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Office of the Assistant Deputy Director General for Operations
Investment Projects Center (CEPI)
Project Preparation Unit IICA/IDB

Ministry of Agriculture
and
Natural Resources

BARBADOS INTEGRATED LIVESTOCK PROJECT

VOLUMEN 3
Chapter IV - V y VI

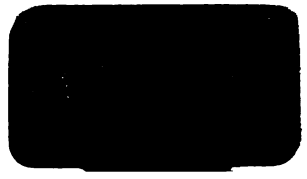
Barbados
April 1986



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MINISTRY OF AGRICULTURE
AND NATURAL RESOURCES

INTERAMERICAN INSTITUTE FOR
COOPERATION ON AGRICULTURE

DOCUMENTO PRELIMINAR
EN
CONSULTA

INTEGRATED LIVESTOCK
PROJECT

INSTITUTO VENEZOLANO
DE INVESTIGACIONES
AGRICOLAS
REVISADO

VOLUME 3

CHAPTER IV
CHAPTER V

CHAPTER VI

COMITÉ DE
ASISTENCIA PARA
LA REINVERSIÓN

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CHAPTER IV

THE BORROWER AND THE EXECUTING AGENCY



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THE BORROWER AND THE EXECUTING AGENCY

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IV. THE BORROWER AND THE EXECUTING AGENCY

4.1 THE BORROWER

The borrower will be the Government of Barbados through the Central Bank of Barbados.

4.2 IMPLEMENTING INSTITUTIONS

The implementation of this project will require the articulated participation and involvement of the Prime Minister's Cabinet and Ministries of:

Finance and Planning (MFP)

Commerce, Industry and Consumer Affairs; and of

Agriculture and Natural Resources.

These institutions will participate in the establishment and maintenance of overall policy instruments including taxes, import restrictions, production incentives and of any other regulations which create the environment conducive to the effective implementation of the project.



The MANR will be the executing agency for the project, through the Permanent Secretary for Special Assignments.

4.2.1. Prime Minister's Cabinet

The approval and monitoring of this project at Cabinet level will be effected through the Planning and Priority Committee (PPC), a sub-committee of the Cabinet with technical representation from certain ministries. The Public Investment Unit of the MFP acts as secretariat to the Committee.

The functions of the Committee include reviewing and advising the Cabinet on national and sectoral planning priorities, directing the execution of development plans, and reviewing and approving each stage of the project process. In fact, the PPC has executive authority and acts on behalf of the cabinet in selecting, assigning priorities to, and monitoring the progress of projects.

With respect to the livestock project, the PPC will provide the policy directives necessary for protecting the development of the



local industry. Interinstitutional agreements, will therefore have to be a continuous concern of the Committee over the life of the project and probably quite some time thereafter. Protective measures should be instituted gradually after reassessment of progress so as to prevent shortages or impede further development.

4.2.2. Ministry of Finance and Planning (MFP)

The MFP will participate in the implementation of this project through its Public Investment Unit (PIU) which is an integral part of its Planning Division. The unit's main functions are to:

- Provide relevant and adequate project information to the Planning and Priorities Committee;
- Act as the Secretariat to the PPC on development project matters;
- Coordinate and negotiate Agreements with external financing agencies and



ensure compliance with terms and conditions by parties to the Agreement;

- Assist in the selection of consultants; and
- Maintain an effective data base related to project inventory and status.

For the livestock project, the PIU will not only monitor its implementation but will also monitor overall development in the industry as well as make recommendations to PPC on the degrees of protection needed.

The MFP will also be expected to finance any subsidies to local livestock production and related industrial activities as well as to assist in reducing the cost of inputs through adjustments in import duties.



4.2.3. Ministry of Commerce, Industry and
Consumer Affairs

The Consumer Affairs Division was removed from the Ministry of Agriculture as a result of a ministerial reorganization during 1985. This Division is linked to two policy areas which are of considerable importance to the livestock project:-

- Import policy through the Licensing Review Committee, and
- Domestic Pricing through the Price Control Division.

The Licensing Review Committee is comprised of representatives from the Ministry of Agriculture and Natural Resources, the Ministry of Commerce, Industry and Consumer Affairs, the Ministry of Finance and Planning, the Central Bank of Barbados, and is chaired by the Prime Minister. The Chief Price Control Officer acts as the General Secretary of the Committee.



This Committee regulates import permits, in consultation with the various governmental agencies involved.

The above mentioned agencies will participate in this project through:-

- the imposition of import in order to increase the price of imported meat and livestock products to a level that will make similar locally produced products competitive;
- the establishment and continuous review and control of relevant prices on the domestic market.

This project will need to interact with all the above mentioned institutions at their regulatory and policy making level so that its activities, objectives and targets are achieved.



4.3. THE MINISTRY OF AGRICULTURE AND NATURAL RESOURCES

(MANR)

4.3.1 Background

The origins of Ministry of Agriculture go back to the year 1898 when a Royal Commission was set up to look into the circumstances of the sugar industry. Its pre-occupation had been mainly with the export crop sugar, since protecting and promoting this activity were of significance for the whole economy.

In fact, by 1927 the major work of the department consisted of:-

- (i) Raising of new cane varieties;
- (ii) Manurial and cultural experiments in sugar;
- (iii) Work on control of pests and diseases in Sugar cane; and
- (iv) Research on sugar and sugar manufacturing problems.

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It was not until the 1930's that the department assumed some concern for livestock agriculture and peasant agriculture, when a veterinary surgeon was appointed to the staff, and in 1936 the first Peasants' Agricultural Instructor was appointed.

The role of the Agricultural Department in initiating and advancing sugar cane technology was extended also to include advisory functions to the small farming sector. Government's promotion of other agriculture increased during and after the war years (when the availability of food was critical) through Acts such as the 1942 'Local Production Defence Control Order". This order forces plantations to allocate specified acreage to food production and also to maintain livestock enterprises.

The role of the Ministry of Agriculture has broadened in response to changed economic circumstances over the years. For example, the declining revenue earned by sugar in the 1960's and 70's and the accompanying sale of marginal plantations was matched by government intervention to preserve such lands for agricultural use, and a renewed interest in diversifying agricultural



production. The Ministry has also expanded its scope to include the area of marketing, research into non-sugar crops, planning for agricultural development, provision of support services to farmers and advisory services through the extension division. The Ministry is also expected to perform a motivational role and to protect the interest of all who gain a livelihood from the sector.

The increasing functions of the Ministry of Agriculture together with the need and urgency for Agricultural Diversification saw the introduction and expansion of the Livestock Development Division. The research work and services of this department were central to the commercialization and take-off experienced in the livestock industry (particularly poultry, pigs and milk) during the late 1960's and early 1970's.

At present the Livestock Division is headed by a Deputy Chief Agricultural Officer in charge of Extension and Development (DCAO/ED) who reports to the Chief Agricultural Officer (CAO).



4.3.2. Organization and Function

4.3.2.1. Main Organizational Units

The formal organization chart of the Ministry of Agriculture and Natural Resources is presented in figure IV-1.

As can be observed in the chart the bulk of the responsibilities for the functions performed by the Ministry is divided between the Permanent Secretary and the Permanent Secretary for Special Assignments, as follows:-

a. The Permanent Secretary (PS)

He is responsible to the Minister for all the operations of the Ministry. Also coordinates the functions of some "external parastatal bodies" (eg. BMC, BADC, etc.,) and is directly responsible for a large number of internal units two of which are performing "staff functions" (Administration and Accounts) while all the others can be categorized as professional (eg. Agricultural Planning Unit).

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b. The Chief Agricultural Officer (CAO)

He is the Senior technical executive responsible to the Permanent Secretary. Through his two Deputies (for Research and for Extension and Development) he is responsible for all technical activities of the Ministry which are related to agriculture. The units reporting to him perform the full spectrum of activities needed to: develop and maintain agriculture (eg. Research and Extension), support it professionally (eg. research stations, laboratories), fulfill statutory/regulatory duties (eg. quarantine, veterinary services) and provide services to the farming community (eg. seed storage).

c. The Permanent Secretary for Special

Assignments (PSSA) The PSSA also reports directly to the Minister and is responsible for the execution of externally funded projects which are under the responsibility of the MANR.

He is responsible for the management of the Soil Conservation Division.

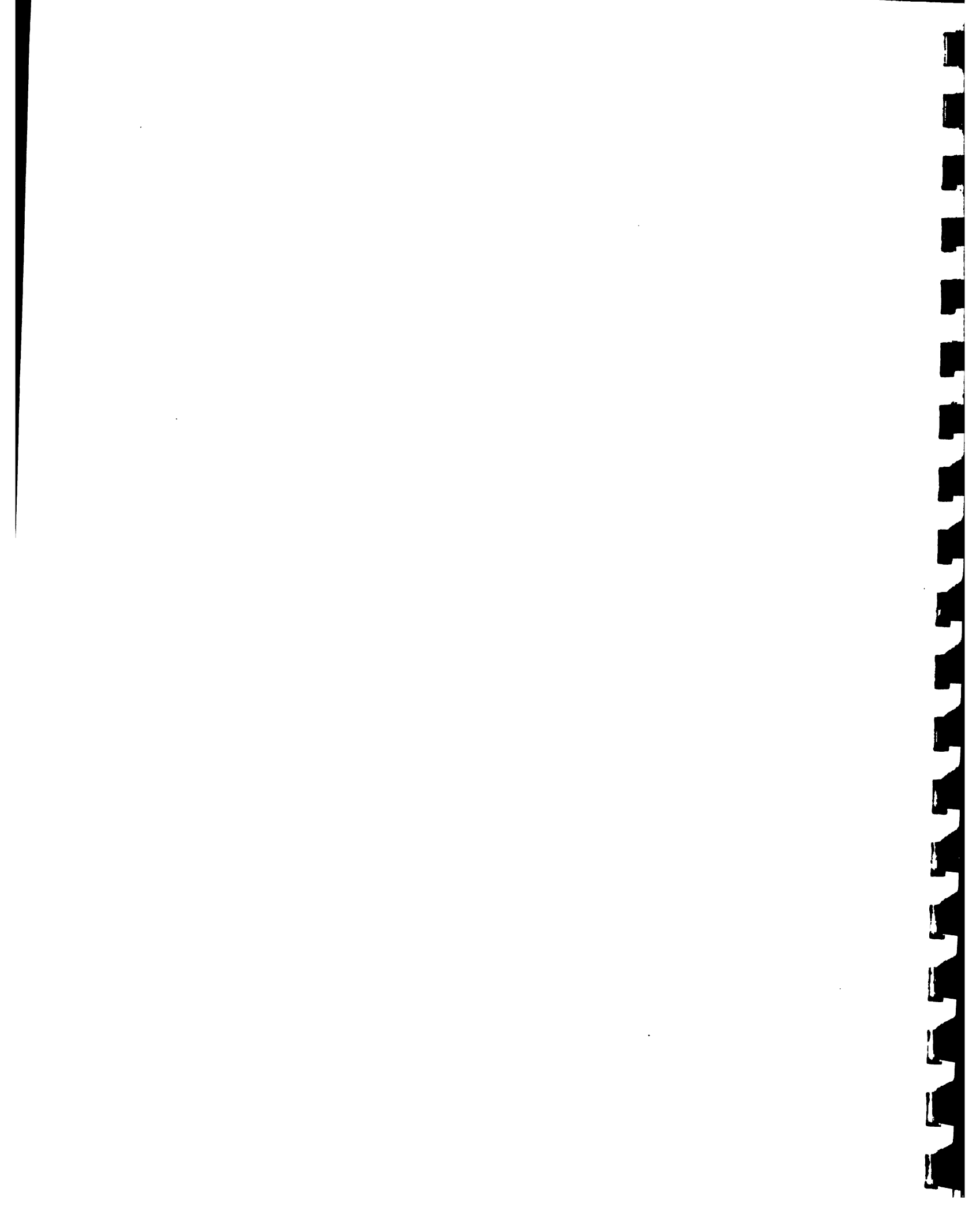
4.3.2.2. Main Operational Units

In order to facilitate better understanding of the formal structure and its intended roles, a short description of the purposes of each of MANR's units and related parastatal organizations is detailed hereunder:

a. Parastatal Bodies

i) Barbados Agricultural Development Corporation (BADC)

- To stimulate, facilitate and undertake the development of agriculture and to carry out, operate and participate in such agricultural project as Cabinet may approve;



- To develop and manage, on a commercial basis, such plantations and other agricultural lands as may from time to time be vested in it, along the terms of Government agricultural policy and so as to stimulate and encourage the private sector.

ii) Barbados Marketing Corporation
(BMC)

- To stimulate, facilitate and improve production marketing and processing in the island, particularly for the benefit of the producers;
- To secure the most favourable arrangements for the purchase, handling, transportation, storage, importation, shipping,



marketing and sale of
produce whether or out of
the island and in
particular to assist
agricultural and fishing
cooperative societies to
dispose of their produce to
their best advantage;

- Upon being required to do
so by the Government, to
make recommendations on any
matter directly or
indirectly relating to the
production and marketing of
produce.

iii) Barbados National Standards
Institute (BNSI)

- to set standards for
products and to ensure
compliance with standards.



iv) Agricultural Credit Bank (ACB)

- concerned with collection of outstanding loans.

v) Government Analytical Laboratory

- to analyse substances for public sector and private sector institutions.

vi) Meteorological Services (MS)

- to provide weather monitoring and forecasting service.

b. Ministry of Agriculture and Natural Resources1) Administration Division

- to maintain Ministry's bookkeeping and accounting records;



- to administer the Budget and maintain inventory records;
- to purchase goods and services required by Ministry.
- to assist the Permanent Secretary in the administration of the Ministry including personnel management, the internal information system and policy formulation and execution

ii) Agricultural Planning Unit (APU)

- to review Ministry's Agricultural Programmes and projects;
- to coordinate preparation of the Agricultural Sector Plan;



- to undertake agricultural censuses and ad hoc sub-sector surveys;
- to advise on agricultural policy matters;
- to collect, compile, analyse and publish agricultural and fisheries statistical data;
- to prepare crop and livestock budgets.
- to undertake agricultural economic research.

