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1．ミニッツ

MINUTES OF DISCUSSIONS OF THE PRELIMINARY STUDY ON THE NATIONAL WATER BUFFALO AND BEEF CATTLE PRODUCTION PROJECT IN THE REPUBLIC OF THE PHILIPPINES

In response to the request made by the Government of the Republic of the Philippines for the National Water Buffalo and Beef Cattle Production Project (hereinafter referred to as "the Project"), the Government of Japan has sent a preliminary study team (hereinafter referred to as "the Team") headed by Mr. Toyoharu Fujioka from October 20 to October 30, 1999, through the Japan International Cooperation Agency (hereinafter referred to as "JICA"). The purposes of the Team were to clarify the background of the request, to identify problems for the implementation of the Project and to study the feasibility of the proposed technical cooperation program.

The Team carried out a field survey, held a series of meetings and exchanged views with the authorities concerned of the Government of the Republic of the Philippines.

As a result of the discussions, JICA and the authorities concerned of the Government of the Republic of the Philippines agreed to recommend to their respective Governments the tentative framework referred to in the document attached hereto.

Manila, October 28, 1999

TOYOHARU FUJIOKA
Team Leader
Preliminary Study Team
Japan International Cooperation Agency

for CESAR M. DRILON, JR.
Undersecretary
for Livestock and Fisheries
Department of Agriculture

LIBERTADO C. CRUZ
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Department of Agriculture

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Bureau of Animal Industry
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THE ATTACHED DOCUMENT

I. BACKGROUND OF THE PROPOSED PROJECT

In conformity with the Medium-Term Philippine Development Plan (1999-2004), the Medium-Term Agricultural Development Plan for Livestock (MakaMASA Livestock Program) is established within the modernizing livestock farming, of which the smallholding livestock farmers are the ultimate beneficiaries.

In the Program, the following are the targets to be achieved by year 2004:

a. Ten (10)% growth rate in livestock population;
b. Thirty (30)% level of contribution of livestock to the total farm income; and
c. Four (4)% annual increase in the value of the domestic livestock production.

The livestock industry has contributed substantial earnings to the agricultural economy. In the livestock industry, the sector of large ruminant is considered as least developed. A majority of the water buffalo and beef cattle population is raised by smallholding farmers. The domestic production does not meet the domestic demand and the domestic consumption heavily depends upon the imports of milk products and beef from foreign countries.

Improvement of the technologies of water buffalo and beef cattle, such as selection of sire and dam, feeding/management and artificial insemination will be expected to increase the production and enhance the quality. Meantime, it will help increase income of the livestock farmers, especially smallholders.

II. SUMMARY

The Team investigated the background and the contents of the revised Project proposal dated June 30, 1999 and the current situations and problems on water buffalo and beef cattle production in this country, through a series of discussions with persons in charge in the Philippine side and the field survey for the period of October 20 to 30, 1999.

The overall technical problems have been identified on relevant technologies of water buffalo and beef cattle such as selection of sire and dam, feeding/management and artificial insemination in the Philippines. Eventually the Team confirmed that it would be meaningful to start this type of project, since it is expected that the Project's outcome will enhance genetic improvement of water buffalo and beef cattle and contribute to improve the life-standard of smallholding farmers in the Philippines.

Taking into account the findings of this survey, the following tentative framework of the Project has been drawn up. This framework may be subject to change through the coming discussions or survey.

III. TENTATIVE FRAMEWORK OF TECHNICAL COOPERATION

1. NAME OF THE PROJECT

Water Buffalo and Beef Cattle Genetic Improvement Project

Note:The name of the Project is subject to modification according to the Project Activities after formulation of the Project Plan.

2. PHILIPPINE ORGANIZATIONS OF THE PROJECT

2-1. Organization responsible for the Project

Department of Agriculture (DA)

2-2. Organizations for implementing the Project

(1) Philippine Carabao Center (PCC), DA

(2) Bureau of Animal Industry (BAI), DA

3. SITES OF THE PROJECT

3-1. Main Site

National Water Buffalo Gene Pool (NWBGP), PCC

Munoz, Nueva Ecija

3-2. Sub Site

Nueva Ecija Stock Farm (NESF), BAI

General Tinio, Nueva Ecija

4. TERM OF THE COOPERATION

Five (5) years

5. MASTER PLAN

5-1. Overall Goal

Improvement of the farmers' standard of life through the increase of their income from water buffalo and beef cattle raising.

5-2. Project Purpose

Increase of the productivity of water buffalo and beef cattle.

5-3. Outputs of the Project

(1) Development of genetic ability of water buffalo and beef cattle

(2) Improvement of feeding/management technology

(3) Improvement and dissemination of Artificial Insemination (AI) technology

5-4. Activities of the Project

(1) Selection of sire and dam of water buffalo and beef cattle

(2) Feeding/Management of water buffalo and beef cattle

(3) Artificial Insemination (AI) of water buffalo and beef cattle

(4) Training for extension officers and key farmers on the fields of above (2) and (3)

6. MEASURES TO BE TAKEN BY PHILIPPINE SIDE

(1) Provision of buildings and facilities necessary for the implementation of the Project

(2) Assignment of the necessary number of full-time counterpart personnel to meet the each field of Japanese long-term experts

(3) Allocation of budget necessary for the implementation of the Project

7. MEASURES TO BE TAKEN BY JAPANESE SIDE

7-1. Dispatch of Experts

7-1-1. Japanese long-term experts

(1) Chief Adviser

(2) Coordinator

(3) Selection of sire and dam

(4) Feeding/Management

(5) Artificial Insemination (AI)

Note: Chief Adviser may serve concurrently as an expert in one of the above-mentioned technical fields.

7-1-2. Japanese short-term experts

Short-term experts may be dispatched when necessity arises within the framework of the Master Plan.

