consumer education, and possibly setting up an orderly marketing system.

Commercial broilers in OMVS countries are now marketed directly from producers to major retail outlets. There are no specialized wholesalers such as exist in native poultry marketing. OMVS needs to give more thought to how expanded broiler output will fit into the marketing system.

12. There is a need for OMVS to seek more help from existing resources in the region to provide more veterinarians trained in poultry diseases, improved poultry diagnostic facilities, and improved quality in the production of vaccines.

13. One of the most neglected management aspects of the OMVS poultry project is security management for the prevention of disease. USAID technical advisers and OMVS poultry center directors were given copies of suggested sanitation practices compiled by the USDA Newcastle Disease Task Force, Riverside, California, March 1973; this should help. Producers should also be discouraged from coming to the Sotuba poultry center to buy feeds. The center should be primarily a breeding facility and the feeds produced should be for use within the facility. Feeds for producers could be handled at the government feed mixing facility a few miles away.

14. The contract USAID technicians were given guidelines compiled by L. R. Gray in Dakar that could be used as forward planning models for weekly and cumulative projections for chick hatchings and feed requirements. Poultry center directors could make adjustments in the basic input data to conform with their local conditions.



## INTRODUCTION

### PROJECT HISTORY

Work begun by the U.S. Agency for International Development (USAID) in the early 1960s as a bilateral cooperative poultry project in Mali and Senegal has been continued since 1970 as a West Africa Regional Poultry Project. This regional project is a cooperative effort involving USAID and the Organization pour la Mise en Valeur du Fleuve Senegal (OMVS). OMVS is a reconstituted successor to the Organization des Etats Riverains du Fleuve Senegal (OERS). OMVS is an international organization which, for the purpose of this study, represents four sovereign governments in West Africa: Guinea, Mali, Mauritania, and Senegal. Guinea withdrew from the project shortly after its inception, however. OMVS is set up to operate under a General Secretariat Authority and is supposed to be empowered to act on behalf of the participating governments (see Appendix A).

During the early part of the project, USAID management resource assistance was located at Bamako, Mali, and the Sotuba poultry center near Bamako was established as the project's broiler hatching center. A poultry center at M'Bao, Senegal, was to hatch layer-type chicks for the projects and to function as a feed distribution and training center for the member countries. The Nouakchott poultry center, in Mauritania, receiving broiler chicks from Sotuba and feed from M'Bao, was to function as the distributor of these commodities to producers in Mauritania.

Tuskegee Institute, selected as the technical services contractor, has had a poultry production specialist serving as a technical adviser to the Director of the Sotuba poultry center since September 1971. A second technician joined him in December 1972.

### PROJECT OBJECTIVES

The principal objectives of the project are to: (1) stimulate local production of poultry meat (egg production being secondary); (2) increase the efficiency of local production; (3) reduce prices of poultry products, thereby making them more competitive with other animal protein sources; and (4) reduce imports of chicks and feed as local production of these is increased.

### BACKGROUND ON CURRENT FEASIBILITY STUDY

Plans for the regional project called for an economic feasibility study of the project early in the work, but staffing problems have delayed this except for an initial study made in September 1971 by Dr. W. A. Austin of Tuskegee Institute. The present feasibility study was undertaken by the U. S. Department of Agriculture under a Participating Agency Service Agreement (PASA) with USAID. The project activity number and title are: RDO/Dakar 625-11-130-508, West Africa Regional Poultry. The PIO/T number is 625-508-2-30038.

## Objectives of this PIO/T

The specific objective of the current study is to reassess the economic feasibility of the project. If the project is considered feasible, an assessment is to be made of the current validity of the project design and appropriate revisions, if any, are to be recommended.

It is not the purpose of this study to make a value judgement as to whether governments of the OMVS countries ought to be directly involved in the development of their respective national poultry industries. If they are inclined to do so, then so be it. As such, however, they ought to strive to see that adequate input resources are committed so optimum efficiencies in the production and marketing of poultry and poultry products can be realized.

## Data Sources

This report is based on information obtained in OMVS countries from May 18, 1973, through September 18, 1973, largely from interpreter-assisted personal interviews with one or more key personnel in a sample of 102 selected establishments. These included 3 OMVS poultry centers, 8 intra-country regional centers d'elevage (animal industries), 38 poultry producers, 2 feed mills, 23 commercial retail outlets, 21 merchants in 14 native market centers, and 7 restaurants. Time, distances, and availability for appointments were limiting factors in making personal interviews.

Considerable time was also spent reviewing USAID files and other secondary data sources. The USAID Regional Poultry Project Officer, USAID's two technical advisers under contract with Tuskegee Institute, and Peace Corps Volunteers working with poultry centers were also consulted.

## Procedures

It was impossible for this study team to compile and analyze all of the desired information on each of the OMVS countries. As an alternative, an effort was made to cover all the major points, but by focusing on different subjects in each country. An overview of selected points for all OMVS countries is also attempted. Erratic production patterns and the lack of consistent, reliable production and marketing data have made it necessary to look beyond actual operations to evaluate the feasibility of this project.

Technical advisers assigned to the regional project under the USAID/Tuskegee Institute contract have submitted special and periodic reports that have been invaluable in the conduct of this feasibility study. The findings of the initial feasibility study submitted by Dr. W. A. Austin are compatible with the findings of this report. These reports are on file in the AID-Dakar library.

## PRIORITY FOR FEED GRAINS

When this USAID/OMVS project was first proposed, feed grain was readily available and relatively inexpensive, and meat was expensive. This project evaluation, however, is based on field work conducted in the summer of 1973 when the OMVS countries were experiencing continuation of a serious drought. This drought, which has become increasingly severe during the past 5 years, has resulted in drastic reductions in most crop and livestock inventories, creating a serious shortage of food for human consumption.

Governments of the OMVS countries have placed a priority on the use of available feed grains for direct human consumption. The region is a net importer of grain for human consumption. Several countries, including the United States, are contributing relief food supplies. These relief supplies are being airlifted by military planes from the United States and other countries to Tombouctou, Gao, and other outlying villages that are most severely affected by the drought. These military planes are supplementing the usual surface transport methods that are not adequate to meet the emergency.

The priority of food grains for direct human consumption has placed severe restrictions on the availability of feed for poultry and livestock. In terms of costs per pound of utilizable protein for humans, Bird found that chicken was more than twice as expensive as corn. <sup>1/</sup> However, policy decisions do not necessarily have to be made solely on economic considerations. For example, protein is utilized in terms of its degradation product, the most prominent product being amino acids. Amino acids in chicken more nearly approximate those required for humans than do amino acids from feed grains.

## RELATED ON-GOING WORK

Except for a cost accounting study underway at the Sotuba poultry center under Government of Mali sponsorship the PASA team is aware of no on-going research work pertaining to this OMVS poultry project.

## COUNTRY ANALYSES

### MALI

#### Management

The OMVS poultry project at Sotuba does not appear to be economically feasible at this time, primarily because of management. Operating costs are excessive, especially labor. Feed efficiency could be improved with more careful management. All feed rations are now mixed by hand; an automated feed mill supplied by USAID was not operational as of September 1973. When this mill becomes operational, the quality of the mixed ration should improve and labor costs should be reduced.

<sup>1/</sup> Bird, Kermit. Plant Protein in USDA Feeding Programs. Mimeograph of paper presented at the annual meeting, American Association of Cereal Chemists, Miami, Florida, November 1, 1972.

Recommendations of the AID technical adviser have often been side-tracked. Forward planning is lacking, as evidenced by poor coordination of chick and feed supplies. There are some competently-trained personnel at the center, but they are limited in number and in their scope of work.