iii) Fisheries

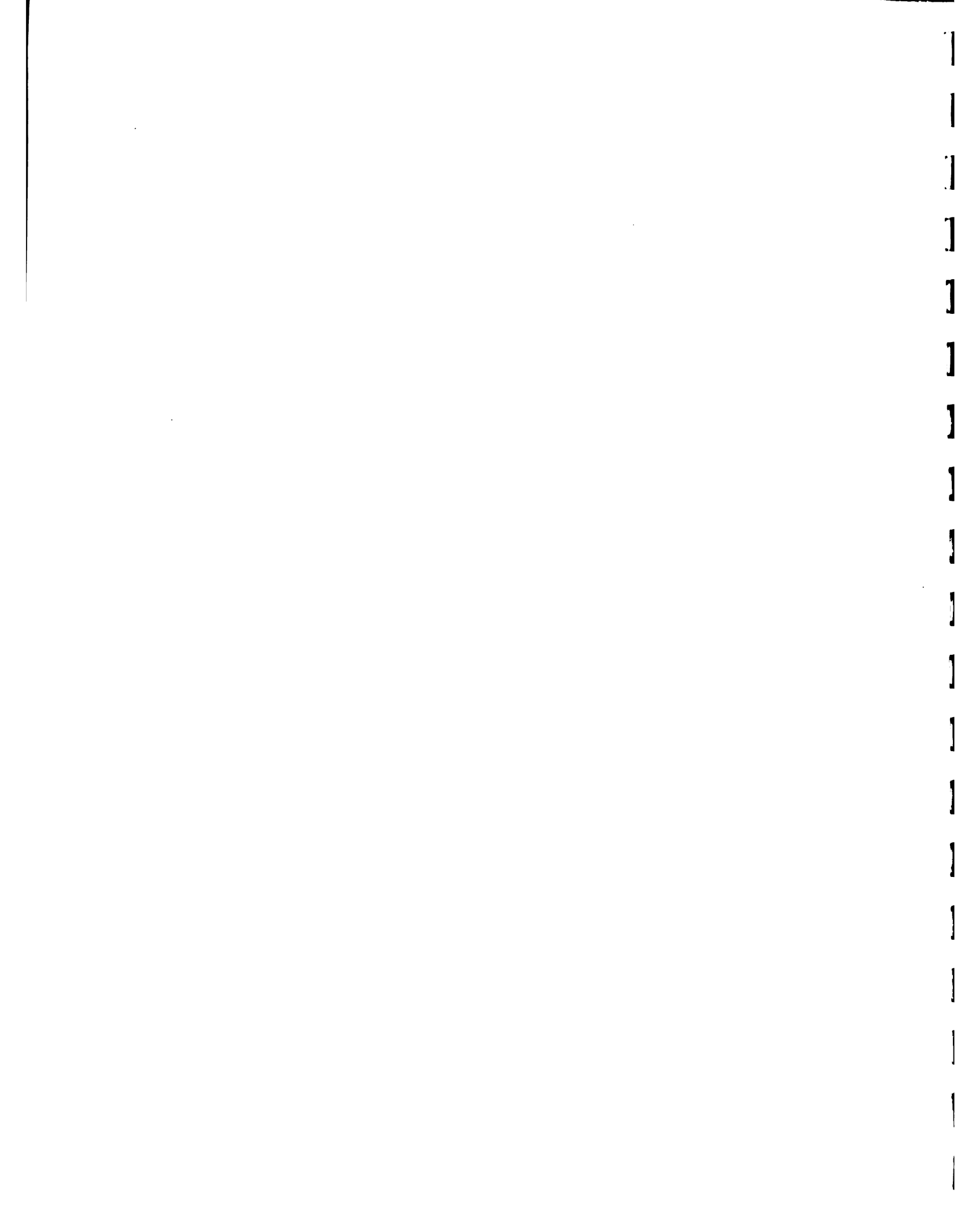
- to promote development of the local fishing industry;
- to operate a haul-up service for fishing boat owners;



- to provide a marine engineering service, and a fisheries advisory service;
- to inspect and register fishing boats.

iv) Agricultural Division - Research

- to prepare, administer and implement the crop research programme;
- to develop effective and appropriate production systems for Barbados;
- to develop measures for protecting existing agriculture against negative effects such as pests and diseases;
- to operate the mechanical workshop and engineering units.



v) Agricultural Division -
Extension and Development

- to provide advise and assistance to farmers in matters such as crop and livestock production;
- to operate a seed store for sale of agricultural inputs mainly for small farmers;
- to operate and manage agricultural stations;
- to prepare and administer the livestock research programme;
- to administer the farm incentive programme.

vi) Special Assignments

- to facilitate the preparation and/or

implementation of specially selected agricultural projects, and manage the operations of the Soil Conservation Unit.

4.3.2.3. Committees and Boards

As indicated, the Ministry resorts to a number of Committees and Boards comprised of members from both within and outside of the Ministry, as an integral part of its operational structure.

a. The Dairy Development Committee

It is comprised of ten (10) members: 5 MANR employees and 5 from other public and private sector representatives, and is chaired by the CAO.

Functions

- to oversee the genetic improvement of dairy cattle by selection of bulls from which semen is to be imported or through recommendations on the importation of animals; and the control of slaughter of genetically good dairy animals;
- to provide recommendations on the control and/or eradication of diseases in cattle; and on veterinary programmes developed to support the development of the cattle industry;
- to recommend on legislation necessary for the improvement of cattle industry;
- to recommend on credit loans to dairy farmers from the funds provided under the Canadian Dairy Revolving Fund or under other dairy credit Scheme funded by Government but under the control of the Ministry of Agriculture and Natural Resources.



- to recommend on training necessary to improve the competence of cattle farmers;
- to recommend on procedures for the marketing of milk between the farm-gate and milk processors;
- to provide recommendations on procedures for up-grading the production of milk from small and large scale farmers, including the provision of subsidized Government services to such farmers;
- to recommend on milk prices to the Milk Processing Plant.
- to provide methods and programmes to channel the largest possible volumes of milk to the processing plant, particularly milk produced by small farmers (Less than 15 cows);



- to provide methods of developing a beef industry as an integrated system with dairying;
- to provide methods for promoting a greater consumption of locally produced milk and for promoting a greater consumption of locally produced beef.
- to recommend on any other relevant matters referred to it from time to time by the Minister.

b. Egg and Poultry Production and Marketing Committee

It is composed of seventeen (17) members in total - 5 MANR employees, and 12 from other Public and Private Sector organizations. Its chairman is the Deputy Permanent Secretary, MANR.

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Functions

- to advise the Minister of Agriculture on the production and marketing of poultry meat and eggs;
- to monitor the poultry industry;
- to advise the Ministry on all other matters relating to the poultry industry.

c. Pig Production and Marketing Committee

Fourteen (14) members, of which 6 are from MANR and 8 from other Public and Private Sector organizations, comprise this committee whose Chairman is the CAO.

Functions

- to advise and assist the Ministry in forecasting production of and assessing the demand for pork and pork products;

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- to make recommendations in connection with the genetic improvement and on the importation of breeding pigs;
- to make recommendations in connection with the control and eradication of diseases among swine and also in connection with veterinary programmes aimed at developing the pig industry;
- to make recommendations with regard to relevant legislation considered necessary for the industry;
- to advise the Ministry on any matter connected with and incidental to the production and marketing of pork and pork products.

d. Farmers' Incentives Scheme Committee

This Committee is composed of five (5) members of which 4 are from MANR and one (1) from the Ministry of Finance and Planning. It is Chaired by the Deputy Chief Agricultural Officer (Extension and Development).



Functions

- to advise the Ministry on and monitor the payment of incentives to small farmers;
- all other matters related to payment of incentives to small farmers.

e. Soil Conservation Board

The Soil Conservation (Scotland District) Act, 1959 provided for the establishment of the Soil Conservation Board.

The Board consists of nine (9) members, 3 from MANR, and is Chaired by DCAO.

Functions

- to advise the Chief Agricultural Officer generally on the utilization of lands in the Scotland area in such a manner as will tend towards the



conservation of the soil and the prevention and mitigation of soil erosion.

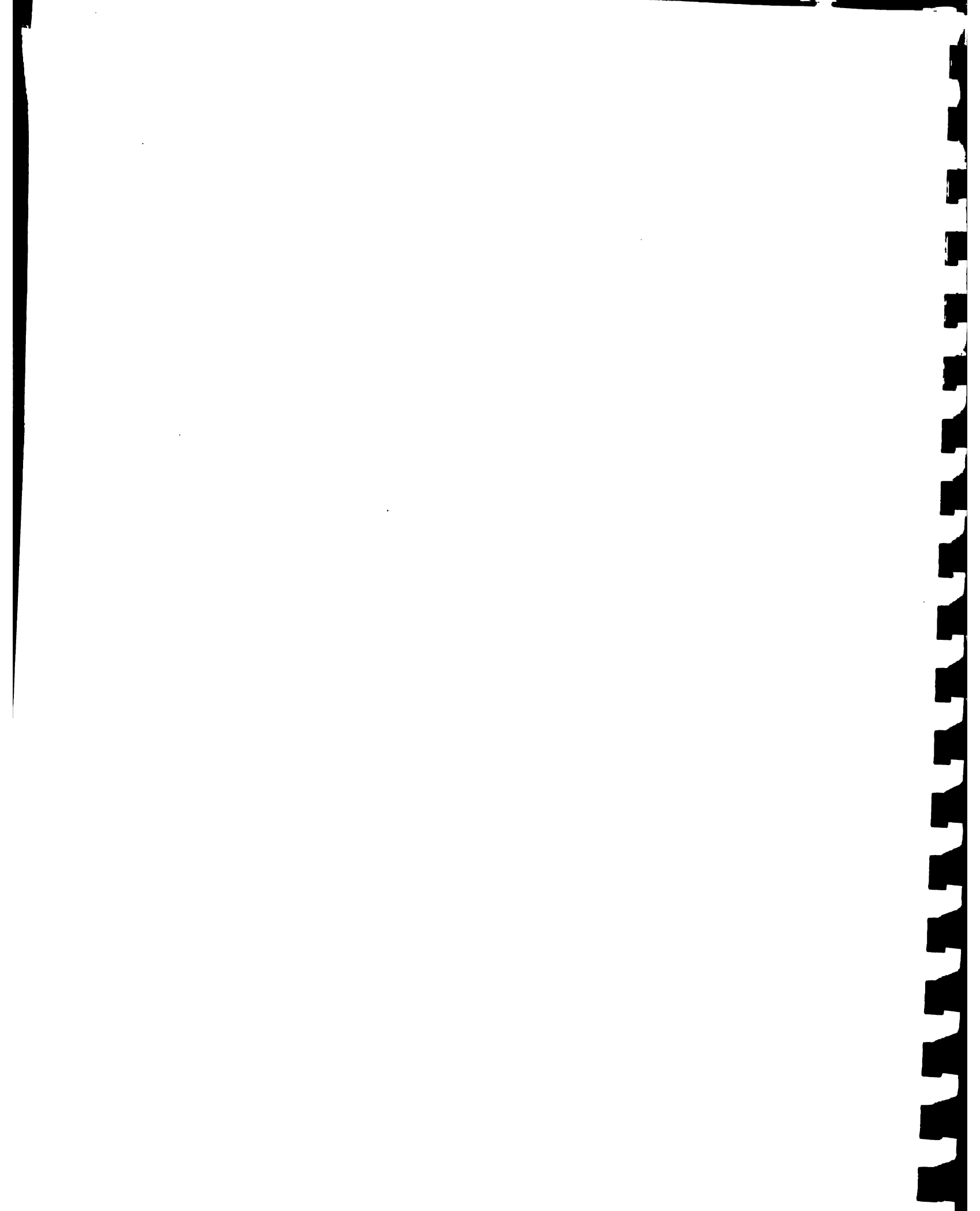
f. Animal and Human Health Committee

This Committee was set up by the Ministries of Health and Agriculture to ensure the establishment of certain standards of Animal and Human Health care where each affects the other.

The Ministry of Agriculture is represented on this Committee by the Senior Veterinary Officer, a Veterinary Pathologist and an Administrator.

Functions

- to advise on the eradication of zoonotic diseases;
- to advise on systems for ante-mortem inspection of animals and post-mortem inspection of carcasses for food;



- recommend on slaughtering methods and conditions;
- to advise on livestock rearing with respect to medical treatment and physical accommodation;
- to advise on the training of Animal and Human Health Assistants.

g. National Agricultural Advisory Committee (NAAC)

This Committee includes representatives from the Ministry of Agriculture, various Statutory Corporations, Private Organizations and Individuals.

Functions

- This Committee was set up to examine the role of the agricultural sector within the context of the national economy and to consider how best agriculture may play an effective role within the national economy.



4.3.3. Personnel Policies and Human Resources of
MANR

4.3.3.1. Personnel Policy

The MANR, as all other agencies of the Government of Barbados, has to abide by the "Service Commission (Public Service) Regulations, 1978" in all matters such as appointments and promotions, probationary service, termination of appointments, retirement, and discipline of its personnel.

Under the Ministry, the parastatals, BMC and BADC, do not have to abide by the above mentioned Service Commissions Regulations or salary scales. As a result, they can, and in fact, do establish higher level of salaries for their personnel than the Ministry for its personnel in established positions.

The appointment of personnel to these Parastatals, has to go through the Minister of Agriculture and Cabinet for ratification.



4.3.3.2. Human Resources

Personnel in the Ministry of Agriculture and Natural Resources occupy three classes of positions :

- established,
- unestablished (temporary), and
- casual

Out of a total of 689 employees, MANR has 244 in established positions (35.4%), 125 in unestablished positions (18.1%) and 320 in the casual category (46.5%).

4.3.4. Accounting and Budgetary System

4.3.4.1 Accounting

The accounting system of Barbados is governed by the Financial Rules, 1971, consolidated as of 30th of June, 1985. They are presented in Annex IV-1

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4.3.4.2. The Budgeting System

The Budget is a statement of estimated revenue and expenditure for the fiscal year, which runs from April to March. The magnitude of the Budget is determined by the availability of resources.

Government obtains financial resources from:

i) Taxation, i.e. income plus corporation taxes, consumption, import duties and property tax.

ii) Fees

iii) Loans

- Local: Treasury Bills, Debentures, Commercial Banks and the Central Bank.

- Foreign: Project Loans, Commercial, Balance of Payments support, IMF.

Economic conditions determine the level of resources available and also Government's fiscal measures.

Resources are allocated among two major types of expenditures:

(i) Current - includes personal emoluments, supplies and material debt servicing;

(ii) Capital - investment projects; studies e.g., Cement Plant, Scotland District Soil Conservation Project, Oistins Fisheries Terminal.

Resources are also allocated on the basis of Ministry/sector - e.g., Education, Agriculture, Health.

Current expenditure is usually financed by revenues and capital expenditure by loans and the current budget surplus.