7-2. Acceptance of Counterpart Personnel

Annual acceptance of counterpart personnel of Japanese experts for training in Japan shall be arranged during the cooperation period.

7-3. Provision of Machinery and Equipment

Necessary machinery, equipment and other materials for the implementation of the Project would be provided within the budgetary allocation.

8. ADMINISTRATION OF THE PROJECT

(1) Undersecretary for Livestock and Fisheries, DA, as the Project Director, will bear overall responsibility for the administration and implementation of the Project and will be responsible for coordination of Implementing Organizations.

(2) Executive Director for PCC, DA and Director for BAI, DA, as the Project Deputy Directors, will assist the Project Director and will bear direct responsibilities for the administration and implementation of the Project in respective fields.

(3) The Government of the Philippines will appoint the Project Manager, who will be responsible for the managerial and technical matters of the Project.

9. JOINT COORDINATING COMMITTEE (JCC)

9-1. Functions of the JCC

The JCC composed of those members as listed in 9-2 below will meet at least once a year and whenever the needs arise.

(1) To formulate an annual plan of an action in accordance with this framework and the Record of Discussions which will be concluded between the Governments of the Philippines and Japan.

(2) To review overall progress of the technical cooperation program in accordance with this framework and the Record of Discussions.

(3) To review input by the Government of the Philippines listed 6. above.

(4) To review input by the Government of Japan listed 7. above.

(5) To recommend both the Governments of the Philippines and Japan on:

   a. Budgetary matters
   b. Recruitment and appointment of the Philippine counterpart personnel
   c. Selection and effective utilization of machinery and equipment
   d. Dispatch of Japanese experts, as and when required
   e. Acceptance of the Philippine counterpart personnel in Japan for training, and
   f. Other matters, as and when required

9-2. Committee Members of the JCC

a. Chairperson: Undersecretary for Livestock and Fisheries, DA, Project Director

b. Members:

Philippine side

-PCC Executive Director, DA, Project Deputy Director

-BAI Director, DA, Project Deputy Director

-Agrikulturang MakaMASA Livestock Program Director, DA

-Project Development Services Director, DA

-Planning and Monitoring Services, National Economic Development Authority

-Project Manager

-Representative of Philippine Counterpart Personnel

Japanese side:

-Chief Adviser

-Coordinator

-Experts assigned to the Project

-Other Japanese experts and personnel concerned dispatched by JICA, as and when required

-Resident Representative and/or Deputy Representative, JICA Philippines Office

Note:

1. Officials of the Embassy of Japan may attend the JCC meetings as observers, as and when required.
2. Persons who are nominated by the chairperson may attend the JCC meetings as observers, as and when required.

IV. UNDERSTANDINGS AND RECOMMENDATION

1. Administration of the Project

1-1. The Project will be implemented by the participation of the several organizations of DA. Therefore, it is expected that Undersecretary for Livestock and Fisheries of DA will play an important role for smooth implementation of the Project with close cooperation and harmonization between the related organizations.

1-2. For successful and efficient implementation of the Project, it is important for the consultative meetings to be held regularly in order to review the progress of the Project as well as to discuss the management of the Project.

1-3. The Philippine side proposed that the Project Manager should be assigned on a full-time basis. The Team expects that a competent person be selected as the Project Manager, because the Project Manager will bear a substantial responsibility for activities of the two Project Sites for mutual cooperation.

2. Budget allocation

It is confirmed that the Philippines will allocate the budget necessary for the implementation of the Project timely and sufficiently.

3. Assignment of Counterpart Personnel

It is confirmed that the Philippines will assign capable and enthusiastic counterpart personnel for the Project.

4. Unified National Artificial Insemination Program (UNAIP)

The Team recognized the importance of Artificial Insemination (AI) dissemination and technology development through UNAIP, aiming at unification of AI services which are being carried out by BAI and PCC. The Team recommended that UNAIP be formulated, implemented and promoted by the Philippines as soon as possible.

5. Livestock Improvement Plan of the Philippine Side

The following are recommended by the Team.

(1) A plan for upgrading AI conception rate at field level of water buffalo and beef cattle should be established.

(2) A plan for upgrading AI diffusion rate at field level of water buffalo and beef cattle

should be established.

6. Japan Overseas Cooperation Volunteers (JOCV)

JOCV has been working for artificial insemination and has contributed to the AI dissemination and technology development in the Philippines. The Team expects that these outcome will be taken advantage of by the Project.

7. Supplementary Study

The Team recognized that a supplementary study is necessary for the following purposes.

(1) To define the function and the role of the respective Project Organizations, and define the concrete cooperation system between PCC and BAI.
(2) To formulate a draft of Tentative Schedule of Implementation that is composed of an annual program and a technical cooperation program.
(3) To define the allocation of counterpart personnel and employment for the Project.
(4) To prepare the definite plan for provision of equipment for the Project.
(5) To define the plan for necessary infrastructure and facilities in PCC and NESF which should be prepared by the Philippine side.

2．農業省次官が議事録署名の権限を次官補に与えた文書

Republic of the Philippines
DEPARTMENT OF AGRICULTURE
Office of the Secretary
Elliptical Road, Diliman, Quezon City

22 October 1999

AUTHORIZATION

This is to authorize Assistant Secretary Theresa C. Capellan to sign for and in behalf of the undersigned, the Memorandum of Understanding between the Government of Japan and the Government of the Philippines.