Funds generated from the use of PL 480 corn were to be used to further poultry and livestock production, but these funds reportedly went to the general revenue of the Government of Mali (GOM) in violation of the Transfer Authorization (TA). A GOM policy decision usurped the authority of the Sotuba center director and exchanged, bag for bag, PL 480 corn for grain that had been donated for human consumption by the European Economic Community. This action had an adverse effect on the quality of poultry rations produced in Mali. As of mid-September 1973, USAID had not received a satisfactory report of accountability for the use of PL 480 corn in Mali, as required in the TA.

Some burgling and imprudent authorizations and expenditures of funds at OMVS poultry centers resulted from a lack of effective monitoring and control on the part of USAID over OMVS (previously OERS) budget allocations in the early phases of this project. For example, available reports indicate that (1) the generator wiring in the feedmixers delivered to Sotuba had to be rewired to be compatible with available local current, and (2) there has been no satisfactory accounting of the authorization, manner, and purpose for which grant funds amounting to \$421,000 had been spent at Sotuba as of September 30, 1971. Some current problems stem from earlier actions, the most notable of which is the lack of installation of the feed mill (mixers, grinder, and house) at Sotuba and the failure to install the water tower at a proper height there.

The core for a top quality broiler industry is in place in the Sotuba poultry center in the form of equipment on the premises and the stock of 5,000 Arbor Acres breeders delivered since May, 1973. This combination of resources, however, needs sound management practices to realize its potential.

The poultry program in Mali and the other OMVS countries focuses almost exclusively on production. Little apparent concern is given to developing a dependable marketing system, or to developing the market potential for commercial broilers. The OMVS countries might consider developing a consumer education program to help develop consumer awareness and preferences for new foods, especially broilers. If production costs decline to the point where broilers are an attractive buy to a broad segment of the population, the demand will be greater if the product and some of its limitations are known.

#### Cost of Producing Broiler Chicks at Sotuba

There is no way the Sotuba poultry center can continue to operate at the July 1973 level of output without a subsidy if they continue to sell their products at current price levels, namely: 50 MF for day-old broiler chicks to producers in Mali and 100 MF to OMVS centers in Senegal and Mauritania. The director of the Sotuba center indicated he was proposing to raise the above prices to 75 and 150 MF respectively. Preliminary cost estimates indicate the total costs at Sotuba were about 277 MF per chick hatched in July 1973 (10,527 chicks)--see table 1. It should be noted, however, that chick

production at Sotuba from January through July 1973 was less than half the comparable output in each of the previous 3 years. (See table 2) The total costs at Sotuba could be lowered easily--at least to 250 MF per chick hatched--by reducing the large labor force, improving the feed conversion ratio, and increasing the number of chicks hatched. The latter is expected to occur when the new breeder flocks are all in production next year. For example, at the projected 500,000 and 1,000,000 chick per year output rates and if all other cost factors remained constant, the above total costs would decline to about 95 and 50 MF per chick, respectively. Existing market outlets may be a constraint at this production level, though, even if management and feed supply are adequate.

The above costs are based on the cost for the least expensive poultry ration produced at Sotuba, namely 42 MF per kilogram. Malian producers currently pay 30 MF per kilo for poultry rations from Sotuba. Five years ago they paid 40 MF per kilo for feed purchased at the National Research Center (CNRZ).

The regional d'elevage center at Sikasso <sup>2/</sup> reported purchasing replacement chicks from the Ivory Coast for 100 MF/chick f.o.b. Ivory Coast plus transportation to Sikasso. There are no tariff barriers in Mali on imported chicks except for approval from the Sotuba center.

#### Feed Consumption Tests at CNRZ, Sotuba

Tests conducted at CNRZ in November 1972 indicate the feed conversion ratio for raising broilers to a weight of 1.2 kg was 4.7 to 1. The cost of production was 324 MF per bird and the selling price was 375 MF per bird, a price margin of 51 MF.

#### Costs of Producing Commercial Broilers

If Mali producers paid 100 FM/kg for day-old chicks and achieved a feed conversion ratio of 3 to 1, then with feed ration costs of 42 MF/kg, their total costs for marketable broilers would approximate 292 MF/bird, well within the current price to retailers of 600 FM/bird (table 3).

#### Broiler Selling Prices, Bamako

Producers in Mali sold commercial broilers to commercial retail outlets for about 600 MF (or 300 CFA) per kilo in August 1973 (table 4). Commercial retailers sold the birds for 800 MF (or 400 CFA)/kilo. A sample of retail selling prices for commercial broilers from November-December 1971 through July 28, 1973, ranged from an average of 315 to 1,125 MF/kg (see appendix 2).

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<sup>2/</sup> Regional d'elevage centers are regional centers of animal industries. The term "d'elevage" poultry is used to denote scientifically-raised birds such as commercial broilers.

Table 1.--Costs of producing broiler chicks, Sotuba poultry centers

Cost item	Cost in FM per chick hatched at various monthly rates of output		
	10,527 chicks	41,667 chicks	83,333 chicks
Total labor <sup>1/</sup> .....	99.7	25.20	12
Feed cost <sup>2/</sup> .....	26.5	26.46	13
Replacement breeder chicks.....	6.2	6.2	6.2
Non-expendable equipment <sup>3/</sup> .....	49.6	12.52	6
Energies.....	55.4	14.0	7
Amortisement.....	39.6	10.0	5
Total cost.....	277.0	94.38	49.2

<sup>1/</sup> Based on total labor budget for 1973 of about 12,600,000 MF.

<sup>2/</sup> Assumes a feed conversion ratio of 4 kg per dozen eggs, a feed ration cost of 42 FM per kg, 180 eggs per breeder per year (of which 70 percent are settable, and 75 percent of settable eggs are hatchable).

<sup>3/</sup> Assumes 5-year depreciation.

Table 2.--Total chick production (broiler and layer types), Sotuba poultry center

Year	Chick production		
	Annual	Jan.-July	Jan.-July as % annual
	Number	Number	%
1970.....	164,602	91,265	55.4
1971.....	168,387	128,295	76.2
1972.....	158,169	116,867	73.9
1973.....	--	44,814	

Source: Adapted from assorted reports on file with Regional Poultry Project Officer, AID Dakar.

Table 3.--Grower's cost of producing a market broiler under varying conditions  
Bamako, Mali

Cost item	Feed conversion efficiency				
	4.7:1	3.0:1	3.0:1	3.0:1	3.0:1
	----- FM -----				
Day-old chick cost.....	250	250	100	95	50
Feed cost/kg.....	42	42	42	42	42
Subtotal of costs per broiler for feed and chicks: at 1.2 kg.....	486.88	401.2	251.2	246.2	201.2
Total cost per broiler*.....	566.1	466.5	292.1	286.3	233.9

\*Assume chick and feed costs as comprising 86 percent of total cost.

Table 4.--Typical retail buying and selling prices for commercial broilers in  
OMVS countries

Item	Price per bird 2/		
	Mali	Mauritania	Senegal
	----- CFA equivalents 1/ -----		
Price to retailer.....	300	425	350
Price to consumer.....	400	475	450
Price spreads.....	100	50	100

1/ CFA = 2MF

2/ Prices are for ready-to-cook birds, except in Mali, where the retailer buys live birds and then pays 12.5 CFA (25 FM) to have them killed and dressed.

### Native Poultry Prices, Bamako

There appears to be a sizable market for native poultry in the Bamako native markets. One merchant, in the "Grand Marche" native market reported selling 1,000 or more chickens a week in August, 1973. Native merchants were asking from 250 to 450 MF per live bird, depending on the size. Asking prices in native markets are not fixed, however; they are subject to negotiation. Their markups were generally 25 MF. It costs 25 MF to have a chicken killed and dressed. Selling prices for live chickens (native type) in Bamako ranged from 248 to 309 and averaged 280.5 MF per kg from 1965 through 1970 (see Appendix 2--local fowl prices reported in Appendix 3 were considerably higher than the prices above, the difference may be due in part to sampling).