Budget Deficits are financed through loans and the current account surplus.

4.3.4.3. Budgeting Procedures

The procedures to determine the Annual Budget are as follows:

- (i) The Budget Committee of the Ministry of Finance and Planning (MFP) taking into account historical data, prevailing economic conditions and expectations of the future, make projections about Government revenue.
- (ii) MFP make projections concerning the level of expenditure taking into account the results of (i).
- (iii) MFP circulate the various Ministries on the ceilings placed on their respective expenditures.
- (iv) Ministries prepare their own estimates taking into account the ceiling given by MFP. These are then submitted to MFP for scrutiny.



A summary of budgetary estimates, at current prices, for the 10 years between 1974/75 and 1982/83 are provided in table IV-1.

4.3.5. Procurement Regulations

Policies and regulations in this respect are all contained in the Financial Administration and Audit (Supplies) Rules, 1971, relevant parts of these are presented in Annex IV-2.

4.3.6. Internal and External Audits

The Auditor General under the Ministry of Finance and Planning has the responsibility for the audit and inspection of all public accounts involving revenue paid into, and expenditures met from, the Consolidated Fund, also he is responsible for submitting to the General Assembly the report on the results of the examination of the said accounts. These functions of the Audit Department, are set out in section 113 of the Constitution of Barbados, and specified in Part V of the Financial Administration Audit Act. The more relevant



4.3.7. The Planning System of Barbados

5.3.7.1. National Level

a. Historical Review

Development planning in Barbados has a history dating back to 1945 when a sketchy development plan for the period 1946-1956 was published. It was not until 1953 that development programming became a systematic exercise. In that year the first medium-term plan was launched. Subsequent development plans covered the periods 1955-60; 1962-65, 1965-68, 1969-72, 1973-77, 1979-83, and 1983-87.

The early 1946-56 plan and some of those prepared during the early 1950's concentrated but on one goal. It can be safely said that they had but one objective: to expand the sugar industry. In the words of the writers "... any substantial increase in the national economy is dependent on the expansion of the Sugar industry".

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Since the early fifties the administration of the island went through several stages up to its current situation. In 1954 the colonial administration gave over to internal self government and the Cabinet System. In the years after independence (1966) the Development Plan became the embodiment of the Government's policies and programmes and the National Planning System (including agriculture planning) evolved around the preparation of such plans.

As a result of the introduction of the Cabinet system in 1954, the Development Plan for the period 1955/60 was more specific than the earlier plans. However, while it indicated that it was the Government policy to "...press on with measures which lead to the further economic development of the island...", these measures were not fully stated.



In 1962, following a change in Government a year earlier, a Central Planning Committee was established to assess the development needs of Barbados. This Committee had no executive authority but merely acted as a co-ordinating body. It was chaired by the then Prime Minister and consisted of senior Government Ministers and their Permanent Secretaries. In 1963 the Economic Planning Unit was established as a division of the Prime Minister's Office, to serve the Committee in developing forecasts, publishing the annual economic survey and drawing up economic plans. The Unit was later merged with the Ministry of Finance and is now the Planning Division of the Ministry of Finance and Planning.

b. Current Status

With yet another change in Government in 1976, the planning mechanism was improved. A Standing Committee of the Cabinet - the Planning and Priority Committee - was established in 1978. This Committee, unlike the previous Central

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Planning Committee, possesses executive authority and is the central co-ordinating body for formulating medium and long-term plans. The Committee acts on behalf of Cabinet as the authority for selecting and assigning priorities and monitors the progress of the projects through which the plans are operationalized.

The primary objective of the Committee is to ensure, on behalf of the Cabinet, the national development of Government's policies, programmes and plans, and to co-ordinate their implementation.

4.3.7.2. Agricultural Planning System

In order to promote, foster and monitor the development of the agricultural sector, the MANR has to:

- (1) Prepare a sectoral plan in order to



(ii) Identify and prepare new projects to assist and facilitate the attainment of the defined objectives;

(iii) Design appropriate alternative policies for the agricultural sector (the existing as well as new agricultural projects) for the attainment of the objectives;

(iv) Monitor the performance and determine the gap between the plan and its actual execution and suggest means and ways to improve the situation, as needed.

The Agricultural Planning Unit (APU) is, within the MANR, the unit responsible to provide support through direct action or by providing expertise to the development of these actions.

Since 1955, the country's development has been charted through a National Development Plan. Planning for the Agricultural Sector has always been an integral part of the national

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planning process. The APU (formerly the Economic Unit) was established in 1969, and has been placed under the CAO. In 1973 the unit was put under the direct responsibility of the Permanent Secretary. The unit has received over the years a substantial amount of technical assistance.

The major function areas for which the Agricultural Planning Unit is responsible are:

- (i) Planning Programming and Monitoring and Evaluation
- (ii) Agricultural Statistics
- (iii) Economic Research
- (iv) Project Analysis
- (v) Agricultural Marketing Research
- (vi) Fisheries Statistics and Economic Research.

The specific activities within each major function area are presented in Annex IV-4.



The Agricultural Planning Unit is currently staffed by 6 professionals and 2 secretaries. It receives technical cooperation on a continuous basis from IICA on budgeting and monitoring aspects as well as in information systems.

4.3.8. FINANCIAL RESOURCES

4.3.8.1. Total Government Estimates and MANR's

Table IV-1 shows the resources assigned to the MANR and are analysed against the background of resources used by the rest of the Governmental institutions.

Actual capital and current expenditures are shown for the exercises 1974/75 to 1983/84. These figures are then expressed in constant prices, (1974 = 100) for which the GDP deflator was used.

The average total actual expenditures (capital and current) by the MANR over these ten years represent 4.5% of the total actual expenditures of the Government. Over these ten budgetary exercises, this proportion ranges

between a minimum of 3.6% in 1981 to a maximum of 7.7% in 1975. In terms of total capital expenditures, these proportions ranges between 4% and 24%, with an average of close to 8%. Concerning current expenditures, MANR's are between 2% and 3% of the total for the Government as a whole.

4.3.8.2. Distribution of MANR's Budget Resources

As may be seen from examination of the figures in Table IV-2, the resources allocated, both from current and capital budget, to the development of the livestock sub-sect reflect its relative unimportance in the Barbados Agricultural economy. In the period 1980 to the present time the total resources allocated to the Crop Sub-sector were many times the amount allocated to livestock, particularly in terms of Capital Development where the amount was on the average 5 times as high as for livestock. Current expenses for crops remained fairly steady at approximately twice the amount allocated for livestock.



TABLE IV-1
COMPARATIVE BUDGET ESTIMATES

YEAR	AGRICULTURE				OTHER MINIST				TOTAL					
	('000 B\$	%	('000 B\$	%	('000 B\$	%	('000 B\$	%	('000 B\$	%	('000 B\$	%	EXPEND.	GRAND TOTAL
CURRENT PRICES														
1975	9301	24.8%	4683	3.0%	28228	75.2%	153196	97.0%	37529	19.2%	157879	80.8%	195408	
1976	3584	7.4%	5485	2.4%	44711	92.6%	178953	97.0%	48295	20.8%	184438	79.2%	232733	
1977	4050	6.7%	7791	2.7%	56376	93.3%	217291	96.5%	60426	21.2%	225082	78.8%	285508	
1978	4369	5.2%	9374	2.7%	79322	94.8%	258809	96.5%	83691	23.8%	268183	76.2%	351874	
1979	10070	14.1%	9547	2.7%	61200	85.9%	276588	96.7%	71270	19.9%	286135	80.1%	357405	
1980	7984	9.2%	9782	2.3%	78821	90.8%	330897	97.1%	86805	20.3%	340679	79.7%	427484	
1981	6848	4.9%	13023	2.3%	131976	95.1%	413255	96.9%	138824	24.6%	426278	75.4%	565102	
1982	11703	6.8%	11826	1.8%	161371	93.2%	461594	97.5%	173074	26.8%	473420	73.2%	646494	
1983	9782	8.7%	14912	2.3%	102886	91.3%	513141	97.2%	112668	17.6%	528053	82.4%	640721	
1984	7287	5.7%	15377	2.4%	119471	94.3%	503437	97.0%	126758	19.6%	518814	80.4%	645572	
CONSTANT PRICES (1974=100)														
1975	7177	24.8%	3614	2.4%	21784	75.2%	118227	97.0%	28961	19.2%	121841	80.8%	150802	
1976	2682	7.4%	4105	2.4%	33470	92.6%	133961	97.0%	36152	20.8%	138066	79.2%	174218	
1977	2763	6.7%	5316	2.7%	38469	93.3%	148272	96.5%	41232	21.2%	153588	78.8%	194820	
1978	2787	5.2%	5980	2.7%	50608	94.8%	165123	96.5%	53395	23.8%	171103	76.2%	224498	
1979	5725	14.1%	5423	2.7%	34796	85.9%	157261	96.7%	40521	19.9%	162689	80.1%	203210	
1980	3708	9.2%	4544	2.3%	36616	90.8%	153718	97.1%	40324	20.3%	158262	79.7%	198586	
1981	2813	4.9%	5351	2.3%	54227	95.1%	169802	96.9%	57040	24.6%	175153	75.4%	232193	
1982	4405	6.8%	4451	1.8%	60744	93.2%	173757	97.5%	65149	26.8%	178208	73.2%	243357	
1983	3506	8.7%	5344	2.3%	36875	91.3%	183917	97.2%	40381	17.6%	189261	82.4%	229642	
1984	2466	5.7%	5203	2.4%	40430	94.3%	170371	97.0%	42896	19.6%	175574	80.4%	218470	

SOURCE: IICA/MANR-I.L.P.



BARBADOS
INTEGRATED LIVESTOCK PROJECT
TABLE IV-2
DISTRIBUTION OF BUDGET AT MINISTRY OF AGRICULTURE

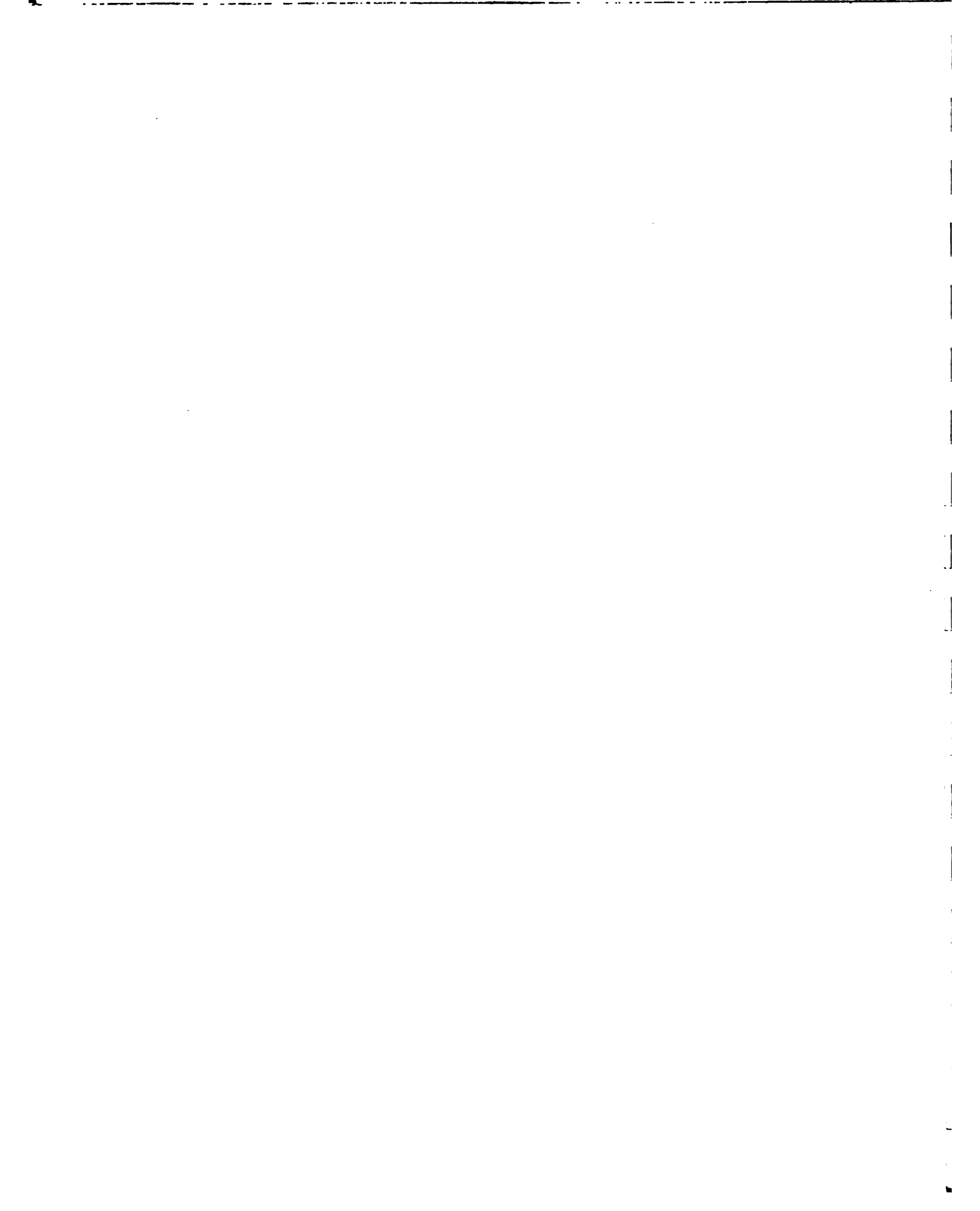
	CENTRAL ADMINISTRATION	LAND DVP. & SOIL CON.	CROP DEVELOPMENT	LIVESTOCK DEVELOPMENT	PRODUCERS PRICE SUPPORT	CONSUMERS AFFAIRS	FISHERIES
1980-1981							
current expenditures	23.6%	9.9%	29.6%	11.3%	6.7%	17.0%	1.9%
capital expenditures	40.9%	28.0%	11.4%	14.2%	1.6%	2.0%	2.0%
1981-1982							
current expenditures	27.9%	10.6%	32.5%	14.8%	0.0%	11.9%	2.3%
capital expenditures	41.8%	33.1%	9.0%	3.9%	5.8%	4.5%	1.9%
1982-1983							
current expenditures	26.0%	9.8%	29.1%	15.5%	0.0%	17.6%	2.1%
capital expenditures	70.0%	0.0%	18.9%	11.1%	0.0%	0.0%	0.0%
1983-1984							
current expenditures	25.3%	9.8%	30.8%	15.0%	0.0%	17.1%	2.0%
capital expenditures	32.0%	0.0%	47.4%	4.6%	0.0%	0.0%	16.0%
1984-1985							
current expenditures	26.3%	10.1%	28.6%	15.6%	0.0%	17.3%	2.1%
capital expenditures	7.5%	0.0%	76.1%	10.4%	0.0%	0.0%	5.9%
1985-1986							
current expenditures	27.3%	10.4%	26.8%	15.6%	0.0%	17.8%	2.2%
capital expenditures	5.1%	0.0%	68.8%	14.1%	0.0%	0.0%	12.0%

SOURCE: IICA/MANR-I.L.P.