CESAR M. DRILON, JR.
Undersecretary

NATIONAL WATER BUFFALO AND BEEF CATTLE PRODUCTION PROJECT

PROPOSAL

for a

PROJECT-TYPE TECHNICAL COOPERATION PROGRAM

on

NATIONAL WATER BUFFALO AND BEEF CATTLE PRODUCTION PROJECT

Submitted to the

GOVERNMENT OF JAPAN

through the

NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY

and the

DEPARTMENT OF FOREIGN AFFAIRS
Government of the Philippines

Proponents

PHILIPPINE CARABAO CENTER *- and -* BUREAU OF ANIMAL INDUSTRY

–

Department of Agriculture

30 April 1999
(revised 30 June 1999)

Table of Contents

I. Title of the Project

NATIONAL WATER BUFFALO AND BEEF CATTLE PRODUCTION PROJECT

II. Implementing Organization

1. Name of the Implementing Organization

Bureau of Animal Industry (BAI) and Philippine Carabao Center (PCC)

2. Project Site

National Artificial Breeding Center (NABC), Dalwangan, Malaybalay City, Bukidnon
Nueva Ecija Stock Farm (NESF), General Tinio, Nueva Ecija
National Water Buffalo Gene Pool (NWBGP) and Headquarters, Muñoz, Nueva Ecija and

3. Related Government Department

Department of Agriculture (DA)

4. Outline of the Implementing Organization

Philippine Carabao Center

The PCC is an attached agency of the DA created on March 27, 1992 by virtue of Republic Act 7307 otherwise known as *"Philippine Carabao Act of 1992."* Operationalized in the second quarter of 1993, the PCC is mandated to conserve, propagate and promote the carabao as a source of draft animal power, meat, milk and hide to benefit the rural farmers. It has four support divisions and a network of 13 regional centers nation-wide to implement the Carabao Development Program (CDP).

Bureau of Animal Industry

The BAI, a staff bureau under the DA, is mandated to promote the livestock and poultry industries as well as to safeguard animal health, ensure public health safety through quality animal food products and help farmers achieve profitability. It has six technical divisions namely: Animal Feed Standard Division, Animal Health Division, Laboratory Services Division, Livestock Development Division, Marketing Development Division, and Research Development Division. There are also several projects under BAI and these are Aflatoxin Laboratory; Animal Products and By-Products Development Center; Conservation and Use of Animal Genetic Resources for Asia and the Pacific; Farm Integrated Animal Health and Production Project; FMD Eradication Project and Philippine Animal Health Center.

5. Outline of Activities

Philippine Carabao Center

The Carabao Development Program has four point program components:

- Genetic Improvement and Conservation of the Philippine Carabao
- Intensification of National Carabao Upgrading Program
- Buffalo-based Enterprise Development
- Research and Development

PCC promotes carabao development by carrying out the following activities and services:

- Production of genetically superior buffalo germplasm for eventual distribution to breeding centers, farmers associations and cooperatives to carry out genetic improvement;
- Artificial insemination services to infuse superior germplasm to improve the native carabao's potential to produce more milk and meat;
- Bull loan is extended to farmer groups or associations who cannot directly avail of artificial insemination services;
- Training for technicians and farmers on specialized areas of water buffalo production and post-production concerns;
- Assistance for the development of carabao-based & related enterprise;
- Development and dissemination of technologies and assistance in policy assessment and formulation leading to a more productive water buffalo industry.

Bureau of Animal Industry

As a staff bureau, BAI's primary role is to formulate policies, plans, programs and projects for the development and expansion of the livestock and poultry industries to meet the requirements of a growing populace. The Livestock Development Division (LDD), one of the technical divisions will directly supervise the project for BAI. The LDD is mandated to formulate long and short-range programs for an efficient and sustainable livestock production. The activities are:

- Establishment, operation and maintenance of Government Stock Farms / Livestock Production Centers (SF / LPC)
- Production and distribution of superior genetic stock to improve the local animal breeder base in the country
- Production, collection, processing, preservation and distribution of high quality frozen semen through the National Artificial Breeding Center
- Establishment of forage nursery/demonstration areas for the propagation of improved pasture grasses, legumes and fodder trees for distribution to livestock raisers and other government stations

The **National Artificial Breeding Center (NABC)** is one of the LPCs of BAI that was established in 1965 at the Alabang Stock Farm, Muntinlupa as a special joint project with the Dairy Training and Research Institute (DTRI) of the University of the Philippines at Los Baños (UPLB), Laguna. In 1995, NABC was transferred to Malaybalay City, Bukidnon to service the needs of breeders / ranchers, farmers and other stakeholders in Mindanao as well as address issues regarding animal health (specifically FMD). Its functions are:

- Production of good quality frozen semen from the best sires for distribution to different Artificial Breeding Stations (ABS) nation-wide
- Train technicians from national and local government units and private sector on Artificial Insemination (AI) and Pregnancy Diagnosis (PD) in Large Ruminants
- Production of quality animals for distribution to government farms (as replacement stock), ranchers and backyard raisers in support to the animal dispersal program
- Coordinate and support the implementation of Regional and Provincial AI Program and encourage the participation of other government agencies and the private sector
- Perform extension services to backyard raisers and commercial ranchers
- Conduct researches on animal reproduction.

NABC also functions as a demonstration farm to farmer groups, commercial ranchers and livestock cooperatives during their visits and consultation. Other activities include provision of assistance to various colleges and universities by accommodating Agriculture and Veterinary Medicine students on their respective farm practicum and on-the-job training.

The **Nueva Ecija Stock Farm (NESF)**, formerly known as General Tinio Livestock Center (GTLC) is the largest cattle production station in the main island of Luzon and is located in General Tinio, Nueva Ecija. Its present activities are:

- Production of purebred Brahman cattle for distribution to other government breeding stations and private cattle breeders. This LPC operates as a Nucleus Farm (NF) in Luzon Island.
- Collection and evaluation of performance data of purebred Brahman cattle.
- Propagation of different species of forage grasses, legumes and fodder trees for distribution to breeders, livestock cooperatives or small-hold farmers.
- Conduct of research / trials on the performance of local crossbred and purebred cattle grazed on different species of forage grasses, legumes and fodder trees.