### Urban Consumption in Bamako

Efforts to measure urban consumption of commercial broilers in Bamako were fruitless. Two of the major commercial retailers in Bamako handle a total of about 200 broilers a week, when they can get them. The supply has been very erratic. They have been able to sell all the broilers they could get. One of the commercial retailers indicates he has been without chickens for 7 months. Due in large part to the scarcity of production, most broilers tend to be sold at the farm, or are delivered direct to customers.

It is even difficult to get a measure of supply based on the number of chicks hatched at Sotuba. From March through July 1973, the Sotuba center hatched 16,876 broiler-type chicks. Distribution of these chicks was made mostly to the regional centers. All of the producers interviewed in the Bamako area were producing layers. Only one had broilers on hand--30 of them. The Sotuba center director indicated there were no broiler producers to interview in the Bamako area, since local producers preferred layers for the value of their egg production; in addition, they could sell the cull hens for their meat value. It was a disappointment not to be able to find any sizable broiler producers in the Bamako area, even if they were not now producing broilers. This gives cause to raise the question, to whom are the broiler chicks distributed in the Bamako area? (Note: Producers in the Bamako area, chosen at the discretion of the center director, received about 5,200 broiler chicks from at least seven hatches at the Sotuba center from March 1, 1973, through July 26.)

Mortality rates are reportedly high at times. For example, a spot check of flocks hatched in July and August of 1973 indicated many flocks experienced mortality rates of about 70 percent.

### Egg Prices, Bamako and Sotuba

Prices for eggs in the Bamako area in August 1973 were 50 MF each at the retail level and 40 MF wholesale. The poultry center at Sotuba was selling eggs at 20 MF each.

## Regional d'Elevage Centers in Mali

Producers in outlying areas of Mali purchase one day-to one month-old chicks from the regional poultry centers for the following prices: Mopti - 60 MF f.o.b. Barbe; Segou - 150 MF f.o.b. center; and Sikasso - 200 MF. The Segou center purchases its feed already mixed from Sotuba, but the Sikasso and Mopti centers mix their own. Costs for ingredients in the ration produced at Mopti total 30.475 MF/kg for a broiler finishing ration.

No information was obtained on the marketing or market potential for broilers in these regions. Reports indicate, however, that the limited supply of birds available were largely sold at the farm gate or delivered to customers. No systematized marketing channels were reported.

If producers were to pay 250 MF per chick and 42 MF per kg of feed, with a feed conversion ratio of 4.7:1, the total cost for feed and chicks would amount to about 486 MF for a bird weighing 1.2 kg at 10 weeks. Assuming feed and chicks account for about 86 percent of total costs (except management), the total cost per bird would be about 566 MF. This would be in excess of some current farm prices for broilers, and considerably above prices for native poultry. It would, however, still be within reach of the current selling price to major retailers of 600 MF per live bird. A concerted effort should be made to improve the feed conversion ratio so as to help lower production cost. If, for example, the producer's cost per chick were reduced to 100 MF and his feed conversion ratio were 3.0:1 with the above feed ratio cost of 42 MF/kg, the cost for feed and chicks would amount to 251 MF and the total costs per bird would approximate 292. This would be within reach of the selling prices for live native chickens. (See table 3.)

## MAURITANIA

### Management

The conditions and management performance at the Nouakchott center are poor and need to be improved. Fixed costs associated with maintaining the facility are high relative to the number of birds handled. Forward planning is lacking to generate more effective coordination of chick purchases and feed supplies. The center lacks personnel with poultry experience except for a Peace Corps Volunteer whose tour is scheduled to end in February 1974.

Some casual observations at the center that are reflections of management are (1) a large number of dead baby chicks from a recently arrived shipment were observed to accumulate for at least 3 days on the ground in front of the brooder house; (2) there were no visible signs of security management precautions to prevent disease spread; and (3) there was no effort to deal with blowing sand--location of vegetation on the center's grounds is resulting in sand drifts that already have made a back road almost impassable, gullies are threatening the foundation of the administration building, and failure to remove sand drifts from the brooder house roof could lead to a collapsed building.

It should be noted that there is an independent commercial producer in Nouakchott who manages to survive. The operation, however, is integrated with a commercial retail outlet in the city.

### Feed

A major constraint to the development of a viable poultry industry in the Nouakchott area is a reliable and sufficient supply of nutritionally-adequate feed. There are no local sources of feed; it is all imported from Dakar. Rosso is the closest agricultural production area in Mauritania where some feed is produced. Currently, there is no feed at the center, nor is there any available from the M'Bao center. In the face of the grain supply situation in Nouakchott, there appears to be little need for constructing a hangar building for grain storage at this center. There are two feed mixers at the center, only one of which works sometimes. It operates with power supplied by an internal combustion engine. The other feed mill requires electric current that is not available at the center. The one-ton feed mixer now in storage at the Nouakchott center should not be installed until a proposed study is completed on a site relocation to an area such as Rosso where adequate grain supplies maybe available in the future. A contract agreement with MAURELEC for the installation of electricity at the center had not been signed as of the end of August 1973. USAID budgeted a million CFA for electrification of this center in FY 73.

### Cooperative Support from Other OMVS Centers

Unless the cooperative support Nouakchott receives from Sotuba and M'Bao improves substantially from what it has been so far, there seems little justification for OMVS to continue to try to maintain a poultry center at Nouakchott.

There is no electricity or running water connected to the poultry houses at the center. If the Government of Mauritania wants such a center it should expedite acquisition of an adequate, continuous, and reliable source of electricity.

It is ironic that the Nouakchott center, the smallest and least independent of the three centers, provided the opportunity for this economic study team to interview more broiler producers cooperating with the OMVS program than did the other two centers combined.

### Costs for Broilers Produced in the Nouakchott Area

Nouakchott Poultry Center Costs: The Nouakchott poultry center sells baby chicks up to 3 days old for 90 CFA each to cooperative producers. Total costs for operating the center, excluding feed costs, are estimated to be 118.85 CFA per chick purchased in May 1973 (assuming chicks costs of 56 CFA each--see table 5.) The center purchased 19,800 baby chicks from June 19, 1972, through August 1973. The peak month was May 1973, with 5,300 chicks. Shipments of baby chicks from Sotuba arrived fairly regularly until January 1973.

Table 5.--Monthly cost per broiler chick purchased, Nouakchott poultry center, Mauritania 1/

Cost item	Monthly cost, per chick purchased	
	----- CFA -----	
Total labor.....	29.62	29.62
Non-expendable equipment.....	14.97	14.97
Maintenance and repair.....	.69	.69
Replacement broiler chicks, Sotuba.....	56.00	--
Replacement broiler chicks, France.....	--	82.00
Medicine and vaccine.....	9.43	9.43
Buildings.....	6.29	6.29
Vehicle.....	1.85	1.85
<b>Total 2/.....</b>	<b>118.85</b>	<b>144.85</b>

1/ Based on May 1973 data; 5,300 chicks purchased.

2/ Excludes feed costs; there were no costs reported for electricity, water, taxes, insurance, rent, and interest. The Nouakchott center mixes feed. In June 1973, the center sold feed to producers for 35 CFA per kg. Total costs (CFA/kg) for producing poultry rations at the center in June 1973, were estimated to be: Broiler starter - 42.62; broiler finisher - 40.65; and layer pullet - 36.99. In September 1973 the above costs had increased to about 54.1, 52.6, and 38.0 CFA/kg, respectively.