CHAPTER V

PROJECT IMPLEMENTATION



CHAPTER V

PROJECT IMPLEMENTATION

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V. PROJECT IMPLEMENTATION

5.1. TECHNICAL ADMINISTRATIVE ORGANIZATION

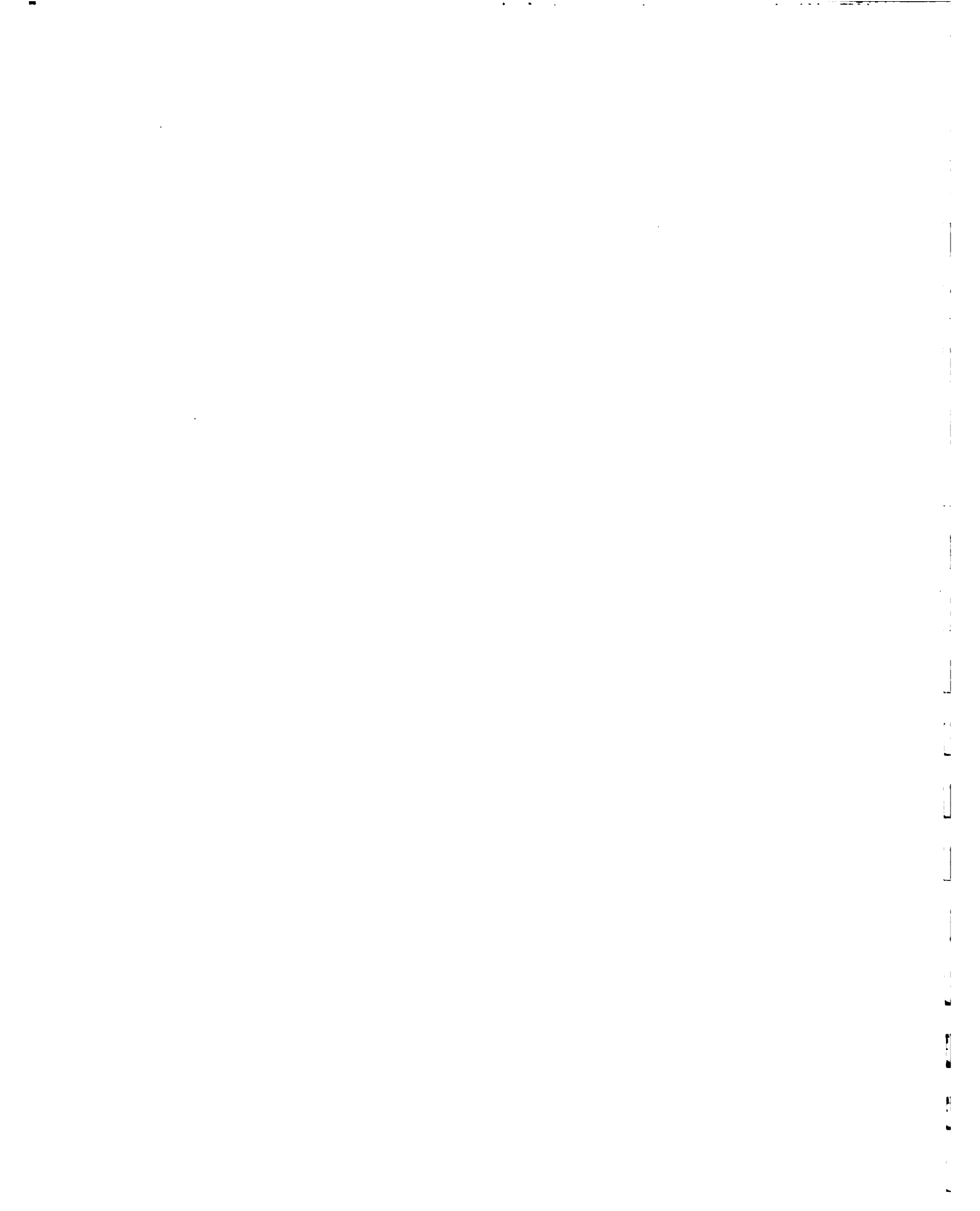
5.1.1 PUBLIC SECTOR RESPONSIBILITIES

There are two distinct levels of involvement of the public sector for the implementation of the project. At one level is the policy-making/regulatory function and on the other the responsibility for project execution.

5.1.1.1 Policy-Making and Regulatory Functions:

At the political level a close interaction will be needed between.

- The Ministry of Commerce and Industry.
- The Import Licensing Review Committee
- The Price Control Office of the Ministry of Commerce and Industry (MCI)
- The Ministry of Finance and Planning (MFP) including the Planning and Priorities Committee, (PPC) and the Public Investment Unit (PIU).



- The Ministry of Agriculture and Natural Resources, including specifically the Permanent Secretary and the Permanent Secretary for Special Assignments.
- The Dairy Development Committee (enhanced so as to include beef development)

These institutions and units would coordinate their regulatory activities for the purpose of creating the required conditions for increased local production and consumption of livestock products.

a. Tax and Subsidy Measures

Every six months a review of the level of taxes to be levied on imported meats and other livestock products and/or the levels of subsidies to the abattoir and meat packing facilities and/or to the milk plant if needed in order to achieve the stated goals of the Project. This should be organised by the Ministry of Finance and Planning in



consultation with the Ministry of Commerce, Industry and Consumer Affairs and MANR.

The specific units to be involved in this process would be the Division of Price Control (MCI) and the CAO (MANR) as Chairman of the proposed enhanced Dairy Development Committee. The latter would also be, through its D.C.A.O (E/D), responsible for the implementation of the project.

For these consultations to be carried out in a systematic way they should be placed in the Planning and Priorities Committee (PPC) with the technical coordination done by the Public Investment Unit (PIU).

As an integral part of the PPC, a subcommittee on livestock development could be created temporarily until local supply of livestock products reach, on a sustained basis, the desired targets.



The subcommittee could be integrated by a high ranking technical officer of the Price Control Division of the MCI, an official from BASIS (BMC), a representative of the Unit in charge of the I.L.P. and a representative of the PIU.

b. Pricing and Import Quota Regulations

The MTI, through its Price Control office, and in consultation with the Dairy Development Committee (Livestock Development Committee), will present pricing and import quota proposals to the Import Licensing Review Committee. These proposals will be based on the analysis of the impact that previous quotas and prices have had on the demand and supply of livestock products.

The Licensing Review Committee, which is chaired by the Prime Minister, may invite, as required, the Manager or Chairman of the firm running the abattoir and meat packing facilities.



The MANR will closely monitor the activities' costs and prices at the project level, in order to keep the above mentioned committees well informed.

5.1.1.2 Developmental Functions

a. Project Executing Unit

Within the Ministry, activities will be the responsibility of the Deputy Chief Agricultural Officer for Extension and Development. His Division together with the Project Executive Committee under the Permanent Secretary for Special Assignments will be the Project Executing Unit of the Integrated Livestock Project.

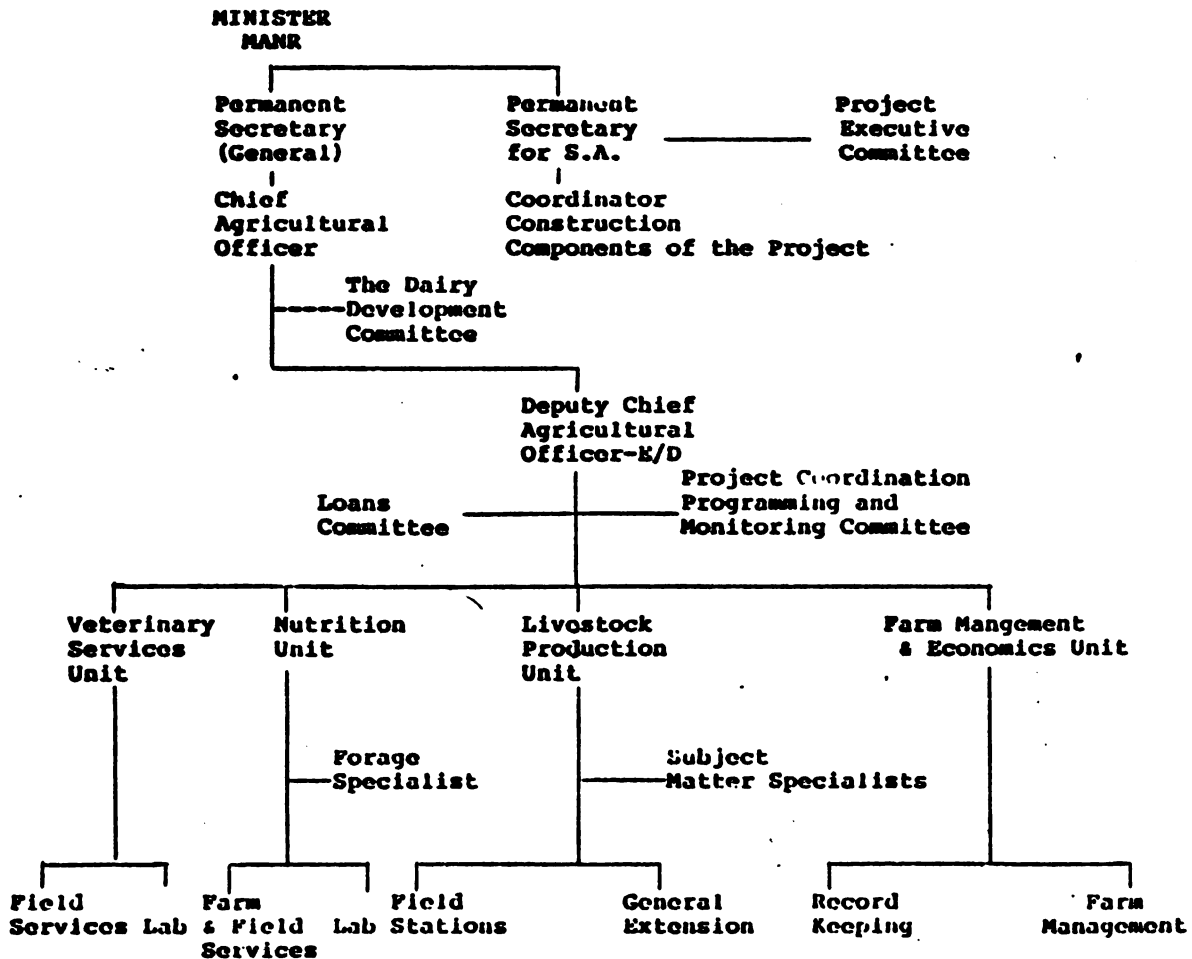
There will be no need for a separate unit, additional to the existing structure under the Deputy Chief Agricultural Officer for Extension and Development, because most of the activities under this structure will belong to this project. The I.L.P. will strengthen all livestock production activities of the Ministry



with the exception of services to the pig and poultry enterprises. Consequently, by the time this project is completed, it is expected that its activities will be well institutionalized.

The structure for the developmental activities of the project within the Ministry will be as follows:

Figure V-1





The additions to the present structure are:

- the Project Executive Committee, under the Permanent Secretary for Special Assignments
- the Farm Management Unit, under the Deputy Chief Agricultural Officer for Extension and Development.
- the Loans Committee

The other units under the DCAO are to be strengthened and restructured to function as described herein.

i) Organization and Functions of Units

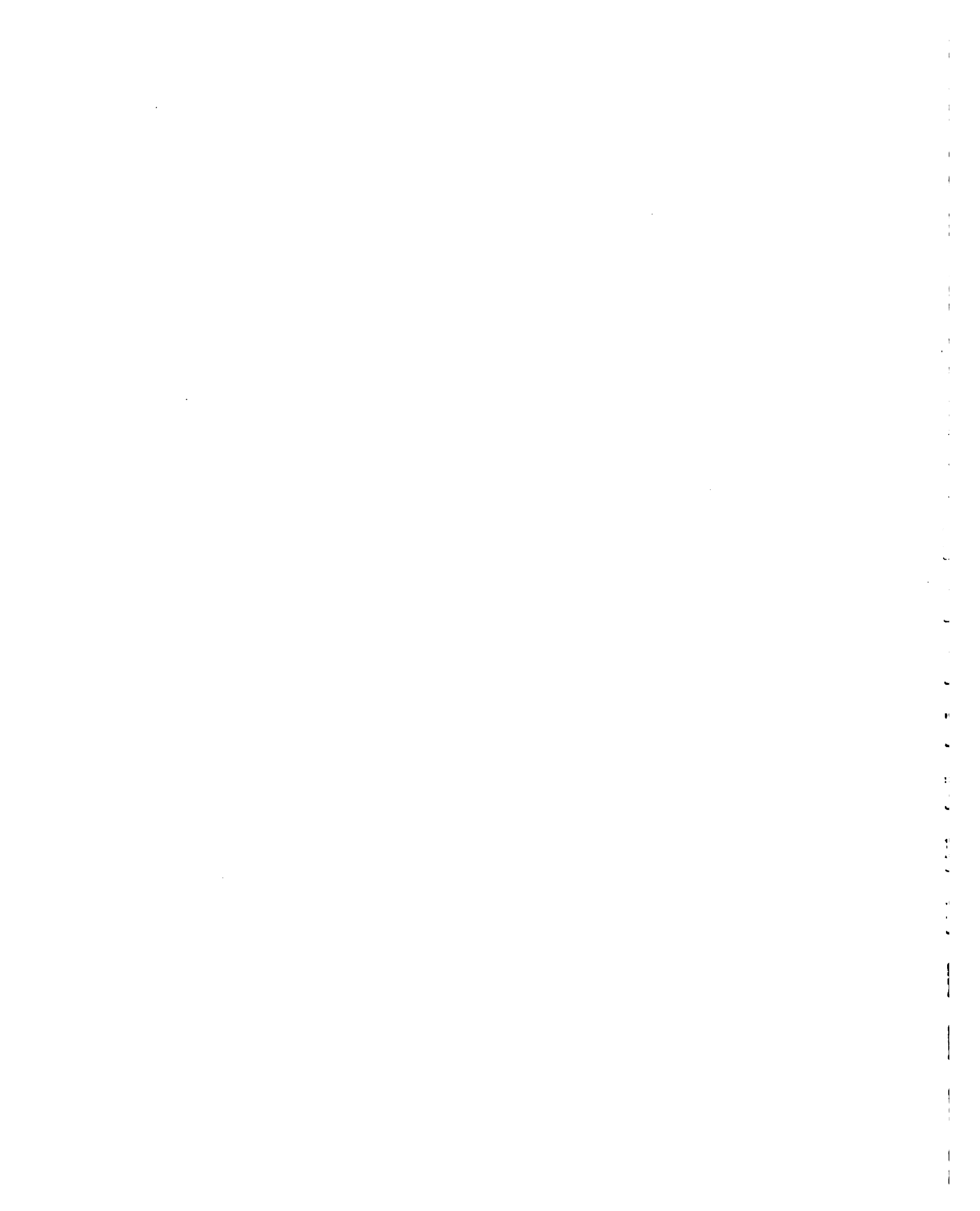
The Livestock Division of the Ministry of Agriculture and Natural Resources, (the Office of the DCAO-E/D) has the main responsibility



for promoting and supporting livestock production in the country. In coordination with livestock industrial activities already existing and/or to be developed under this project in the private sector, it will ensure that consumption of local livestock products, particularly of local beef, increases steadily substituting for imported meats up to the point where local production is a viable business.

ii. Project Executive Committee (PEC)

This Committee will be chaired by the Permanent Secretary for Special Assignments and will be integrated by the Chief Agricultural Officer, the Deputy Chief Agricultural Officer (E/D) the Permanent Secretary or his nominee and the Coordinator for the construction components of the project. This Committee will meet at least once a month.