The **National Water Buffalo Gene Pool (NWBGP)** is a special facility of the PCC that concentrates elite herds of Philippine Carabao and dairy breed of buffalo. This is located in a 40-hectare lot donated by the Central Luzon State University (CLSU) at Muñoz, Nueva Ecija. Among its services and activities are:

- Production of progeny tested buffaloes
- Acts as a germplasm bank of quality semen and embryos for immediate and long-term use
- Source of purebred bulls
- Conducts biotechnology researches

6. Annual Budget

The budget of PCC and BAI for the last six (6) years are as follows:

Year	PCC	BAI
1993	P 34,900,000.00	P 89,953,000.00
1994	102,400,000.00	133,121,000.00
1995	172,600,000.00	104,678,000.00
1996	188,300,000.00	LUP 404,319,000.00
1997	174,300,000.00	119,381,000.00
1998	176,360,000.00	244,064,000.00

III. Project Proposal

1. Rationale

Description of the Livestock Sub-sector

Within the agricultural sector, the livestock industry contributed substantial earnings to the total economy. In 1998, the livestock and poultry sector contributed 29.4 % to the total agricultural production. The gross value of production figured at **P 152 Billion** (at current prices) indicated a 4.2 % increase from last year's earnings. There has been a pattern of sustained growth in the development of livestock industry primarily because of an accelerating demand of livestock products brought about by the rapid increase in human population, with a 2.3 % annual growth rate. The challenge in the industry is sustainable development as it is a critical component of a production system to meet the needs of the current and growing domestic market.

The industry is characterized by a well-developed poultry and swine subsector, considering that much of the local demand is met by local production. Its continued growth is largely attributed to the strong support and active participation of industry players particularly the commercial integrators. The commodity however, stands to be of high risk owing to the fact that most of its inputs (feed) are import-dependent.

On the other hand, the large ruminant subsector is considered the least developed as demonstrated by the country's heavy reliance on imports for milk and milk products and substantial import of beef and beef cuts. One comparative advantage identified of these two species however, is their ability to be sustained in the typical backyard farm operation system as they survive on marginal inputs. These animals are efficient converters of grasses and other farm residues into meat and milk. They can both generate employment opportunities, capable of creating both upstream and downstream production activities such as feed mills, meat processing, milk (carabao) processing and distribution.

Considered as the main drawback affecting the production of improved breeds of water buffaloes and beef cattle is the insufficient number of breeding animals of superior genetic quality. A relatively high extraction rate and the low level of reproductive rate of these animals further aggravate the situation. Cognizant of the situation, the government has taken measures in averting the sad state of the large ruminant sector. Thus, in the Medium Term Livestock Development Program (MTLDP) and the Gintong Ani (GA) for Livestock Program a few years back and now referred as the AGRIKULTURANG *MakaMASA* (AM) Program, these two sectors were given due importance and recognition both in terms of budgetary and policy support.

The current economic crisis plaguing the Asia and Pacific Region dictates a more vigorous effort in improving the productivity of these two animal resources. Further improvement in the water buffalo and beef cattle production systems would mean saving foreign currency for the country by lessening the importation of live animals and meat products.

2. Current Situation

Host Country Strategy

The GOP is implementing the **AGRIKULTURANG** *MakaMASA*-**LIVESTOCK** (AML) Program, a part of the *Medium-Term Agricultural Development Plan (1999-2004).* The Program takes off from the Gintong Ani-Livestock Program that has laid the foundation for a productive, efficient, economic and sustainable livestock and poultry industry. The implementation strategies and development targets of these projects and activities are consistent and supportive to the Ten Point Agenda in Agriculture on the full implementation of the **Agriculture and Fisheries Modernization Act** of 1997 (AFMA).

MakaMASA in Filipino means "for the masses", denoting the preferential option of the present administration for the poor. The word aptly describes the context of the Philippine Department of Agriculture's twin goals, that is, ***poverty alleviation*** and ***food security***. These concerns including social equity, income enhancement and profitability of livestock farmers, global competitiveness and sustainability will be the focus in the identification of projects and activities of the Program.

The AML will have achieved the following by year 2004:

1. A ten percent (10%) growth rate in livestock and poultry population with corresponding genetic improvements;
2. Attain a thirty percent (30%) level of contribution of livestock and poultry in the total farm income; and
3. Increase the value of production of the local livestock industry by three and a half percent (3.5%) annually, based from 1998 record of P 152 Billion (at current prices).

Program features and strategies of the AML are as follows:

1. Encourage and empower farmers and farmer-organizations to engage in livestock and poultry projects, including other vertical integrators in their farm enterprises.
2. Produce quality breeder stocks and other production inputs available and affordable to farmers at the right time.
3. Improve the production marketing systems to become more efficient and cost effective.
4. Empower Local Government Units (LGU) to assume primary responsibility for food security programs.
5. Provide technical support to LGUs to help attain the production targets.
6. Focus national government support to Strategic Agriculture and Fishery Development Zones (SAFDZ) i.e. investment on farm-to-market road, post-harvest facilities, etc.
7. Develop complementation and counterparting schemes with the local governments.
8. Enhance appropriate production loan program.
9. Promote production-intensifying but cost-reducing technologies through an intensive and extensive agricultural extension support program.
10. Tap the expertise of State Universities / Colleges in developing appropriate technologies, providing forum for the R & D linkage and assisting in the evaluation of the program.

11. Intensify information education campaign on AGRIKULTURANG *MakaMASA*-LIVESTOCK in particular, and the AFMA in general using appropriate and cost-effective media.
12. Institutionalize the needed infrastructure, technology and development strategies for the livestock and poultry industry's growth, competitiveness and sustainability.