Since then, only one shipment arrived (on April 20, 1973, from Sotuba) although a shipment destined for Nouakchott the end of August was directed to M'Bao because of the lack of feed in Nouakchott and the inability of the M'Bao poultry center to supply Nouakchott with feed. In mid-June 1973 there were 2,739 birds on hand at the Nouakchott center, but in mid-August there were fewer than 40 birds. If the Nouakchott center were operated at the rate of 10,000 or 20,000 broilers per month, rather than 5,300, and all other cost factors above remained constant, the total cost mentioned above would decline to 89.63 or 73.17 CFA respectively per chick purchased.

Baby broiler chicks from Sotuba cost the center 56 CFA each f.o.b. Nouakchott, while those imported from France cost 82 CFA f.o.b. Nouakchott. Layer-type chicks imported from France cost the center 182 CFA/chick f.o.b. Nouakchott.

Nouakchott Grower Costs: Producer costs per bird for raising broilers in the Nouakchott area have varied considerably due largely to the quality and quantity of available feed rations. Estimates of costs would vary depending upon a number of factors, especially the costs for chicks and feed. Assuming chick costs of 90 CFA each, feed costs of 35 CFA/kg, and a feed conversion ratio of 4.5 to 1, total costs of raising a commercial broiler to 1.0 kg would

Table 6.--Cost of producing broilers, Nouakchott, Mauritania

Cost item	Feed conversion efficiency					
	4.5:1	4.0:1	3.5:1	4.5:1	4.0:1	3.5:1
	----- CFA -----					
Baby chick cost (up to 3 days old), each.....	50	50	50	90	90	90
Feed cost/kg.....	35	35	35	35	35	35
Subtotal feed cost.....	157.5	140.0	122.5	157.5	140.0	122.5
Subtotal for chick and feed.....	207.5	190.0	172.5	247.5	230.0	212.5
Total cost per broiler*.....	241.3	220.9	200.6	287.7	267.4	247.1

\*Assume chick and feed costs as comprising 86 percent of the total cost.

approximate 287 CFA (table 6). Although, this total cost is well within the price that growers received for their birds, the cost could be reduced even further.

### Prices and Price Spreads

Cooperative producers in the Nouakchott area generally bought baby chicks up to 3 days old from the poultry center for 90 CFA each, and sold their broilers for about 400 CFA per live bird or up to 550 CFA if the birds were ready to cook, mostly to custom outlets (table 7). Most of the commercial broilers sold through regular commercial marketing channels in the city, however, were imported from Senegal. June 1973 grower prices to retailers for birds averaging 1.0 kg., delivered ready to cook (rtc), averaged 425 CFA; retail prices to consumers rtc averaged 475 CFA. Thus, the retail store price spread was 50 CFA per bird.

None of the retailers in Nouakchott reported featuring broilers at reduced prices. One retailer, however, did say he had featured eggs at reduced prices, and that his gross returns were greater for the price special. He did not feature broilers because he had no assurance he could get an adequate supply to meet his needs.

There are enclaves of expatriates in other Mauritanian cities, particularly in the mining communities of Akjoujt, Nouadibou, and Zouerate, that reportedly have requested to be supplied with local broilers. These markets are now supplied with frozen broilers imported from France; however, the import prices for these birds f.o.b. Nouadibou were not determined.

Table 7.--Broiler and egg prices and price spreads, Nouakchott, June 1973

Item	Price per bird		
	Buy	Sell	Spread
	----- CFA -----		
<u>Nouakchott Poultry Center:</u>			
Day-old chicks from Sotuba, f.o.b. Nouakchott.....	56	90	34
Day-old chicks from France, f.o.b. Nouakchott.....	82	90	8
<u>Nouakchott Cooperative Poultry Producers:</u>			
Baby chicks, up to 3 days old.....	90	--	--
Grower's price to retailers, live broilers ...	--	400-450	310-360
Grower's price to retailers, ready-to cook broilers.....	--	400-500	310-460
Grower's price to restaurants, ready- to-cook broilers.....	--	400	310
<u>Nouakchott Commercial Retailers:</u>			
Commercial broilers, ready-to-cook*.....	425	475	50
Eggs.....	18	25	7

\*Typical prices for all birds, including imports from supplies in Senegal.

#### Estimates of Consumption and Potential Demand

Cooperative producers in the Nouakchott area could market an increased broiler volume if they could get the baby chicks, an adequate supply of nutritious feed, and adequate assurances of land on which to build an expanded production operation. A survey of major outlets and restaurants in Nouakchott, that cater primarily to the 'carriage trade' suggests that the Nouakchott market could handle about 1,900 broilers and 30,000 eggs a week.<sup>3/</sup> This would amount to a weekly per capita consumption of 0.0158 broilers and 0.2500 eggs, based upon an estimated population of 120,000 for Nouakchott in 1973.

Assuming this to be a reasonable per capita estimate that could be applied to all urban areas of Mauritania, the total demand for a year could amount to 187,200 commercial broilers and 2,990,000 commercially-produced eggs. It should be noted that this volume does not include sales of cull hens or native

<sup>3/</sup> The term 'carriage trade' in this report is used to include the upper income class among the native populations in the OMVS countries, expatriate residents, and tourists.

poultry through these outlets, nor sales of native poultry eggs sold through traditional native marketing channels.

Projections of total poultry consumption in Mauritania were estimated at about 2.7, 3.2, and 3.9 million kilograms per year in 1970, 1975, and 1980, respectively (see Appendix 3.) These consumption projections include imports and all poultry raised for home consumption as well as for sale.

No information was obtained concerning possible consumption of poultry and eggs in Mauritanian cities outside of the Nouakchott market area because time did not permit this. Presumably significant quantities of native poultry are consumed in the delta area of the Senegal River.

#### Production Unit Requirements for Nouakchott Market

Broilers: Twenty (20) producing units of about 1,000 bird capacity each could alternately start 200 baby broiler chicks every other week. If they realized a mortality rate of 5 percent, they would have about 1,900 broilers ready for market each week. This would allow time for cleaning, disinfecting, and downtime between flocks.

Eggs: Up to 12 units of 500 to 1,000 laying hens each could supply the Nouakchott market. These units would comprise an area laying flock of about 7,000. An assumed production averaging 4.56 eggs per hen per week would generate over 31,000 eggs a week.

### SENEGAL

#### Management

After 11 years of technical guidance and assistance with equipment purchases, the national poultry center at M'Bao does not have an adequate layer chick supply, breeder/hatchery operation. This is a reflection on its management capacity. There is no OMVS poultry center of substance in Senegal, as yet, except for the feed operation at M'Bao. In the first week of September 1973, we were told the M'Bao center's supply of P. L. 480 corn was virtually exhausted.

The national center at M'Bao purchased 500 turkey poult from France in July and is raising them for sale at Christmas time. Raising chickens on the same premises with turkeys is a management practice that should be discouraged, especially on a breeder ranch. Note: If grain is in short supply for chickens at M'Bao and Nouakchott, what is being used for turkey feed at M'Bao?

The OMVS center at M'Bao is supposed to function as a training center for all OMVS countries, but this program had not started as of September 1973. AID contract technicians, however, indicate training courses are to start in February 1974.

There is a national poultry center adjacent to the planned site of the OMVS center, but the director of the national center is careful to point out

that it is a separate and distinct entity. The national poultry center at M'Bao does not raise broilers, but focuses its attention on layers. All the farmers interviewed in Senegal who were cooperating with the national poultry center program were producing layers. Some indicated an interest in raising broilers. Personnel from the M'Bao OMVS center have lined up some prospective broiler producers, but they have not been able to arrange for a steady supply of broiler chicks from Sotuba.

M'Bao center personnel also monitor the arrival and ground handling of baby chicks at the Dakar (Yoff) airport when chicks are enroute to the Sotuba or Nouakchott centers.

Reports from M'Bao and the regional centers in Senegal indicate their national program to upgrade the calibre (quality) of native poultry is beginning to take effect. This is accomplished by replacing native cocks with cocks from M'Bao.