Initially, and until the abattoir and other constructions are fully operational this Executive Committee will concentrate on the construction and operationalization of the abattoir. In general, its functions will be to review and coordinate the overall work plans, as well as to monitor and evaluate their progress. The Permanent Secretary for Special Assignments, as Chairman of the Committee, may invite other representatives of the public or private sectors, as he sees fit, for better monitoring and decision making by the Committee.

iii). Construction Coordinator

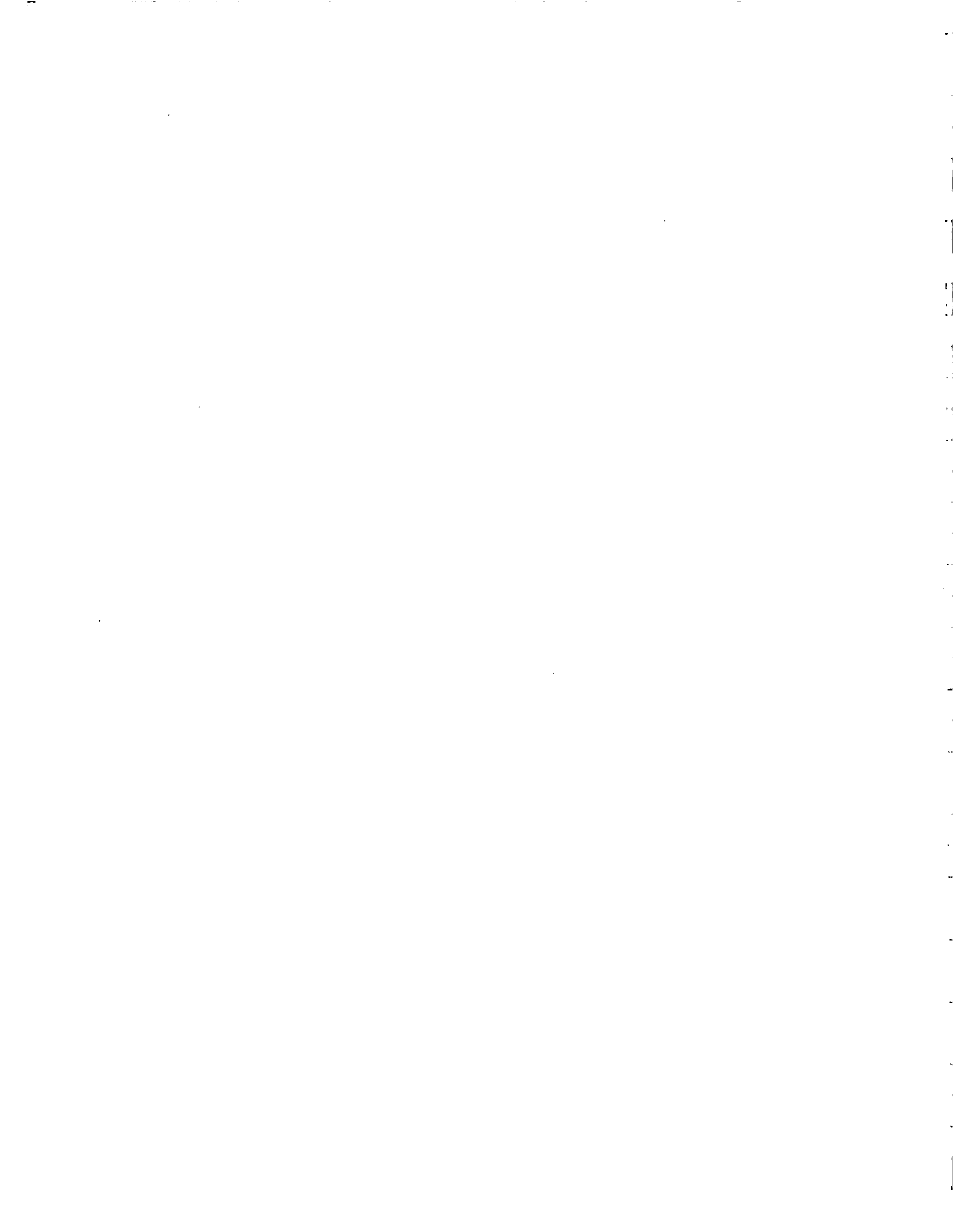
This officer will be a specialist in the supervision and monitoring of all project construction works, under the Permanent Secretary for Special Assignments, and will coordinate the construction and keep the PSSA and



the Executive Committee duly informed about progress and difficulties in this area.

iv) Dairy Development Committee
(DDC) (Livestock Development
Committee)

This Committee already exists with specific functions to promote the dairy and livestock sector as a whole (See Chapter IV). Chaired by the CAO, this Committee is integrated by a total of ten members. Five of them are MANR officers and five are representatives from both public and private sector who are related to the development and support of the dairy and livestock sector and industry-related activities. This Committee meets at least once every three months. Its main functions are to advise the Ministry on issues concerning the development of the industry as a whole, analysing and making recommendations about work



plans as well as reporting on actual performance and impact. It is particularly concerned with the improvement of quality in livestock; local production and demand. Among others, it analyses credit availability, legislation, (additions and amendments), training and extension activities, price control, import quotas, quality standards and regulations, genetic improvement, control and/or eradication of diseases, and any other relevant matters referred to the Committee from time to time by the Minister.

The DDC is a two-way communication channel between the Minister and this project. Through it, the Minister can get the necessary advice for policy making, monitor policy implementation and introduce the necessary adjustments.

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v) Deputy Chief Agricultural
Officer -E/D

The DCAO-E/D reports directly to the CAO, and will participate in the Project Executive Committee and in the Dairy Development Committee, and serve both as the technical secretary. He will make sure that all the information required by these committees is available on time and is relevant. This officer will also make sure that the recommendations and decisions made by the DDC and PEC are taken into consideration, and implemented as required.

Under the DCAO-E/D there are four units. Three of them exist already; the fourth, the Farm Management Unit, is new.



vi). Farm Management Unit

This unit, reporting directly to the DCAO-E/D, will be under the direction of a senior agricultural economist, who will be supported by three high level professional assistants: two in Farm Management (record keeping, farm management-advisory services and enterprise analysis) and the third in Business Administration.

The main functions of this unit will be:

- to assist farmers in record keeping and general farm management.
- to establish and develop the service centers.
- together with professionals of the other executing units of the execution of the project, analyse recommendations to be conveyed to farmers.

- participate in design, implementation and follow-up of extension and training programmes addressed to beneficiaries of this project.

vii) Livestock Production Unit

It will be headed by of a senior livestock specialist, reporting directly to the DCAO-E/D. Under him will be the Field Station Managers and the General Extension Units. This officer will also have a staff group of subject-matter specialists.

There will be one subject-matter specialist for each of the following areas; dairy, beef, sheep, information and communications. These specialists will work in both, research and extension. In relation to research these specialists will be attached to the field stations as decided by the Chief of the Unit. They will then carry out the



necessary research projects within their respective fields of specialization. These projects may physically be located either on these field stations, or on private cooperating farms which are appropriately located for their demonstration impact.

These specialists will also act as specialized advisors to the Extensionists in the Extension sub-unit, and will participate in training programmes for extensionists and farmers, as required.

The Extension sub-unit will have six generalists to provide integral technical assistance services to farmer beneficiaries of this project. As they come across with problems within the realm of the subject areas represented above, they will communicate with the specialists and request their advise as required.



Field station sub-units, Greenland, Home, Central Livestock Stations (CLS) and Sedgepond Stations, will be devoted, under the leadership of the subject matter specialists, to both research and extension, and provide their facilities for field training and extension events as required. (See Chapter III for a description of the operation of these stations). However, as far as possible, extension and training events will be carried out in the farmer's holdings in order to have the maximum "demonstration effect".

These events, will be supported by the Information and Communication specialists in the staff group and of the Farm Management Animal Nutrition and Veterinary Services Units as required.



viii). Nutrition Unit

It will be headed by a Senior Animal Nutrition Specialist, reporting, directly to the DCAO-E/D, as in the case of the other units. The Senior Animal Nutrition Specialist will manage the farm and field services and the Animal Nutrition Laboratory. A forage specialist will also be attached to this unit. These sub-units will strengthen their current activities, so that they will support the activities of the project.

ix) Veterinary Services Unit

This unit will be coordinated by a Senior Veterinary Officer. Under this officer there will be field service sub-unit and the Veterinary Diagnostic Laboratory.



The chief of this Veterinary Service Unit reports to the DCAO-E/d who will see that it closely coordinates and supports all other units in charge of project activities.

x. Programming and Monitoring Advisory Committee (PMAC)

All the heads of units described above will constitute the Programming and Monitoring Advisory Committee which will be chaired by the DCAO-E/D.

A Senior Management, Programming and Monitoring specialist will be appointed, under the DCAO-E/D who will act as the technical secretary of the PMAC. He/she will also have a professional assistant. The main responsibilities of this technical secretariat will be:

- to prepare guidelines for the programming of activities.



- to prepare guidelines for work plans.
- to prepare guidelines for the preparation of progress reports.
- to consolidate work plans and programmes and monitor implementation.

The PMAC would meet at monthly intervals to examine work plans and progress reports, and make recommendations to the DCAO-E/D in relations to:

- adjustments in work plans.
- measures to be taken to circumvent problems.

These same officers will also participate, as required, in the Project Executive Committee.

xi) Loans Committee

This Committee will be chaired by the Deputy Chief Agricultural Officer-E/D and integrated by:

- a nominee from the Permanent Secretary for Special Assignments.
- the Heads of the Livestock Production and Farm Management sub-unit.

The main functions of this Committee will be to analyse and approve, from a technical point of view, the loan applications submitted for financed under the I.L.P.

These applications may reach this committee through either MANR's livestock extensionists or the Barbados National Bank.

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If the application is received at MANR, it is sent after analysis to the BNB with pertinent recommendations. If it is received at BNB, it sends it first to MANR for technical assessment.

The recommended applications with MANR's technical views are then subjected to a financial analysis at BNB and its Loan Committee decides finally on whether the loan will or will not be granted. If the BNB has any question or doubt on livestock technical aspects, it may spell them out and send the application back to MANR for further study and recommendation.

This Committee will meet once a week. It is the responsibility of the Head of the Livestock Production Unit to have all loan applications analyzed and to submitted with all pertinent recommendations to the Committee once a week. Summaries of



these analyses, should go to each one of the Committee members at least one day before their weekly meeting. (Loan regulations are presented in Annex V-1).

b. Project Coordination

As mentioned before, the execution of the project requires the coordination and orchestration of both public and private sectors at three distinct levels:

- Public Policy-making
- Public Sector Operations, and
- Private Sector Operational

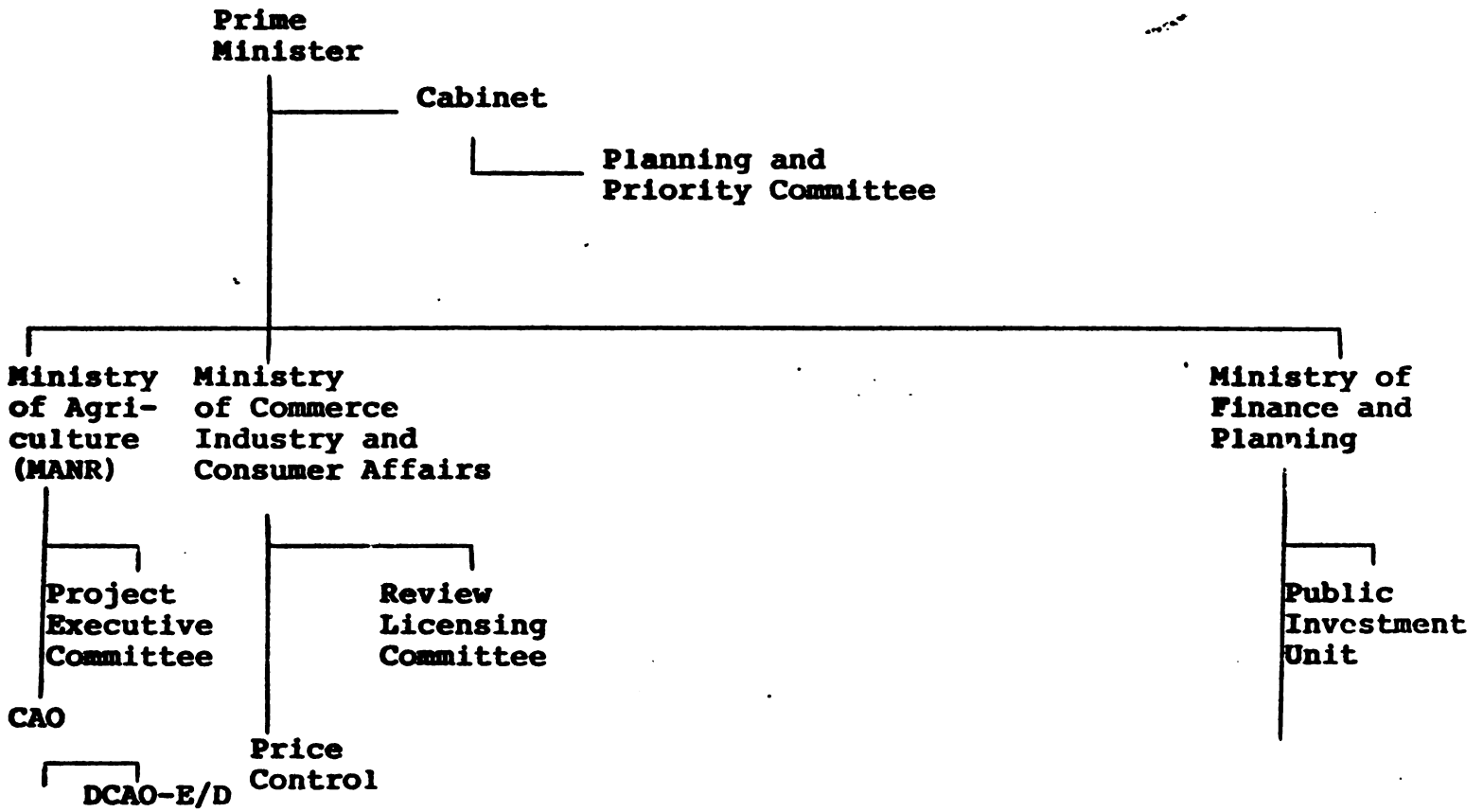
1) Coordination of Public Policies

In figure V-2, the institutions involved at this level are presented. The main activities will relate to:

- Price Control by the Ministry of Commerce, Industry and Consumer Affairs.