The AML's program components are:

1. Livestock Enterprise Development
2. Technology, Information Promotion, and Capability Building
3. Genetic Improvement Program
4. Animal Health Services
5. Post Production, Regulatory and Marketing Services
6. Policy, Industry Research, and Strategic Projects

Brief descriptions of the different components are:

1. Livestock Enterprise Development
   Implement activities towards increasing investments in livestock and poultry projects by providing livestock farmers the needed assistance in the acquisition of livestock through the Multi-Livestock Development Loan Program (Window 1) and the Barangay Livestock Breeding Loan Program (Window 2).

   Activities
   - Financing through conduit banks
   - Selection and procurement of stocks
   - Training of beneficiaries
   - Accreditation of banks
   - Preparation of feasibility studies

   Strategies
   - Selection of stocks for distribution following the goal/plan of an organized breeding scheme operation
   - Organization of regional networks that will supervise and manage the livestock sourcing/procurement and capability building of the beneficiaries in coordination with the DA-National Management Committee
   - Accreditation of a network of banks that can provide basic service to farming communities

2. Technology, Information Promotion & Capability Building
   Sustainable, technology-based training and information program promotes an environment conducive to profitable livestock activities. It also enhances the capabilities of RFUs and LGUs in promoting technology packages and services to the masses.

   Activities
   - Development of information materials
   - Enhancement of model farms
   - Capability building for LGUs, RFUs, and farmers

Strategies

- Development and diffusion of information and education materials through the appropriate communication media
- Identification and/or enhancement of techno-demo projects or model farms in every region to showcase livestock technologies
- Development of manpower capability to address the program components
- Strengthening of DA-LGU and SCU extension linkages
- Upgrading of selected DA-regional livestock centers and research stations to serve as demonstration, research and training centers for animal production technologies

3. Genetic Improvement Program

Projected increases in the demand for food compel us to ensure that production environment is maintained and made more productive. Livestock production systems respond to economic conditions, and production systems move from subsistence to commercial operation. The current efforts of the livestock industry on genetic improvement, conservation and utilization (ICU) therefore, need to be strengthened through the institutionalization of a scientific selection and breeding program.

Through this program, animal genetic resources shall be effectively and efficiently managed. Likewise, production of genetically superior animals and genetic materials shall be accelerated.

This program focuses on:

- The DA farms and selected private farms which shall serve as the nucleus centers or gene pools that will produce the purebred stocks for distribution to multiplier farms and production centers.
- The private farms and other RFU/LGU stations that shall serve as the multiplier farms to produce commercial breeders for distribution to smallholders
- The smallhold farmers who are the ultimate beneficiaries of the overall gain in the improvement program

Activities

- Genetic Resource Improvement
  - ⇒ Establishment, strengthening and management of Nucleus Farms (NF) for the production of genetically superior animals and genetic materials for use in the organized breeding activities and intensive artificial insemination program respectively.
- Genetic Resource Conservation
  - ⇒ Collection of superior local livestock breeds for further development at conservation centers.
- Genetic Resources Utilization
  - ⇒ Strengthening and/or Rehabilitation of production and breeding centers and AI stations through distribution of genetically superior stocks and materials to livestock producers, with genetically superior stocks coming from the NF.

Strategies

- Identification and selection of NF and Multiplier Farms (MF) for commercial production
- Bull/Buck/Ram/Boar/Stallion exchange program between and among NFs
- Bull/Buck/Ram/Boar/Stallion loan program
- Monitoring an devaluation of production performance of all animal genetic resources (AnGR)
- Publication of breed performance standards for existing AnGR in the Philippines and establishment of selection indices and sire catalogs that will be used by farmers and livestock centers in their breeding operations

Milestones/Outputs for 1999

- Attainment of a 2.9% diffusion rate for AI services in cattle and carabao
- Accreditation of 2 additional DA-RFU farms as NF
- Establishment of 10 cattle MF (private) and 15 SR MF (private)
- Production of 1,800 head purebred goats and sheep and 1,500 head purebred Brahman and Simbrah cattle
- Strengthening / Revitalization of production, breeding and AI centers
- Dispersal of 20 stallions to identified RFUs

4. Animal Health Services

An efficient system of livestock farming means operating in an environment conducive to growth. One of the concerns that ensure such is the provision of animal health services. A healthy herd allows for unhampered growth of the livestock industry.

Monitoring of diseases of economic importance, controlling and preventing such, and eventually eradicating certain diseases will pave the way for an environment that is conducive to livestock raising.

Activities

- FMD Eradication Program will be vigorously implemented
- Strengthening of diagnostic and biological laboratories located in every region will be pursued and therefore spread centers of technical services to farmers
- Control and prevention of disease outbreaks
- Improvement of quarantine services

Strategies

- FMD Eradication Program (envisions an FMD-free Philippines by 2003)
  - ⇒ Disease monitoring and surveillance
  - ⇒ Vaccination
  - ⇒ Quarantine
  - ⇒ Information

- Strengthening of Diagnostic and Biological Laboratories
  - ⇒ Provision of basic diagnostic services by all laboratories in all regions
  - ⇒ Designation of reference centers in Regions 2, 3, 5, 7 & 11 that can handle specialized diagnostic work after gathering baseline data
  - ⇒ Improvement of technical capabilities of reference and national laboratories

- Control and Prevention of Disease Outbreaks
  ⇒ Control and prevention of *Hemorrhagic Septicemia* and Fasciolosis
  ⇒ Components similar to the FMD Eradication Program will be followed

- Improvement of Quarantine Services
  ⇒ A protocol on quarantine will be developed

5. Post Production, Regulatory & Market Services

There is a need to make available safe and quality livestock products to the consuming public. At the same time, products have to be globally competitive. This can be done through efficient handling, processing, inspection and marketing of products.