#### Production Costs at M'Bao OMVS Center

Current OMVS center labor costs are about 142,000 CFA per month. When the center becomes operational with birds, labor costs are expected to increase to about 342,000 CFA, assuming some salary increases. Note: Labor costs for management personnel at the M'Bao OMVS center are paid by the Government of Senegal (GOS) and were reported to be secret; however, estimates were made.

Equipment already budgeted for the M'Bao OMVS center amounts to 5.7 million CFA (plus 400,000 CFA for Amprol) from USAID, and 16.9 million CFA (including labor for fencing the property) from GOS, or a total of 22 million CFA. There is also an item for a diesel truck budgeted at 2.5 million CFA that does not appear to be warranted at this time.

The diesel truck was to haul feed to the Nouakchott center and also to be used locally. There are, however, no requirements for large volume feed deliveries in the local area at this time. Security management sanitation recommendations to prevent the spread of poultry diseases frown on the delivery of feed to more than one premise on a single trip. Thus, a smaller vehicle such as the pick-up truck now being used at M'Bao seems adequate for local use. M'Bao OMVS center plans for shipping 343.6 tons of feed to Nouakchott between June 1973 and February 1974 could be handled by a contract hauler for about 2.75 million CFA.<sup>4/</sup> This quantity of feed movement alone is not sufficient to justify purchasing a large truck.

#### Feed

M'Bao purchases its local feed ingredients for about the same prices f.o.b Dakar as do commercial producers in Dakar, except for grain; M'Bao realized about a 10 CFA/kg advantage on maize. Commercial feedmills indicated

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<sup>4/</sup> Based on a contract hauling charge of 8 CFA/kilo from M'Bao to Nouakchott. It should be noted that the hauler would not likely have any back-haul from Nouakchott to Dakar.

they had to pay a special tax on maize to be used for animal consumption. Part of this tax advantage to M'Bao is offset in prices for premix. In addition, transportation of feed from Daker to M'Bao costs about 0.5 CFA/kg.

In June 1973, price to producers for broiler rations from M'Bao were about 0.25 CFA below prices from commercial feed mills. Prices for layer rations were nearly 2 CFA lower from M'Bao. In September 1973, prices paid by producers for broiler rations from M'Bao were the same as those from commercial feed mills; namely, 53.3 CFA and 50.6 CFA per kg for starter and finisher rations, respectively. Feed transportation from M'Bao to Nouakchott costs about 7.08 CFA/kg.

### Marketing

Commercial broilers: Practically all commercial broilers sold through commercial channels in Senegal are raised by independent producers. An estimated 210,000 commercial broilers were raised and marketed in Senegal in 1972. <sup>5/</sup> In 1973, commercial broiler production in Senegal may approximate 300,000. Broiler production in Senegal might be rapidly expanded by enlarging the operations of existing independent commercial producers. They have already developed some expertise in management and poultry husbandry. In most instances, however, this would not be in keeping with a policy of Senegalization.

An influx of efficient commercial broiler producers in Senegal that may develop through an effective extension program of the OMVS center at M'Bao would expand the total number of broilers available on the market. The combined output of these new producers and that of the older independent producers may well generate more commercial broilers than the existing commercial retail outlets can effectively market. A major function of the OMVS extension program should be to seek ways and means of generating an increased demand for broilers through consumer education efforts and through finding alternative systematized means of moving the broilers through marketing channels.

One possibility might be to splice the commercial production into the native marketing system at the wholesale merchant level in the native market. An alternative approach might be to set up cooperative outlets in or near existing native markets.

Independent producers sold broilers to commercial retail outlets for about 350 CFA per ready-to-cook bird in July 1973. Retailers sold these birds to their consumers for prices ranging from 420 to 470 CFA/kg in Dakar. The retail price spread was about 100 CFA per bird. Retailers in other major cities, notably Saint-Louis and Ziguinchor, sold commercial broilers for prices ranging from 470 to 560 CFA per ready-to-cook bird.

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<sup>5/</sup> Based on an estimated 2 to 4 percent mortality applied to the 216,625 baby chicks imported from France and Mali.

Marketing Native Poultry: There exists in Dakar and presumably in other major native African markets a well-established, intricate distribution system for the marketing of native poultry. Perhaps it may be possible to tap into this distribution system from small producers of commercial broilers, providing suitable price levels can be realized.

The chickens may move from the country producer to a merchant in a rural market, to a buyer from a Dakar wholesaler who travels to outlying areas to collect birds, to a wholesaler merchant in the Dakar area, to retail merchants in Dakar native markets or commercial retail outlets, and then to consumers. At the other extreme, birds may move from the producer directly to consumers.

Commercial broilers in Dakar, as in other markets in Senegal, Mali, and Mauritania, vie with competing products, most notably native chickens (poulets du pays), for the consumers attention. The volume of native poultry in the Dakar market may be as large or larger than the total volume of commercial broilers produced in 1973. Commercial broilers are generally used in the same dishes as native chickens. Poulets du pays sold ready-to-cook through commercial retail outlets in Dakar averaged 395 CFA/kg to consumers and 320 CFA/kg to retailers, a price spread of 75 CFA/kg. On the other hand, poulets du pays sold live through native markets in Dakar averaged 325 CFA per bird to consumers and 300 CFA to market merchants, a price spread of 25 CFA. Consumers could have their birds killed and dressed at the native market for 25 CFA each (Note: This is double the charge prevailing in Bamako). Prices asked for chickens in native markets outside the Dakar area in Senegal were less than in Dakar by amounts up to 125 CFA/bird.

### Import Substitution

There is a market for commercial broilers produced in OMVS countries. This market is concentrated mostly among the 'carriage trade' in urban areas. In the early 1960's this market was served by broilers imported mostly from France. Imports of commercial broilers into the Casamance Region of Senegal (namely for two retailers in Ziguinchor) decreased from 531 kilos in 1969 to about 183 kilos in 1972, a decline of 65 percent. This decline in imports has been offset by increased local production. 6/

Statistical data, however, are not available to substantiate the magnitude of the increase in local production around Ziguinchor, but the birds are imported as baby chicks, mostly from France. A survey of commercial retailers in the area in August 1973 revealed they obtained all of their birds from local producers or from Dakar supplies.

Total imports of baby chicks into Senegal from France declined from 136,775 in 1967 to 112,025 in 1969, and then increased yearly to a high of 213,775 in 1972, 90 percent above the 1969 level of imports. In addition there were 2,850 broiler chicks imported from Mali.

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6/ Rapport de la direction de l'élevage et des industries animales 1967 through 1972, ministère du Développement rural, Senegal.

## Eggs

Egg producers in the Thies region (mostly government officials) were disillusioned about the future of egg production when in 1967-68 the market became glutted and egg prices declined to 11-12 CFA/egg. At that time, one big rancher reportedly expanded his production beyond the capacity of the market distribution system. Since 1971, however, his production has been adjusted downward according to reports of competitors. (Note: It could also be that the market demand has increased, thereby sustaining a higher price for eggs.) Most retailers in urban areas of Senegal (Dakar, St. Louis, Ziguinchor, Kaolack, and Thies) sold large, commercially-produced eggs for 20-25 CFA each during July and August 1973. Their price spreads ranged from 1 to 7 CFA each.

No estimate of the demand for eggs is attempted in this report due to the lack of data.

## OMVS OVERVIEW

### POULTRY CONSUMPTION

Data published by the Food and Agriculture Organization of the United Nations indicate the three OMVS countries consumed about 16.2 million kilograms of poultry a year during the base period 1964-66. This is based on average per capita consumption rates, in kilograms per year, as follows: Mali - 1.8, Mauritania - 1.9, and Senegal - 1.4. This total consumption is projected to increase to 20.6 and 22.5 million kilograms in 1975 and 1980 respectively (see appendix 3). Apparently most of the poultry consumed was native-type birds.