Figure V-2





- determination Import Quotas at the Review Licensing Committee also under the Ministry of Commerce, Industry and Consumer Affairs.

ii) Coordination of Public Operations

The two institutions involved at this level will be the MANR and the Barbados National Bank through the respective units described before.

The BNB will administer the credit component of the project through Agricultural Division. It will either create an ad-hoc I.L.P Loans Committee or assign that function to one of the existing Loan Committees.

In any case, the BNB will have the final say as to whether loans are granted, on the basis of the financial feasibility Credit worthiness and reasonable financial

projections will be the criteria for analysing credit applications, but in respect of the technical aspects of the applications, the BNB has to abide by the MANR's recommendations.

The operational and developmental activities should continuously interact with the public policy-making level through the Ministry of Agriculture and Natural Resources. The MANR will assign the responsibilities for coordination of these activities to its Permanent Secretary for Special Assignments.

iii) Coordination of Private Sector Operations

At this level, the institutions involved are the company to be established to run the livestock complex, the farmers and the traders of livestock products in the domestic market.



5.1.2. PRIVATE SECTOR RESPONSIBILITIES

In addition to the role that farmers will play in the development of the project, a key element will be the management of the abattoir and meat processing facilities. As the only purchaser of the live animals for slaughter, this abattoir would act as a monopsony, and, as the only purveyor of fresh meat in Barbados, it would enjoy a monopoly. It will be obvious that such a monopsony/monopoly will require careful regulation in order to avoid any abuses or excesses in the use of such power. It could be similar in its functions to the public utility companies.

The company would be a joint venture between the livestock producers who will own 75% of the shares and the Government which will own 25% of the shares.

A General Manager would be appointed by the board, who has been trained in the management of this type of business. To ensure the success of the complex, an experience consultant expatriate could be appointed for, say, two years in the first instance, who would run the company while training



the prospective manager. The company will be required to pay its way, Nevertheless, the nature of livestock production in the island plus the characteristics of an increasingly subsidized international meat market will probably require protection by the Government.

5.2 PROJECT EXECUTION PLAN (PEP)

The Project will be executed by the Ministry of Agriculture and related units, as described in 5.1 of this chapter.

The strategy for the implementation of the project is presented in Chapter III. It is essential that the marketing component of the project be initiated at a very early stage. In Annex V-4 a detailed Preliminary Activity Plan is presented. Once the implementing unit is established it will have to prepare a more detailed activity plan which will include information not currently available and adjust to changes that will occur between the feasibility study and the implementation of the project.

Following the Plan is the chronogram of the Preliminary Activity Plan. Also a diagram showing the



sequence of activity for the implementation of the project is presented in Annex V-4..

5.3 MONITORING AND EVALUATION SYSTEMS

The Government of Barbados, through its Ministry of Finance and Planning, has a well established monitoring system for investment projects. In Annex V-5, the description of the general system can be found.

For the specific purpose of the Integrated Livestock Project, the reporting will have to be every 3 months during the pre-implementation period, and every month once implementation has begun.

The main purpose of the system should be to monitor the implementation of the project in order to improve its efficiency, and evaluate the impact of those actions in order to improve its effectiveness.

The forms, as detailed in Annex V-5, will be filled by each of the units responsible for activities in the project and consolidated at the level of the Permanent Secretary for Special Assignments, who will then report to the P.I.U. of the MFP.



More specifically, the monitoring and evaluation system for the I.L.P. will have three levels:

- Annual Programme
- Quarter Programming and Reporting
- Analysis and consolidation.

5.3.1. Annual Programming

Before the start of each fiscal year, each unit has to present its budget estimates for the year. Within the Integrated Livestock Project this will be part of an annual programming exercise that should bring together activities, outputs and required resources, with a rough calendar of implementation. This will be consolidated at the PEC level. These programmes should have the following information:

- Outputs expected to be achieved.
- Activities necessary to obtain those outputs.
- Financial resources to perform activities.
- Calendar of activities and disbursement, by quarter.



5.3.2 Quarterly Programming and Reporting

Before the end of each quarter, based on the overall annual programme prepared, each unit should prepare a more detailed programme of work for the coming quarter, in which the activities defined will be broken down in tasks. Resources required should also be included, as well as the expected outputs. A calendar of activities should also be specified.

A report should be prepared at this same time, based on the programming done the previous quarter.

- activities and tasks developed
- expenditures
- reasons for departure from programmed activities (if any).

If the monthly reporting is still enforced by the PIU, it can be prepared based on the quarterly programme.



5.3.3. Analysis and Consolidation

At the PEC level all the information generated for annual/quarterly or special reports should be consolidated and analysed for the guidance of decision making within the project and for the PIU when requested.

Specific forms will be designed for the implementation of the projects. Also the following reports will have to be provided to the Bank:

- Baseline information
- From year 5 onwards, every 2 years, a report on the impact evaluations of the programme.

A clear definition of the methodology to use will have to be prepared and sent to the Bank.

5.3.4 Variables and Indicators

For a sound and meaningful system to be developed it will be necessary to define adequate indicators that reflect the targets and objectives of the project. Through their measurement and adequate analysis, a proper feed-back will be done.



CHAPTER VI

PROJECT JUSTIFICATION



CHAPTER VI

- 6.1 Technical Feasibility
- 6.2 Financial Feasibility
- 6.3 Economic Feasibility

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- Table VI-2 Estimated Total Income - Cattle
- Table VI-3 Estimated Total Income - Sheep
- Table VI-4 Estimated Incremental Income - Hog Slaughter
- Table VI-5 Estimated Total Income of the Project
- Table VI-6 Estimates of Standard Conversion Factor for Abattoir
- Table VI-7 Estimates of Standard Conversion Factor for Farm Level Expenditures
- Table VI-8 Estimated Total Economic Costs
- Table VI-9 Estimate of Economic Rate of Return
- Table VI-10 Estimate of Economic Rate of Return, Assuming a Milk Production of 15 lbs/cow/day
- Table VI-11 Estimate of Economic Rate of Return, Assuming a 20% Decrease in Beef Price
- Table VI-12 Estimate of Economic Rate of Return, Assuming a Price for Mutton of Bds. \$3.00/lb.
- Table VI-13 Estimate of Economic Rate of Return, Assuming a 50% Reduction in the Price of Offals



VI. PROJECT JUSTIFICATION

6.1 TECHNICAL FEASIBILITY

The Integrated Livestock project has been conceived to overcome the constraints that a country with the characteristics of Barbados present to livestock development. In this sense, the scarcity of land, lack of widespread commercial herds, lack of readily available local feed stuffs and no tradition on livestock production for commercial purposes are some of the main problems that will be faced in the endeavour.

On the other hand, Barbados has an excellent genetic material in its dairy herd that only requires better feeding in accordance with the lactation period, or growth stage of the animal.

In terms of sheep, as it has been pointed out, the Blackbelly is an excellent breed, well adapted to the environment with a tremendous prolificity that could be readily up-graded from its current level by an adequate nutritional programme.

The know how in terms of immediate results is already

available and the project intends to make it accessible to farmers through the extension and research programme.

One of the main constraints to the development of the livestock sector has been found to be the marketing system. One of the main purposes of the I.L.P. is precisely to lift these constraints in order for the farmers to be able to realize the benefits of improved production and productivity.

At the same time it will boost the scale for local feedstuff to partially substitute the import of grains. If that is also accomplished (and there is no reason why it cannot be so) the livestock development in Barbados will be self sustained and legitimately Barbadian.

Great care has been taken in reaction to pollution aspects due to the operation of the abattoir, in annex III-4 some consideration on the subject are presented.

6.2. FINANCIAL FEASIBILITY

The financial feasibility of the project is high when compared with the financial requirements of the proposal. In terms of the Government of Barbados, the project will only require some B'dos \$ 2 million a year during the first four years of the project, that is the disbursement period (see



table III-22. In terms of the Ministry of Agriculture, the project will put a minor requirement in relation with the current allocated resources. In effect, for the past six budgetary exercises the amount of money allocated to the Ministry has oscillated between B'dos \$ 4.2 million and B'dos\$ 8.2 million a year. On more specific terms, the implementation of the project would only add extra financial requirements to the Ministry, that represent between 5 and 10% of the current levels of expenditures.

Despite the fact that the credit conditions to be obtained for the financing of the project will depend on the negotiations that the Government of Barbados will eventually carry on with the lending institution, in table VI-1 an estimate of the servicing of the debt is presented, in order to give an idea of the burden that it would signify to the Country. Under the assumptions made (see table), the servicing of the debt will demand a little over US\$ 830 thousand a year. The foreign exchange saved and generated by the proposed project means that this debt service should be easily taken care of.

6.2. ECONOMIC FEASIBILITY

For the economic evaluation of the Project prices have been adjusted to reflect their opportunity cost. In case of the outputs, they were valued at the import/export prices of the products they substitute.



They were valued as follows:

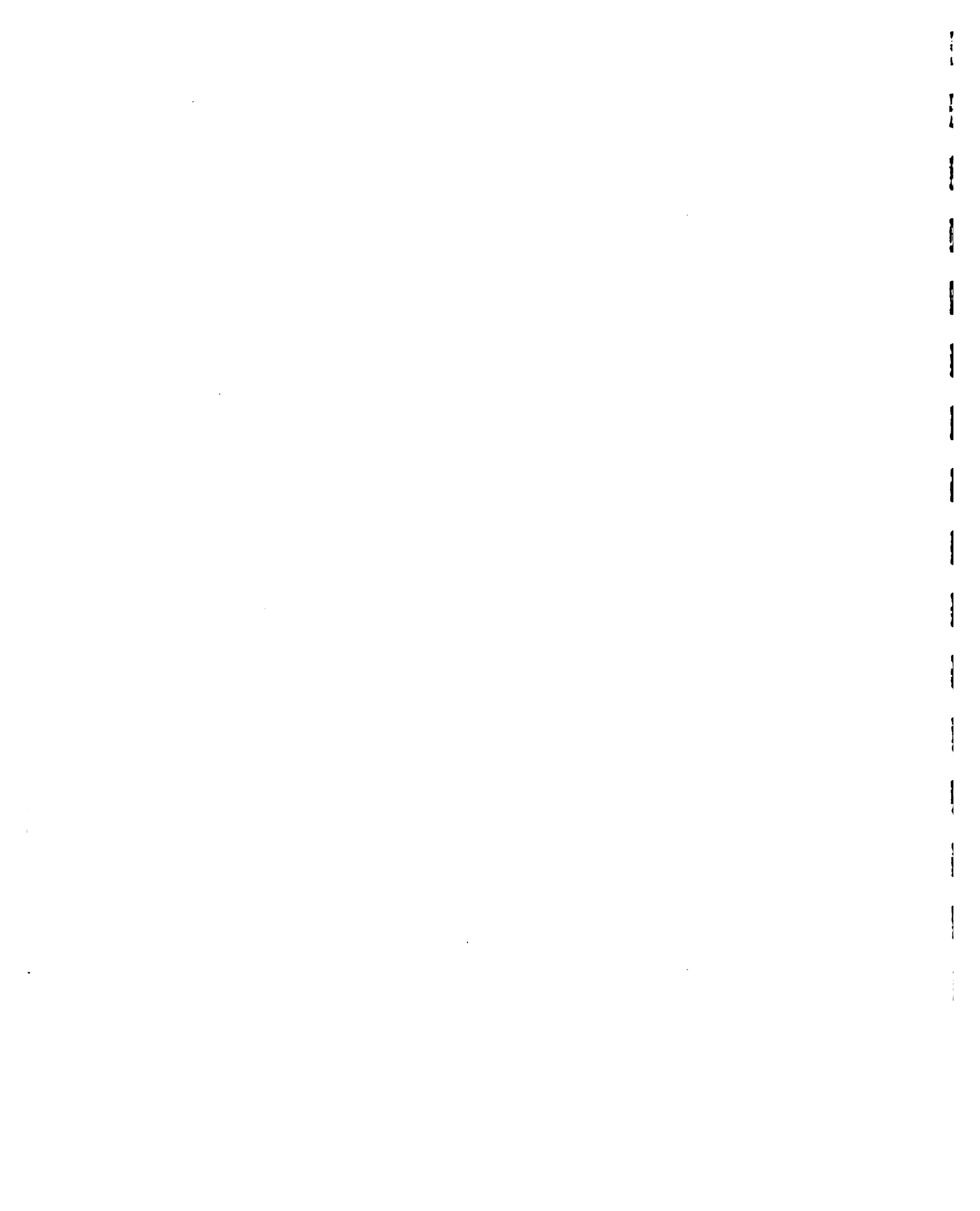
ECONOMIC PRICES FOR PROJECT OUTPUTS

CONCEPT	UNIT PRICE	
	B'dos \$	US\$
Beef	4.60/kg	2.30/kg
Milk	0.275/lt	0.14/lt
Mutton	3.90/kg	1.95/kg
Hides	20/hide	10/hide
Sheep skins	3/skin	1.5/skin
Offals	2/kg	1/kg

Note:milk powder to fluid milk = 9.6

These prices were derived from the c.i.f. values of imports of meat and milk powder and from the f.o.b. prices of hides & skins and offals. For the former there is a market in the Montserrat tannery, for the latter, processing industries currently under construction have expressed their interest.