Activities
- Upgrading and rehabilitation of post production facilities
- Strengthening of post production regulatory activities
- Development of effective/efficient post production marketing strategies

Strategies
- Implementation of the Abattoir Development Program
- Strengthening of Meat Inspection Service
- Rehabilitation of Existing Livestock Auction Markets (Weighing Scale Loan Program)
- Establishment and Operation of Central and Satellite Meat Laboratories
- Strengthening of the activities of the Animal Products & By-Products Development Center
- Operation of the Regional Animal Feed Laboratories
- Milk Processing and Marketing Program
- Provision of Livestock Product Marketing Services

6. Policy, Industry Research, & Strategic Projects

In consonance with global trade and the need to modernize livestock production, current policies, rules and regulations have to be assessed and reformulated to address the above concerns.

Likewise, technology needs of the industry have to be addressed by policy makers to enhance competitiveness. This program component therefore will respond to all these concerns and emergency cases of the DA and the LGUs.

Activities
- Policy Formulation, Assessment and Advocacy
- Industry Research
- Quick Response and/or Emergency Projects (certified and approved by the DA Secretary)
- Program Management

Strategies

- Institutionalization of the involvement of industry stakeholders in the formulation of policies, rules and regulations (e.g., public hearings, consultation meetings)
- Enhancement of the internal capability of DA and the LGUs in policy assessment and formulation through the tapping of SCU and LGU expertise
- Creation of quick response teams and quick reaction protocols to handle emergency situations of the industry

Water Buffalo Situation

The carabao population declined progressively at an annual average of 1.9 % per year from 1980 to 1994 due to high extraction rate estimated to be 8.1 % and the slow reproduction rate of the animal. Positive shift was registered starting in 1995 until 1997, with an average rate of 4.7 %. The total carabao population is estimated at 3.0 million, majority of which or 99.9 % is with the small-hold farmers. At an average number of 1.30 animals per family, there are an estimated number of 2.29 million families or translated in human numbers, about 13.74 M or 20% of the total human population in the country that derive direct benefits from carabao production.

The sector's average contribution had been estimated in 1996 at ₱ 7.16 Billion broken down as follows: meat - ₱ 3.2 Billion, milk and hide - ₱ 296.0 million and ₱ 138.6 Million respectively and draft - ₱ 3.52 Billion.

Shifting from the use of draft carabao to small hand tractors is an apparently common practice in irrigated, rice producing areas. Nonetheless, reality still holds that despite the introduction of these farm implements, many farmers cannot totally do away with the draft buffaloes in their farm activities particularly in rain-fed & upland areas.

Increasing local demand for processed meat products boosted the growth of the local meat processing industry. Coupled with the rising demand for these products are the increased demands for raw materials of which beef from cattle and buffalo are the two most important ingredients. Since the cattle industry cannot adequately supply its need, these meat processors look for alternative sources. In 1993, buffalo meat importation from India had been identified. Buffalo meat importation increased significantly by 4,700 % from 1993 to 1996, and interestingly a corresponding significant reduction in slaughter rates from the domestic population was noted during the same period.

A total of 30,150 metric tons or 30,150,000 kilos of buffalo meat were imported into the country in 1997, despite the 222,517 head water buffalo slaughtered by accredited abattoirs. At an average carcass weight of 150 kilos, the country should at least slaughter an additional 201,000 head buffaloes to meet the requirements of the industry particularly the meat processing sector, which requires large volumes of bovine meat - equivalent to 500,000 to 600,000 head annually. This can only be achieved if: a) there were an additional 500,000 head breeders in the population; or b) by increasing the carcass weight of slaughter animals by 50 % - from 150 to 225 kilos at the same time increasing total breeders by 333,333 head.

The CDP, launched in 1993, is premised on the need for the improvement of the genetic potentials of our carabao for better and more efficient production of milk, meat, draft and hide. These efforts will lead to the stabilization of the water buffalo population with a corresponding increase in genetic qualities which eventually result to the development of water buffalo-based and related enterprises.

Stock infusion of superior genetic quality riverine buffaloes is a major component of the program in order to support the wide scale upgrading of the native animals. The introduction of dairy breeds, such as the Murrah, has resulted in crossbreeds with 250 to 350 percent more milk production and growth potential of 75 to 100 per cent more than the native animals. With this observation, it is easy to understand how the large carabao resource in the Philippines can be a potent additional source of milk and meat to improve the nutrition and income of the farming families.

At an average of 35,000 inseminations per year, close to 500,000 head or 33.33 % of the 1.5 million water buffalo breeders was already serviced (from 1993 to 1998). Conception rate was estimated to be 47% (natural heat detection and estrus synchronization).

Beef Cattle Situation

For the last 10 years, cattle population has declined at an average of 1.4 % annually, as a consequence of high extraction rate in almost all regions of the country. From 1992 to 1994, a slight increase has been observed and the gross supply of beef had an average annual growth of 8.5 %. This increase came from imports (feeder stock or beef cuts). In 1997, 81.5 % of the total market demand was supplied by domestic production while 18.5 % was imported.

Data from 1997 indicated that approximately 60,000 metric tons or 60,000,000 kilos of beef cuts, equivalent to 18.5 % were imported into the country, despite the 637,143 head of cattle slaughtered by accredited abattoirs. A majority of beef or beef cuts were utilized by hotels, restaurants, specialty food stores and meat processors. In order to supply the market requirement for beef and beef cuts, an additional 342,857 head cattle should be slaughtered annually or increase the carcass weight by 14.3 % (from 175 to approximately 200 kilos) while at the same time increasing the number of slaughter animals by 300,000 head. At this level, the breeder base should be substantially increased by 1,187,178 head annually or 93.48 % to meet meat processor's requirements.