### POULTRY, A LUXURY ITEM

At present prices, commercial broilers are a luxury item produced in OMVS countries primarily for the 'carriage trade,' namely, expatriate residents, the upper income class among the native populations, and restaurants, especially those catering to tourists.

An objective of the OMVS poultry project is to provide an increased supply of protein via lower-priced poultry meat and eggs to a broader spectrum of the total population of these countries, including the 'carriage trade.' To date, however, unit costs of operating the OMVS poultry centers have been so high that, without subsidies, full cost pricing would make their products too expensive even for much of the 'carriage trade.'

Adjustments in farm practices that lead to reduced production costs may not necessarily be reflected in reduced costs to consumers. If retailers and others insist on trying to maintain fictitiously high prices, supplies will not move through the marketing system as contemplated. If this happens, the distribution system will become glutted, producers will lose money due to a lack of market outlets, and they will be forced to make adjustments in their production levels. This may suggest the need for some type of an orderly marketing system.

## MANAGEMENT

OMVS has been ineffective in administering and enhancing the practical regional cooperation necessary to realize optimum economies.

Management is a problem at all three OMVS poultry centers, especially in regard to the need for improved (1) programming in the complex poultry breeder/hatchery; (2) forward planning to facilitate more effective coordination of baby chicks with available feed supplies; (3) quality control of feed rations; (4) inventory control of feed materials, and equipment; and (5) maintenance of premises and security management for the prevention of disease.

There is no evidence of adequate records of production performance and operating costs from which accurate costs of production can be developed. All three centers should develop, if necessary, and implement acceptable cost accounting procedures. (Note: A cost accounting procedure was being developed at the Sotuba center during the time of the PASA team's visit in August 1973. The M'Bao center had an accountant on station at the time of our last visit there in September 1973, but we did not have an opportunity to interview him.)

The OMVS centers so far have failed in their efforts to achieve their objective of supplying baby chicks and nutritionally adequate feeds to foster the development of lower-priced poultry meat and eggs for their citizens. OMVS governments have placed a priority on the use of available feed grains for direct human consumption. In the face of this priority, it is contradictory for the governments to get involved in expanding a poultry industry in a region where there is no apparent surplus of local grain production in excess of requirements for human consumption. The region is a net importer of grain for human consumption, as is evidenced by airlifts of grain to Tombouctou, Gao, and other points. For the right price, however, feed grains could still find a way to established poultry producers.

A major problem associated with all three OMVS centers is a lack of forward planning to facilitate more effective coordination of chick purchase and feed supplies. Chicks are being hatched and distributed without adequate provision for assuring that a dependable supply of feed is available to meet their requirements. Management at all three centers could take steps to maintain improved inventory control of feed, materials, and equipment. They should also take whatever steps are necessary to assure improved quality control in the preparation of feed rations. Both Mali and Senegal have practically exhausted the partial tonnage allocations of PL 480 corn they received for use as grain in poultry rations. Release of the balance of their authorized tonnages of PL 480 corn is being delayed by USAID pending satisfactory accountability of the corn already delivered. The outlook for alternative sources of corn at this time is blurred. There appears to be little reason why the OMVS should not be responsible for assuring an adequate supply of feed grains for their cooperative poultry projects, if such grains are in excess of priority requirements for human consumption. Performance of poultry associated with the OMVS program ought to increase significantly if an assured supply of nutritionally-balanced rations is achieved and maintained. This, of course, assumes also that adequate management and poultry husbandry practices are followed.

AID and Peace Corps technicians indicate there could be more cooperation from their local government counterparts. This is reflected in the lack of implementation of some sound operating recommendations.

### SECURITY MANAGEMENT

One of the most neglected aspects of the OMVS poultry project is security management for disease prevention. During interviews on 43 premises associated with poultry production in the three countries, evidence of any obvious efforts (other than vaccination) to effect security management was observed in only five cases, including two OMVS centers. Precautions on all other premises were lax. A common practice even at the OMVS centers is to keep sick birds in a separate area of the same house with healthy birds. The cost of security management for disease prevention and control is not known.

If and when a disease does strike a poultry premise, however, it can be economically devastating. For example, an outbreak of Newcastle Disease at the Sotuba poultry center the week of June 10, 1973, resulted in significant losses. A summary of this outbreak is contained in the Annual Report to USAID for the year ending June 30, 1973, by the contractee--Tuskegee Institute. This outbreak was traced to the Newcastle vaccine produced at the Ham Laboratory in Dakar--it was too potent. On September 11, 1973, an outbreak of Newcastle Disease occurred among a flock of 7-week-old pullets at the M'Bao national poultry center. The cause was again traced to the potent vaccine received from the Hann Laboratory in Dakar. Apparently there is a need for more quality control in the preparation of vaccines at this laboratory.

A common priority need expressed by producers was for more veterinarians trained in poultry diseases and for improved diagnostic clinic facilities. Perhaps the new national veterinary laboratory at Sotuba (near the Sotuba poultry center) could be called upon for assistance in these areas. (Note: This laboratory was constructed at a cost reported to be in excess of \$3 million, with cooperative support from USAID.)

### HATCHING ACTIVITIES

Under competent management, one hatchery can supply all the chicks needed to meet expected demands in OMVS countries. Short-term demands for baby chicks are not sufficient to absorb the present capacity at the Sotuba center. Under-utilization of capacity could lead to increased inefficiencies of production and sustained high costs of operation.

### SELF HELP PROGRAM

This is an adjunct to the OMVS poultry project that is designed to help producers get started in the poultry business in all three countries. It is operated through the U.S. Embassy through Peace Corps Volunteers with funds allocated from USAID. The Peace Corps furnishes the producer his first 200 chickens plus a stock of 600 kilograms of feed, calculated on a feed conversion ratio of 3 kilograms of feed required to raise a broiler to a weight of

1 kilogram. In addition, the producer receives assistance in defraying building construction costs for doors and windows, plus they get certain materials such as feeders, waterers, and buckets. Four of the five remaining poultry producers in Mauritania received assistance from the self help program.

#### MISCELLANEOUS ADDITIONAL INFORMATION REQUESTED BY USAID

Estimates were made of urban and national consumption, and prices at the retail and grower levels. Estimates of costs were made for producing broiler chicks and raising broilers. No effort was made to ascertain costs by scale of operations because of the lack of available data. Likewise, no effort was made to estimate the price elasticity for poultry consumption because of the lack of compatible price-volume data. It should be noted that commercial broilers are competitive with prices of competing meats in commercial retail outlets that cater primarily to the carriage trade. In the native markets that cater primarily to the native population, native poultry is competitive with beef in terms of price per kilogram. On a per serving basis, however, a kilogram of beef goes further than a kilogram of poultry in native dishes.

If the OMVS chooses to pursue the development of a poultry industry, they should focus production initially around the consumption centers that are likely to have a sufficiently large carriage trade to sustain an effective demand. Such centers exist in all three OMVS countries.