Tables VI-2 through VI-4 present the estimated economic income for cattle, sheep and pork, respectively. Total project income ranges from B'dos \$ 2.7 million to B'dos \$ 6.8 million from year 8 onwards (see table VI-5).



To adjust project costs corrections were made for unskilled labour and taxes leaving the foreign exchange rate unchanged since with the information available it doesn't seem to be much distortion in its value, despite the fact of a fixed rate.

For the abattoir and farm level costs a standard conversion factor was estimated, tables VI-6 and VI-7, and for the expenses for research and extension the foreign exchange component and 100% of technical personnel costs were used. A summary of total estimated economic costs is presented in table VI-8.

Table VI-9 presents the economic evaluation of the project. It shows an internal rate of return of a little over 18%, which is an adequate yield, considering an opportunity cost of capital of 12%, as indicated by the Ministry of Finance and Planning.

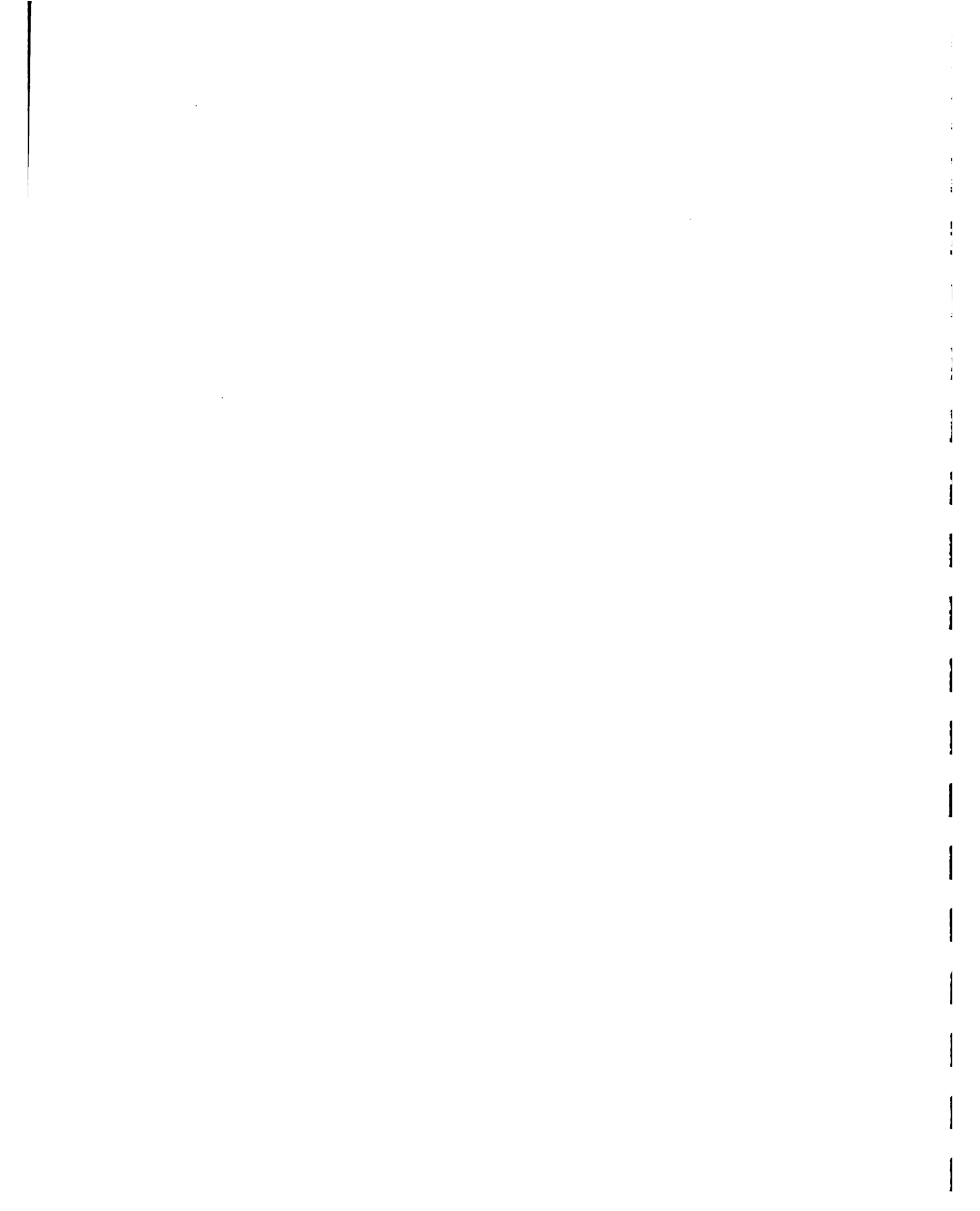
In order to test the sensibility of the project, the economic rate of return was estimated for the following conditions:

- 15 lbs of milk production/cow/day
- 20% decrease in beef price
- \$3/ kg of mutton
- a 50% reduction in the price of offals



The estimates are presented in tables VI-10 through VI-13, respectively. In all cases the project does not suffer much with the changes, except for the case of the offals, where the net benefit becomes negative along the period studied. It should be recognized that the latter was an important drop in the price.

In summary, the economic evaluation of the Project show that it is a very feasible endeavour, with a high return under the assumptions made for the study, and not much sensibility to changes in income, except for the offals.



BARRIOS
INTEGRATED LIVESTOCK PROJECT
TABLE VI-1
DEBT SERVICE OF THE PROJECT
('000 US\$)

repayment period: 20
 interest rate: 6.06
 commission: 1.25% on non-disbursed funds
 inspection fee: 1% of total credit, paid 1/4 a year

CONCEPT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
PRINCIPAL	2815.3	5099.0	7697.4	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0	10475.0
INTEREST	225.2	400.0	628.8	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0
INSPECTION FEE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL PAYMENT	225.2	400.0	628.8	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0	838.0
COMMISSION	95.7	18.4	32.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEFERRED FEE	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2
TOTAL PAYMENT	171.9	317.8	458.9	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2	654.2

SOURCE: IICA, WMB-I.L.P.

BARBADOS
INTEGRATED LIVESTOCK PROJECT
TABLE VI-2
ESTIMATED TOTAL BENEFITS - CATTLE COMPONENT

CONCEPT	1	2	3	4	5	6-20
I. DAIRY						
Breeding cows		300	700	1000	1300	1300
& cows in production		234	546	780	1014	1014
milk production (lbs)		1427400	3330600	4758000	6185400	6185400
production value ('000 \$)		177.8	414.8	592.6	770.4	770.4
II. BEEF/DAIRY						
& heifers			54	126	180	234
carcass yield (lbs)			29241	68229	97470	126711
production value ('000 \$)			61.1	142.7	203.8	264.9
& culled cows		39	91	130	169	169
carcass yield (lbs)		23400	54600	78000	101400	101400
production value ('000 \$)		48.9	114.2	163.1	212.0	212.0
& steers		99	231	330	429	429
carcass yield (lbs)		57173	133403	190575	247748	247748
production value ('000 \$)		119.5	278.9	398.5	518.0	518.0
& hides (incremental)		138	376	586	778	832
value ('000 \$)		2.8	7.5	11.7	15.6	16.6
& of hides (current prod.)		2200	2200	2200	2200	2200
value ('000 \$)		44.0	44.0	44.0	44.0	44.0
offals incr. ('000 B'dos \$)		342.6	916.0	1414.1	1873.3	1989.9
offals current ('000 B'dos\$)		440.0	440.0	440.0	440.0	440.0
III. TOTAL BEN. ('000 B'dos\$)						
milk		177.8	414.8	592.6	770.4	770.4
meat		168.5	454.2	704.2	933.8	995.0
hides		46.8	51.5	55.7	59.6	60.6
offals		782.6	1356.0	1854.1	2313.3	2429.9

SOURCE: IICA/MANR-I.L.P

ASSUMPTIONS:

- 78% of total cows in production
- milk production = 20 lbs/cow/day - 305 days
- culled heifers 18%
- culled cows 13%
- steers 33%
- \$ 2.09 per lb of carcass meat
- \$.125/lb milk
- \$ 2.0/kg offals
- \$ 20/ hide



BARBADOS
INTEGRATED LIVESTOCK
TABLE IV-3
ESTIMATED TOTAL INCOME OF PROJECT - SHEEP

CONCEPT	1	2	3	4	5	6	7	8-10
number of farms incorporating		300	300	600	300			
I. MEAT PRODUCTION								
incremental volume (kg)		5400	26400	60000	117600	161400	196200	210000
incremental value ('000 B'dos\$)		21.1	103.0	234.0	458.6	629.5	765.2	819.0
II. OFFALS								
current number of sheep		17500	17500	17500	17500	17500	17500	17500
incremental # of sheep			2400	4800	9600	12000	12000	12000
value offals ('000 B'dos\$)	0	262.5	299.5	334.5	406.5	442.5	442.5	442.5
III. SKINS								
value ('000 B'dos \$)		52.5	59.7	66.9	81.3	88.5	88.5	88.5
IV. TOTAL ('000 B'dos\$)		336.1	461.2	635.4	946.4	1160.5	1296.2	1350.0

SOURCE: IICA/MANR-I.L.P.

ASSUMPTIONS:

- 7.5 Kg offals per animal
- B'dos \$ 3.9 per kg carcass meat
- B'dos \$ 2.0 per kg offals
- B'dos \$ 3.0 per skin

BARBADOS
INTEGRATED LIVESTOCK PROJECT
TABLE VI-4
ESTIMATED INCREMENTAL INCOME - HOG SLAUGHTER

CONCEPT	1	2-20
kg of hogs slaughtered		30000
offals (ton)		613.6
value ('000 B'dos \$)		1227.3

SOURCE: IICA/MANR-I.L.P.

ASSUMPTIONS:

- B'dos \$ 2.0 per kg offals



BARBADOS
INTEGRATED LIVESTOCK PROJECT
TABLE VI-5
ESTIMATED TOTAL INCOME OF THE PROJECT
('000 B'dos \$)

CONCEPT	1	2	3	4	5	6	7	8-20
BEEF/DAIRY		1175.6	2276.6	3206.6	4077.1	4255.9	4255.9	4255.9
SHEEP		336.1	461.2	635.4	946.4	1160.5	1296.2	1350.0
HOGS		1227.3	1227.3	1227.3	1227.3	1227.3	1227.3	1227.3
TOTAL	0.0	2739.0	3965.0	5069.3	6250.8	6643.6	6779.3	6833.1

SOURCE: IICA/MANR-I.L.P.



BARBADOS
INTEGRATED LIVESTOCK PROJECT
TABLE VI-6
ESTIMATES OF STANDARD CONVERSION FOR ABATTOIR

CONCEPT	FINANCIAL VALUE	COEFF.	ECONOMIC VALUE	STANDARD FACTOR
LABOUR				
professionals	110.0	1.00	110.0	
unskilled	860.0	0.80	688.0	
			0.0	
water	22.0	0.30	6.6	
electricity	60.0	0.66	39.6	
propane	1.0	0.10	0.1	
maintenance	8.0	0.80	6.4	
supplies	17.0	0.50	8.5	
			0.0	
			0.0	
			47.3	
			18.1	
TOTAL	1078.0		924.6	0.86

SOURCE: IICA/MANR-I.L.P.



BARBADOS
INTEGRATED LIVESTOCK PROJECT
TABLE VI-7

ESTIMATES OF STANDARD CONVERSION FACTOR FOR FARM LEVEL EXPENDITURES

CONCEPT	FARM MODEL 7			FARM MODEL 14		
	FINANCIAL VALUE	ECONOMIC COEFF.	STANDARD VALUE	FINANCIAL VALUE	ECONOMIC COEFF.	STANDARD VALUE
LABOUR						
farm manager	18.0	1.00	18.0	1.8	1.00	1.8
farm labour	41.6	0.80	33.3	10.4	0.80	8.3
FEED						
fodder			0.0			0.0
molasses	7.6	0.50	3.8	6.1	0.50	3.1
concentrates	52.7	0.38	20.0	112.1	0.38	42.6
VETERINARY EXPENSES	10.0	0.90	9.0	3	0.90	2.7
FUEL AND LUBRICANTS	20.1	0.40	8.0	3.2	0.40	1.3
REPAIRS AND MAINTENANCE	14.5	0.80	11.6	4.8	0.80	3.8
FERTILIZER	6.9	0.87	6.0	2.3	0.87	2.0
UTILITIES	19.6	0.66	12.9	6.8	0.66	4.5
MISCELLANEOUS	11.6		6.7	2.5		3.9
CONTINGENCIES	4.1		2.6	3.1		1.5
TOTAL	206.7		132.0	156.1		75.4
			0.64			0.48

SOURCE: IICA/MANR-I.L.P.