Importation of breeder stock and the increased quota for feeder stock to supply the local demand for beef is an immediate or a stopgap remedy in an effort to build up the cattle population base. However, importation of live animals and beef cuts is not a long-term program solution and will not sustain the livestock production system. Likewise, imported purebred animals will only perform locally if the environmental / climactic conditions to which they are originally bred are replicated or put in-place. Efficiency of production is achieved in highly supervised environment and where production inputs are readily available, i.e., in government stockfarms or in commercial breeding farms. Thus, improvement in the productivity and efficiency of production of local cattle using the existing exotic cattle breeds in the breeding program, evaluation of current technology and development of appropriate technology to be verified through research generation, utilization and adaptation is necessary.

Ongoing and Prior Assistance

- *Strengthening of the National Artificial Insemination (AI) Project*

The *"Strengthening of National Artificial Insemination (AI) Project"*, a Japan Overseas Cooperation Volunteer (JOCV) – assisted project was started in July 1989 with the aim of increasing the income from raising livestock and improving the techniques of raising cattle and carabao through establishing and strengthening livestock AI services. Phase I of the project covered three regions of the country, namely regions III, VII and X and ended last January 1994. Upon the evaluation of a JICA investigation team, the project was extended (Phase II) until December 1998 and included region XIII. The Japanese International Cooperation Agency (JICA) and JOCV secretariat conducted an Interim Evaluation Survey Report in October 1997. Following are some of the observations made:

- *There were significant gains achieved by the Project with regards to the uptake of the technology by the intended beneficiaries, from **9,084 inseminations in 1988 to 20,472 inseminations last 1997.***
- *The National Local Government Code of 1992 did more harm than good because before 1992, the DA was the only organization that implemented project activities. After the passage of the LGU Code, DA's role was reduced to production and distribution of frozen semen. Actual AI services and other AI-related activities were now conducted by LGU / Provincial personnel.*
- *AI supplies that were previously unavailable in the country but were provided by the Project during the start were already available in the market, an indication that there is a growing AI demand.*
- *The other observations include:*

AI Services Impact

- *It restricted AI services and other activities by the technician within his municipality.*
- *AI technician was forced to do other activities as well as AI services due to lack of trained persons resulting to a negative impact of accomplishment of AI services target.*
- *Difference of salaries between Municipal officials and National or Provincial officials created negative impact on the morale of AI technicians who belong to LGU with small revenal income.*

Organizational Problems

- *Closer contacts and coordination (liaison) with LGUs were required after the LGU Code.*
- *Involvement of LGU executives (Mayors, Governors, etc.) and Provincial Coordinators in the conduct of AI activities (needs their approval) which increased the number of persons that approved before the actual conduct of AI.*
- *In the provincial situation, AI services were placed under the direct supervision of the Provincial Veterinary Office (PVO) such that this enabled stable implementation of AI activities.*
- *Most veterinarians and AI technicians assigned at the provincial offices of DA were hired by the Provincial government therefore their activities continue without the usual problems.*

Duplication of AI activities with other related organizations (especially PCC and NDA)

- *It is very likely that inefficient AI activities are conducted in regions where coordination is not well established.*
- *PCC implements a carabao improvement program using AI and uses the Estrus Synchronization (ES) method (hormone used is PGF2 α) resulting to non-or poor establishment of the follow-up system with owners whose animals did not conceive or become pregnant after farmer pooling/gathering and AI conduct.*

- *It was also suggested that cooperation with PCC regarding AI activities be established in the near future.*

AI Services (number of head)

The beginning of phase II, a target that artificial insemination will be provided to 23,760 animals in 1998. Revised downward as municipal AI technicians could not be employed full-time due to an impact of enforcement of the New Local Government code. The accomplishment in 1996 was 76%: 11,841 heads against the goal of 15,600 heads.

Conception Rate

It should be required that different targets be established for cattle and carabao because apparent that conception rate of carabao is lower than that of cattle. Carabao is an animal of showing silent heat. 62% is established for the target of cattle in 1998 while 41% for carabao. The average of four regions and actual figures are various by region 60-64% for cattle and 31-60% for carabao. The target of Region III is established as 60% while other regions target approximately 30%. In Region III, the numbers of carabao are extremely many, artificial insemination is accepted positively and the level of farmers' technology to find the estrus of carabao is high.

Necessity for follow-up project works until Phase II

Strengthening the organization of NABC and coordination with related organizations (works of senior volunteers)

NABC, which works as a center for AI businesses in the Philippines, is short of persons who are capable for carrying out management partly because of the confusion after its movement from Manila to Malaybalay in Mindanao in 1995. Currently, it is necessary for NABC to establish a proper organizational system. Besides, NABC will be required to maintain close contacts with Philippine Carabao Center in regard to AI works. JOCV has sent volunteers to Philippine Carabao Research and Development Center (PCRDC), which is the forerunner of PCC, and it is planned to send veterinarian surgeons to PCC along with the first dispatch of volunteers in 1997. Thus, JOCV ha provided much cooperation in the areas of personnel and equipment and it is expected to act as a coordinator.

Purchasing equipment for diffusing AI works

Motorcycles

Generally, AI works are carried out in the yard of each farm to which no public transportation (bus, tricycle or others) is available to go. The road to come to farms are generally too narrow for automobiles to run through. Therefore, motorcycles are vital equipment to carry out AI works.

Since it is very difficult to purchase motorcycles with the budget of the Philippine side, currently Japanese cooperation will be required continuously. However, the Philippine side should make efforts to purchase motorcycles with its budget. All sections desire motorcycles and priority might be given to other sections. Therefore, it should be considered that JOCV will give a condition to the Philippine side when it will provide motorcycles. That condition might be to require the Philippine side to purchase certain numbers of motorcycles that can be purchased within its financial capacity.