#### CONCEPTUAL MARKETING SYSTEM

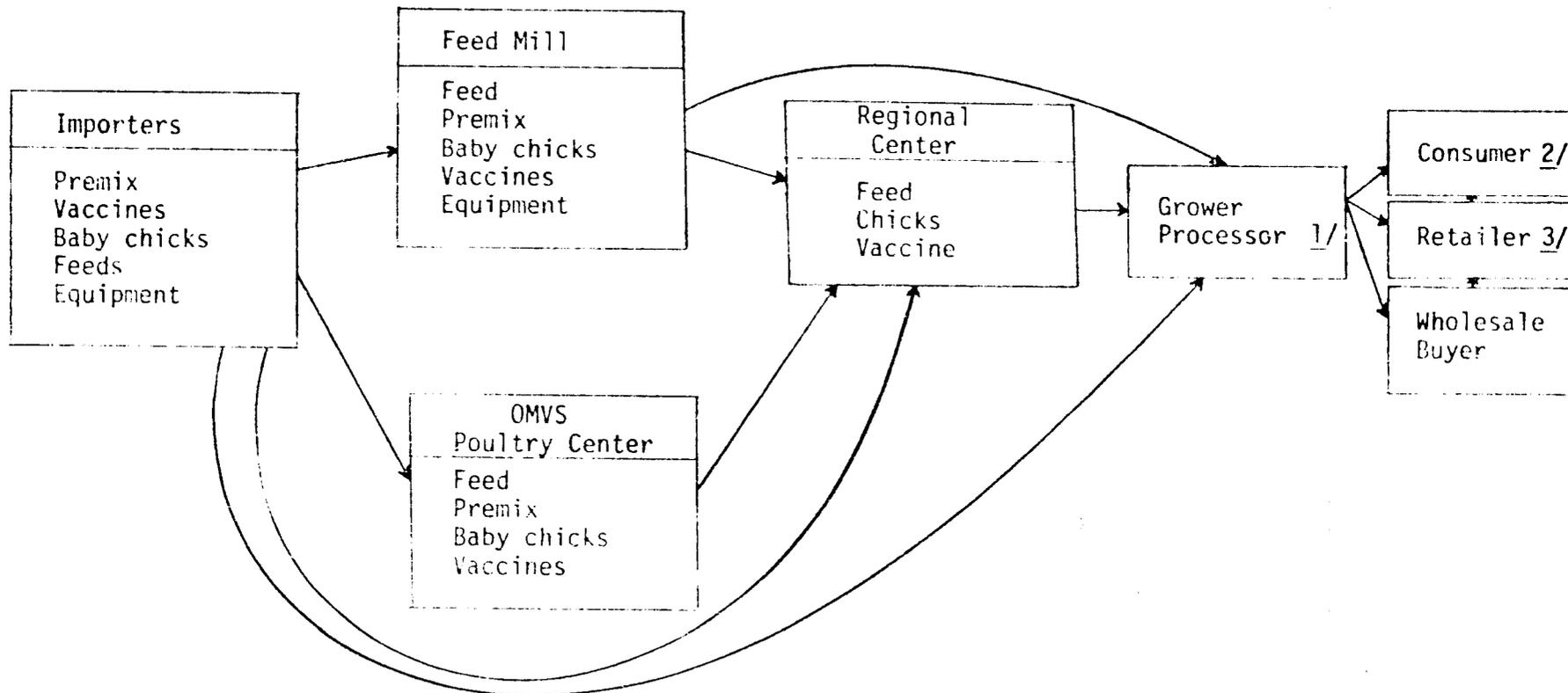
Figures 1 and 2 show conceptual systems for marketing commercial broilers (poulet d'elevage) and native poultry (poulet du pays). No effort was made to describe the linking elements as to capacity, capital requirement, or ownership and management because of the lack of appropriate information.

Observations of project-sponsored cooperatives, especially in the Nouakchott area, indicate they do not have coordinated control of a sufficient amount of the market to be effective as supply and marketing agencies. It does appear that growers could realize some net return over costs even without government support.

Hatching and other supply elements at the Sotuba poultry center were not economically viable at the scale of operations observed during the 4 months of this study. However, at the scale programmed for early 1974, they would be viable if competent management and adequate supplies of appropriate inputs (feed and vaccine) are provided. The lack of forward planning and attention to good poultry husbandry practices indicates management of the project centers has been one of the weakest links. If OMVS countries assume the full burden of responsibility for this project, closer monitoring of activities of the centers should assist the managers in making more prudent decisions.

The role of cooperating governments in the project should be to: (1) encourage development of the private sector with regard to poultry production and poultry

Figure 1.--Commercial Poultry  
(d'Elevage)

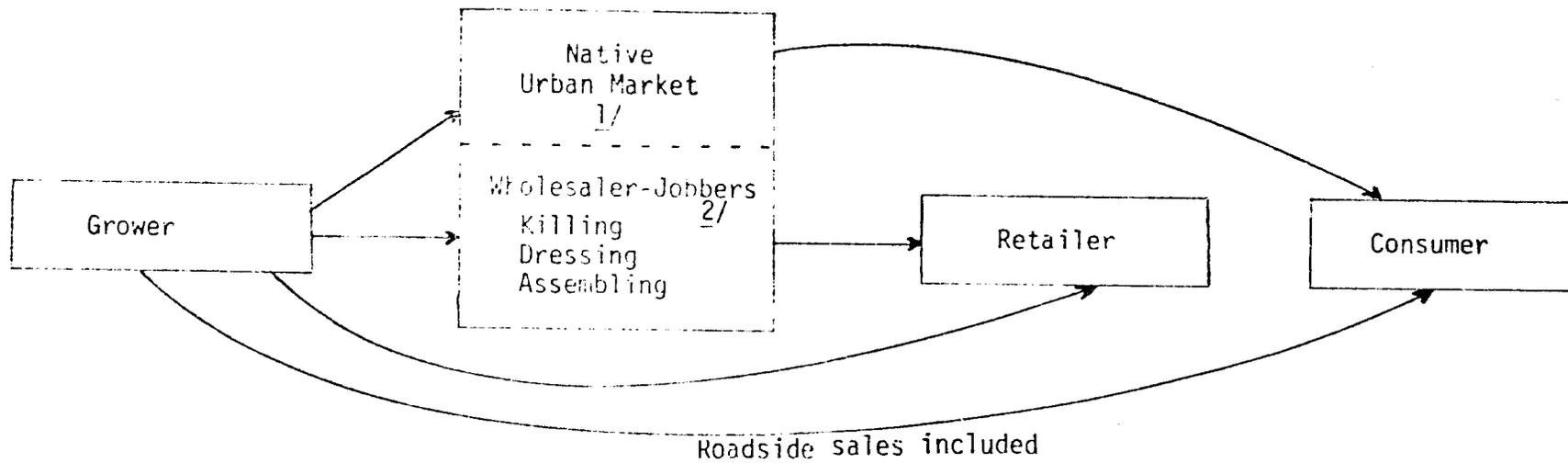


1/ Most growers sell live birds but a few major growers sell N.Y. dressed and ready-to-cook birds to retailers and consumers.

2/ Retailers buy ready-to-cook poultry and, less frequently, live poultry which they then dress to meet their needs.

3/ Wholesale buyers are primarily retailers who sell at wholesale prices to other retailers.

Figure 2.--Native Poultry  
(Poulet du pays)



1/ Native produce markets in population centers which often have a poultry market section.

2/ The Wholesaler-Jobber is generally located in the native urban market and buys from producers.

input supplies; (2) encourage funding for training technicians and managers; (3) assist in the development of markets and consumer education; and (4) assist in the development and maintenance of a market information system.

The roles of the private sector in the project should be (1) to cooperate in the development of an improved marketing system and (2) to minimize dependence on imports of baby chicks, feed, and vaccine by encouraging improved quality and quantities of locally-produced items.

Technical assistance for this project, as required, should be contracted from domestic or foreign resources. Increased reliance should be placed on native personnel who have achieved higher levels of proficiency as a result of training received either in or out of the country.

National extension services should develop a coordinated OMVS poultry extension specialist training program to enable the governments to more effectively provide guidance and assistance in production and marketing. This would include development of suitable publications, in French, that could eventually be given to producers. Extension workers stationed at regional d'elevage centers would be expected to conduct extension meetings and distribute relevant publications to producers.