BARBADOS
INTEGRATED LIVESTOCK PROJECT
TABLE VI-8
ESTIMATED TOTAL ECONOMIC COSTS
('000 B'608 \$)

CONCEPT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
I. MARKETING & PROCESSING																				
Abattoir																				
-design	125.0																			
-construction	1314.0																			
-equipment	368.0																			
-operation		907.1	922.5	927.1	927.9	927.9	927.9	927.9	927.9	927.9	927.9	927.9	927.9	927.9	927.9	927.9	927.9	927.9	927.9	927.9
Service Centers	120.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0	295.0
II. ANIMAL HEALTH	152.1	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6
III. RESEARCH & EXTENSION	845.6	513.9	362.4	352.9	326.1	326.1	326.1	326.1	326.1	326.1	326.1	326.1	326.1	326.1	326.1	326.1	326.1	326.1	326.1	326.1
IV. TECHNICAL COOPERATION																				
Training	103.0	54.0	39.0	15.0																
Consultants	108.0	72.0																		
V. FARM LEVEL																				
Beef/Dairy	202.9	870.5	1650.9	2436.8	2941.2	2990.0	3002.8	3119.6	3081.2	3192.9	3149.7	3143.7	3120.9	3086.0	3103.6	2867.3	2884.4	2876.9	2816.0	2825.6
Sheep	140.8	297.3	618.1	813.8	876.5	908.0	908.0	908.0	908.0	908.0	908.0	908.0	908.0	908.0	908.0	908.0	908.0	908.0	908.0	908.0
VI. TOTAL	3471.4	3654.4	3932.5	4885.3	5405.4	5477.6	5496.4	5497.2	5536.8	5480.5	5637.3	5631.4	5608.5	5573.6	5591.2	5354.9	5372.0	5364.5	5303.6	5313.2

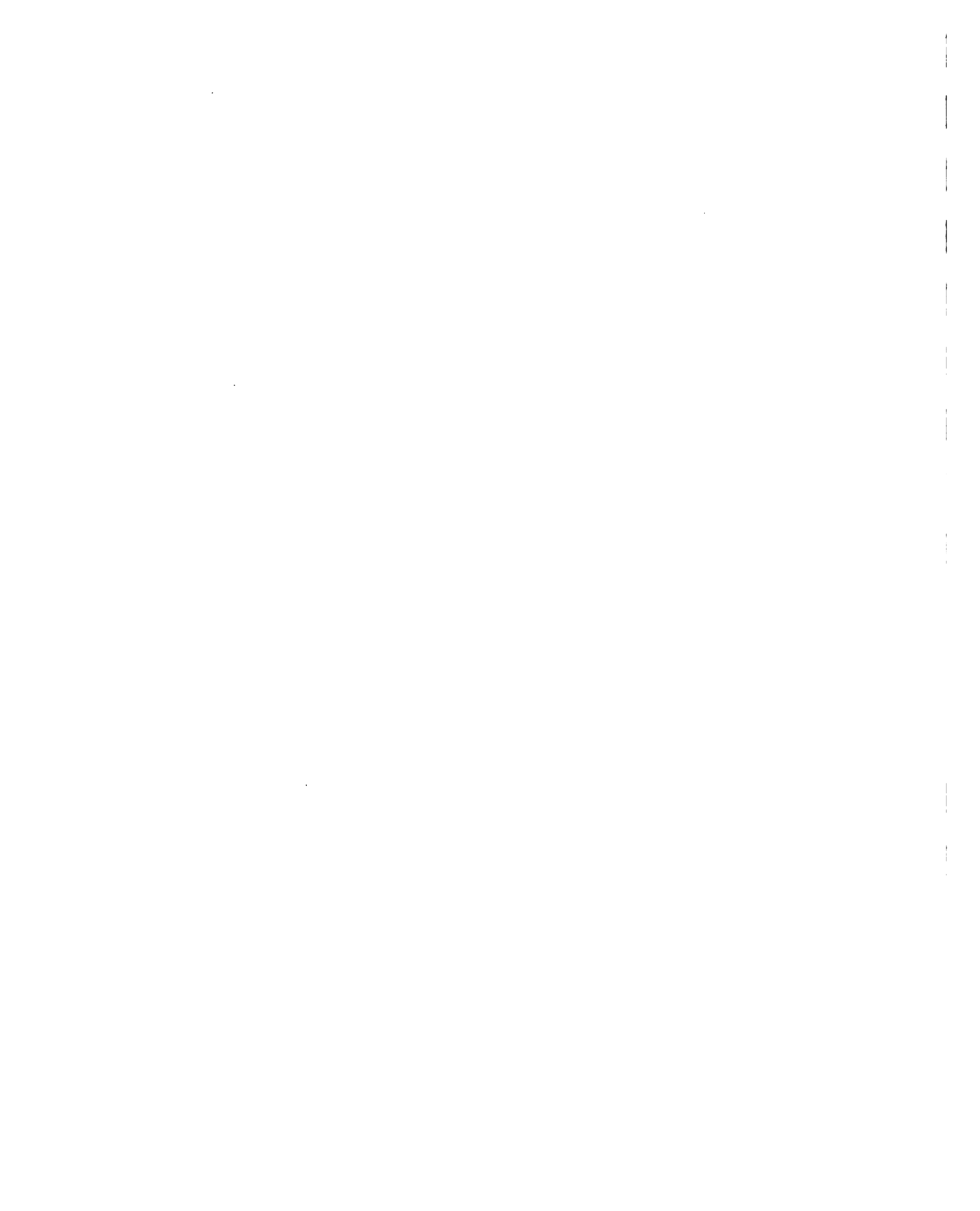
SOURCE: IICA/MARS-I.L.P.
Note: economic costs of feedstuff are considered at farm level

BARBADOS
 INTEGRATED LIVESTOCK PROJECT
 TABLE VI-9
 ESTIMATE OF ECONOMIC RATE OF RETURN
 ('000 B'dos \$)

CONCEPT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
TOTAL BENEFITS	0.0	2739.0	3965.0	5069.3	6250.8	6643.6	6779.3	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1
COSTS	3471.4	3054.4	3932.5	4885.3	5465.4	5477.6	5499.4	5467.2	5368.8	5480.5	5637.3	5631.4	5608.5	5573.6	5591.2	5354.9	5372.0	5364.5	5303.6	5313.2	5313.2
NET BENEFIT	-3471.4	-315.5	32.5	184.0	845.4	1166.0	1288.9	1276.0	1244.4	1152.6	1195.8	1291.8	1224.6	1259.6	1241.9	1478.2	1461.2	1466.6	1529.5	1519.9	1519.9

SOURCE: IICA/INMR-1.L.P.

NET PRESENT VALUE 0120= 2162.4
 NET PRESENT VALUE 0162= 631.5
 NET PRESENT VALUE 018.52= -13.7



BARBAROS
INTEGRATED LIVESTOCK PROJECT
TABLE VI- 10
ESTIMATE OF ECONOMIC RATE OF RETURN
('000 B'400 \$)
ASSUMING A MILK PRODUCTION OF 15 LBS PER COW PER Y

CONCEPT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
TOTAL BENEFITS	0.0	2694.5	3861.3	4921.2	6058.2	6451.0	6586.7	6649.5	6640.5	6640.5	6640.5	6640.5	6640.5	6640.5	6640.5	6640.5	6640.5	6640.5	6640.5	6640.5	6640.5
COSTS	3471.4	3054.4	3752.5	4885.3	5405.4	5477.6	5490.4	5487.2	5568.8	5680.5	5637.3	5631.4	5608.5	5573.6	5591.2	5354.9	5372.0	8364.5	5303.6	5313.2	
NET BENEFIT	-3471.4	-359.9	-71.2	35.9	652.8	973.4	1096.3	1053.3	1071.7	960.0	1003.2	1009.1	1032.0	1066.9	1049.3	1285.6	1268.5	1276.0	1356.9	1327.3	

SOURCE: IICA/HMR-I.L.P.

NET PRESENT VALUE 0123= 1105.3
NET PRESENT VALUE 0161= -27.7

BARBADOS
INTEGRATED LIVESTOCK PROJECT
TABLE VI- 11
ESTIMATE OF ECONOMIC RATE OF R ETURN
('000 B '40s \$)
ASSUMING A 20% DECREASE IN BEE F PRICE

CONCEPT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
TOTAL BENEFITS	0.0	2739.0	3963.0	5049.3	6250.8	6443.6	6779.3	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1	6833.1
COSTS	3471.4	3054.4	3932.5	4885.3	5465.4	5477.6	5490.4	5687.2	5568.8	5688.5	5637.3	5631.4	5608.5	5573.6	5591.2	5554.9	5372.0	5364.5	5393.6	5313.2	
NET BENEFIT	-3471.4	-315.5	32.5	184.0	845.4	1166.0	1288.9	1226.0	1264.4	1152.6	1195.8	1201.8	1224.6	1259.6	1241.9	1478.2	1461.2	1468.6	1529.5	1519.9	

SOURCE: IICA/MARR-I.L.P.

NET PRESENT VALUE B12Z= 2162.4
 NET PRESENT VALUE B15Z= 631.5
 NET PRESENT VALUE B18Z= -57.7

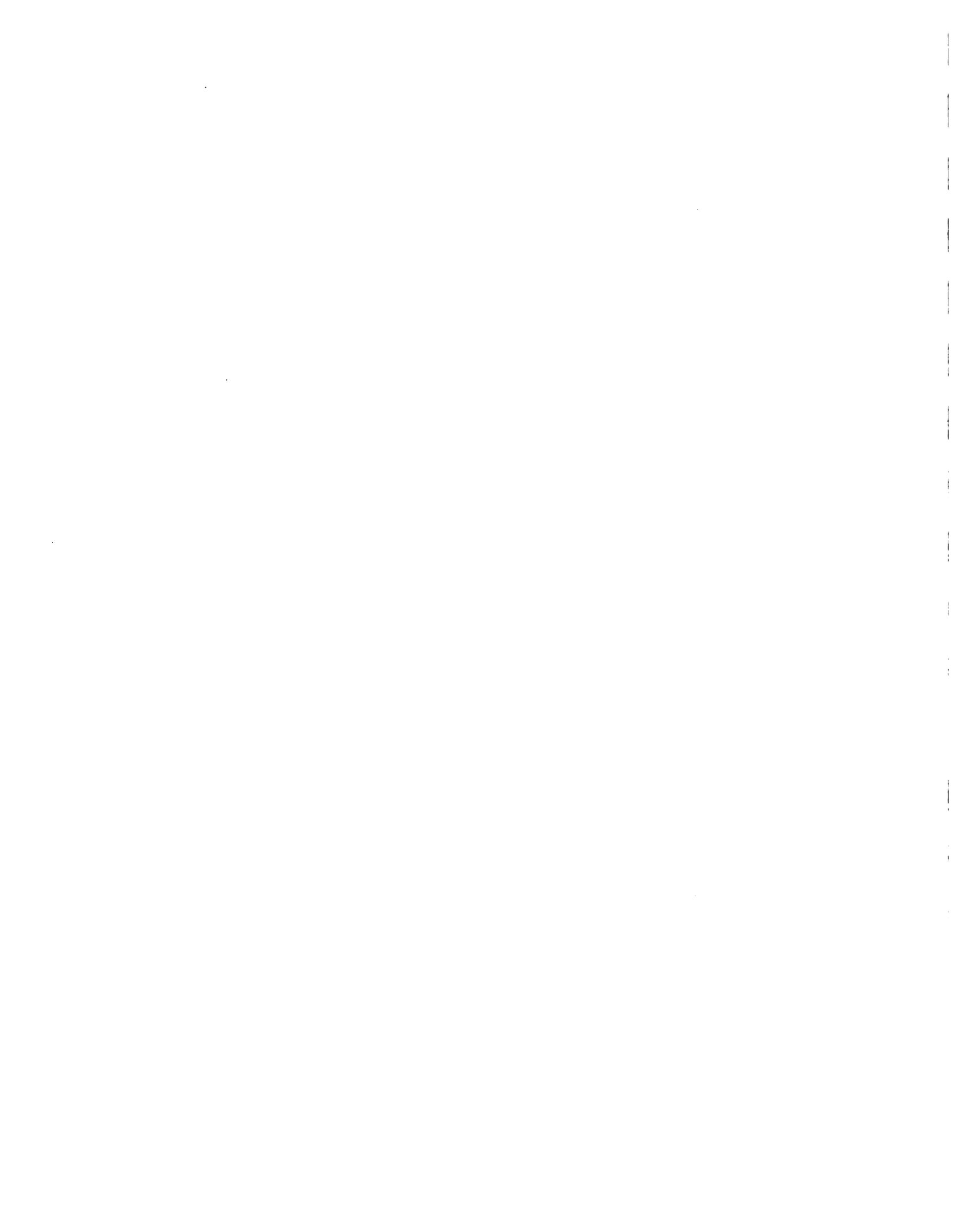


BARBAROS
 INTEGRATED LIVESTOCK PROJECT
 TABLE VI- 12
 ESTIMATE OF ECONOMIC RATE OF RETURN
 ('000 B' less \$)
 ASSUMING A PRICE FOR MUTTON OF \$3/LB

CONCEPT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
TOTAL BENEFITS	0.0	2734.1	3941.3	5015.3	6144.9	6498.3	6682.7	6644.1	6644.1	6644.1	6644.1	6644.1	6644.1	6644.1	6644.1	6644.1	6644.1	6644.1	6644.1	6644.1	6644.1
COSTS	3471.4	3054.4	3932.5	4885.3	5405.4	5477.6	5499.4	5607.2	5568.8	5680.5	5637.3	5631.4	5608.5	5573.6	5591.2	5354.9	5372.0	5364.5	5303.6	5313.2	
NET BENEFIT	-3471.4	-320.3	8.8	130.0	739.6	1020.8	1112.4	1037.0	1075.4	963.6	1006.8	1012.8	1035.6	1070.6	1052.9	1289.2	1272.2	1279.6	1340.5	1330.9	

SOURCE: ITCA/MNR-1.L.P.

NET PRESENT VALUE 0122= 1344.6
 NET PRESENT VALUE 0162= 53.1
 NET PRESENT VALUE 0172= -102.3



BARBADOS
INTEGRATED LIVESTOCK PROJECT
TABLE VI- 13
ESTIMATE OF ECONOMIC RATE OF RETURN
('000 B'dos \$)
ASSUMING A 5% REDUCTION IN THE PRICE OF OFFALS

CONCEPT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TOTAL BENEFITS	0.0	1602.8	2524.1	3361.4	4277.2	4593.8	4729.5	4783.3	4783.3	4783.3	4783.3	4783.3	4783.3	4783.3	4783.3	4783.3	4783.3	4783.3	4783.3	4783.3
COSTS	3471.4	3464.4	3732.5	4065.3	5165.4	5477.4	5497.4	5607.2	5568.8	5600.5	5637.3	5631.4	5608.5	5573.6	5591.2	5354.9	5372.0	5344.5	5303.6	5313.2
NET BENEFIT	-3471.4	-1861.7	-1408.4	-1523.9	-1128.1	-883.8	-768.9	-823.9	-785.5	-877.2	-834.0	-848.1	-825.2	-790.3	-807.9	-571.6	-588.7	-581.2	-520.3	-529.9

SOURCE: ITC/MAR-1.L.P.

NET PRESENT VALUE 0172= -9076.2
 NET PRESENT VALUE 0165= -8460.3
 NET PRESENT VALUE 018.52= -7769.7