OMVS countries need to assess carefully the extent to which they want to develop their poultry industries and markets. This is especially crucial in the face of the current and expected availability of feed ingredients. If, in the future, more animal meats are desired, it should be kept in mind that commercial broilers are the most efficient converters of grain to meat.

APPENDIX 1--MODIFIED ENGLISH VERSION OF OMVS DECISION NO. 00009

General Secretariat

Decision: On the organization and Operation of the Regional Poultry Project

THE SECRETARY GENERAL

Considering the Convention of the Creation of OMVS  
Considering the Cabinet and General Secretariat Regulations  
Considering OMVS Financial Regulation  
Considering Grant Funds for the Regional Poultry Project included on May 30, 1970,  
between USAID and OMVS (ex OERS) and the amended agreements  
Considering the Decision on the Appointment of the Project Co-Director

DECIDES

Article 1.

The Regional Poultry Project is an OMVS Project.

Article 2.

(Sites for the OMVS Poultry Centers are located at: Sotuba, Mali (just outside of Bamako); M'Bao, Senegal (just outside of Dakar); and Nouakchott, Mauritania).

Regional Project Inter-State Centers: Each participating country is supposed to provide an OMVS Inter-State Poultry Center that will: (1) Take part in the adaptation trials on the rations for poultry food, on accommodation of the control of poultry diseases and on methods of management of laying houses. (2) Take part in the training and organization of chicken breeders. (3) Cooperate in the development of a National poultry production program and of extension services for disseminating modern techniques of poultry management. (4) Receive and sell baby chicks to producers who are raising and marketing meat type birds (broilers).

In addition to the four general activities mentioned above: (1) The Sotuba Center is charged to produce and sell broiler chicks to producers in Mali and to the other OMVS poultry centers, and in case of need, to supply the demand from breeders outside OMVS countries. (2) The M'Bao Center is charged: (a) to produce and sell to the OMVS countries vitamin-mineral compound premixes that are essential to prepare a complete poultry food; (b) to provide at the under-regional grade, the training of poultry extension technicians for the three states; and (c) eventually it can help the Sotuba Center in the production of chicks.

### Article 3.

Each OMVS center is operated by a Director who is proposed by his Government and appointed by the Secretary General of OMVS. Duties of these OMVS Center Directors are to ensure organizational, administrative, and financial efficiency required for the realization of programs set up by the Secretary General, with the cooperation of the Project Direction Board.

### Article 4.

The Regional Poultry Project is under OMVS General Secretariat Authority and operates under the responsibility of a Co-director.

### Article 5.

The Project Direction Board includes: The OMVS Secretary General (chairman), The Project Co-director (OMVS), a representative from USAID, the Directors of each of the Interstate Poultry Centers, and the Directors of the Breeding Department.

The Board is in charge of the planning and preparation of the project's annual program, and it meets on the notice of the Secretary General.

### Article 6.

Each OMVS Poultry Center is to set up an intermediate Incoming Cash Account and a Petty Cash Account. They are to be managed as stated in the conditions of the OMVS Financial Regulation, and under special instructions from the OMVS Secretary General. The Intermediate Incoming Cash Account is provided by sales of chicks, chickens, eggs, poultry feed, and breeding material. The Petty Cash Account is made up from cash reserves available to the Director of the Center, but all expenditures must be accounted for.

### Article 7.

The sale price list for products from the Centers will be laid down by the Secretary General, on proposal of the Directors of the Centers and the Poultry Project Co-director.

### Article 8.

The Project Co-director, and the Directors of the Centers are in charge as far as everyone is concerned, to carry out the present decision, which will be issued everywhere it will be needed.

Dakar, January 8, 1973

Mohamed Ould Amar  
Secretary General

APPENDIX 2--SELECTED FOOD PRICES IN BAMAKO

I. Average annual retail selling prices for chicken and some competing meats, Bamako, Mali, 1966-1970 \*/

Item	Average annual prices, per kilogram					
	1966	1967	1968	1969	1970	5-year average 1966-70
	----- Mali francs -----					
Live chicken.....	248	287	309	292	287	284.6
Beef with bones.....	193	231	249	222	244	227.8
Mutton with bone.....	206	262	275	322	343	281.6
Smoked fish.....	223	254	273	285	284	263.8
Dry fish.....	303	381	370	417	254	345.0
Peanuts in shell.....	61	84	108	100	91	74.0
Chicken eggs, each.....	25	27	27	24	25	25.6

\*Source: Mali, 1971, 4th Trimistre. Publication of the Government of Mali, Ministere des Finances, Service de la Statistique General.

II. Average prices paid for poultry, other meats, fish and eggs, Bamako,  
1970-1973

Year and period	Price per kilogram					Price per egg	
	Live poultry		Beef	Mutton	Fish	Commercial	Native
	Commercial broilers	Native fowl					
	Mali francs						
1970: Jan.-June.....	--	280	211	313	276	--	--
July-Dec. ....	--	298	275	373	290	--	--
1971: Jan.-June.....	--	313	281	384	328	--	--
Nov.-Dec. ....	315	265	--	--	--	30.0	19.3
1972: Jan.-June.....	411	330	--	--	--	22.5	15.1
July-Sept. ....	489	410	--	--	--	27.7	20.5
Oct.-Dec. ....	647	597	--	--	--	59.7	32.3
1973: Jan. ....	674	630	--	--	--	60.0	36.0
Feb. ....	--	--	--	--	--	--	--
Mar. ....	691	610	--	--	--	50.0	50.0
Apr. ....	750	550	--	--	--	50.0	50.0
May.....	1,000	720	--	--	--	50.0	50.0
June.....	1,125	712	--	--	--	50.0	50.0
July.....	975	662	--	--	--	50.0	50.0
August.....	800	350	275	400	--	50.0	--

Source: Prices through July 1973 adapted from assorted OMVS quarterly activity reports submitted by Mr. Charles L. Davis, Chief of Party, Tuskegee Institute AID Contract No. AFR/762.

APPENDIX 3--PROJECTED POULTRY AND EGG DEMAND IN OMVS COUNTRIES

Projected levels of per capita consumption and total demand for all poultry and eggs in OMVS countries, 1970, 1975, and 1980

Country and item	Year		
	1975	1980	1970
<u>Mali:</u> Population.....	5,530,000	6,257,000	4,936,000
All poultry:			
Per capita consumption, kg/yr. ...	1.9	1.9	1.8
Total consumption, kg/yr. ....	10,507,000	11,888,000	8,845,000
Eggs:			
Per capita consumption, eggs/yr. :	12.69	12.69	12.69
Total consumption eggs/yr. ....	70,175,700	79,401,330	62,637,840
<u>Mauritania:</u> Population.....	1,327,000	1,516,000	1,173,000
All poultry:			
Per capita consumption, kg/yr. ...	2.4	2.6	2.3
Total consumption, kg/yr. ....	3,185,000	3,942,000	2,698,000
Eggs:			
Per capita consumption, eggs/yr. :	41.69	43.50	39.88
Total consumption, eggs/yr. ....	55,322,630	65,946,000	46,779,240
<u>Senegal:</u> Population.....	4,281,000	4,797,000	3,840,000
All poultry:			
Per capita consumption, kg/yr. ...	1.6	1.6	1.6
Total consumption, kg/yr. ....	6,849,600	7,675,000	6,144,000
Eggs:			
Per capita consumption, eggs/yr. :	14.50	14.50	14.50
Total consumption, eggs/yr. ....	62,074,500	69,556,500	55,680,000

Source: Agricultural Commodity Projections, 1970-1980, FAO, CCP 71/20 Rome 1971. (Note: The authors do not necessarily concur with the validity of the above FAO estimates, but they are the only data we found that give any indication as to the possible magnitude of the potential market for poultry and eggs in these OMVS countries.)

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