Liquid nitrogen tanks

Liquid nitrogen tanks are indispensable equipment for storing frozen semen and they can be used for semen storage without any problem even after decades if proper amount of liquid nitrogen is maintained.

A liquid nitrogen tank has a double structure consisting of aluminum or stainless container and vacuum inside. Two types of tanks are used in the project: a 30-liter tanks (so called "Mother Tank") and a 2-3 liter tank (so-called "Baby Tank" or "Field Tank"). These tanks are not manufactured in the Philippines but products made in USA are available through their distributors in the Philippines. A 30-liter tank is as expensive as about 40,000 peso (about 160,000 yen).

While it is a minimum requirement for carrying out AI works to secure AI technicians equipment (tanks, semen syringes (AI gun) and motorcycles) and liquid nitrogen, some provinces have started purchasing tanks with their own budget as municipal rights of distributing budget were expanded due to the enforcement of the New Local

Government Code. However, the numbers of such provinces are not many yet and therefore, cooperation should be provided with a condition similar to automobiles. For example, 10% of the required number might be borne by the Philippine side.

Frozen semen production and AI works

Although most equipment required in the process of producing frozen can be purchased or repairable through dealers in the Philippines, there are a few products that cannot be purchased or repairable through dealers in the Philippines, there are a few products that cannot be purchased or manufactured in the Philippines, such as some expendable supplies (special ink for use of printing a label on a straw semen tube, with which semen will be filled) and a metal beak-tube to be installed on items and at the same time, it should be considered if any type using a French-style straw sheath tube can be substituted.

Input of equipment

Since expendable supplies necessary for carrying out AI works are currently available from the Philippine side and liquid nitrogen are provided by provinces and municipalities, it has become possible for AI works to continue. However, the financial situation of municipalities is severed and it is still extremely difficult for the Philippine side to purchase relatively expensive items such as motorcycles and liquid nitrogen.

Upon the recommendation of the JOCV, six (6) mini-liquid nitrogen (LN_2) plants will be made available to the Department of Agriculture through a special fund from JICA. These LN_2 plants will be distributed to the following areas: NABC Central Semen Distribution Office, NABC-Lot 184 and Regions 3, 7, 10 and 11. It is hoped that the operation of these plants will partly address the issue on unstable supply and prohibitive cost of LN_2.

- *National Genetic Resource Improvement Program for Livestock and Poultry (NGRIP)*

The Livestock Upgrading Program (LUP) is a project that aims to increase the large ruminant breeder base, is now called the *National Genetic Resource Improvement Program for Livestock and Poultry (NGRIP).* Program components include breeder stock infusion, rehabilitation/upgrading of farm facilities, purchase of equipment to complement stations and intensification of AI program (AI paraphernalia), human resource development (upgrading the technical capability of stations through participation in training programs) and conduct of researches on animal breeding and reproduction and animal health. Although insufficient funds have sidelined the program, it is envisioned that some components of the LUP/NGRIP i.e., technical capability development, technology transfer, training and information dissemination will be addressed by the Project.

Institutional Framework for the Sub-sector

Government support for livestock development and production is within the framework of DA. There are six National Livestock Agencies involved in the implementation of the livestock and poultry programs, namely the *Bureau of Animal Industry* (BAI), *Livestock Development Council* (LDC), *National Dairy Authority* (NDA), *National Meat Inspection Commission* (NMIC), *National Stud Farm* (NSF), and *the Philippine Carabao Center* (PCC).

The DA has a network of fifteen (15) Regional Field Units (DA-RFU) that implements various programs at the field level and works in close coordination with the Local Government Units (LGUs).

PCC and BAI both utilize the DA-RFU network in the implementation of concurrent or related activities. Currently, both these agencies conduct their own AI and PD training program and services addressing each specific commodity. Existing collaborative efforts in semen production and semen storage (PCC has 10 imported Murrah Buffalo bulls that are being collected since 1995 in NABC-Lot 184) must be built upon and expanded. Sharing of technical expertise, semen distribution and conduct of AI services towards a unified implementation at the field level are areas of cooperation that should be defined and included.

3. Development Constraints

- *Insufficient Numbers and Poor Quality of Breeder Base*

  The total number of breeder animals for both water buffalo and beef cattle cannot meet the local demand for slaughter animals and bovine meat. The increase in human population and economic growth increases the demand for bovine meat. This situation exerts greater pressure on slaughter animals that eventually includes the breeder population. Breeder and feeder stock importation while recognized as a temporary, stop-gap remedy becomes an inevitable recourse to fill-in the requirement.

  The targets set for LUP components, specifically the breeder animal infusion component were not realized during the previous term. Out of the 8,000 head breeders targeted for water buffalo, only 2,456 head were imported accounting for a mere 30.7 %. The beef breeders' target of 328,500 head was not achieved: only 3,831 head beef breeders or 1.17 % was accomplished.

- *Low Artificial Insemination Diffusion Rate*

  Artificial Insemination (AI) is still the best single technique in increasing animal population and improving the genetic make-up of local stocks. Although AI was introduced years ago as an alternative to natural breeding, its direct contribution to the livestock industry is still far behind the desired level. Summarizing the observations made by the JOCV project, the slow uptake maybe attributed to the following:
  a) lack of a long-term, unified, national AI development program
  b) shortage of both full-time AI technicians and technical demonstration facilities
  c) weak support from local governments in terms of budget and supporting policies
  d) lack or absence of vehicles to address AI technicians' mobility
  e) lack or absence of field supplies and unstable liquid nitrogen (LN_2) supply and
  f) lack of awareness of smallholder farmers about the importance and benefits of AI.

- *Limited Technology Draw Down and Poor Technology and Information Dissemination*

  There is a limited flow or application of technologies across species particularly on genetic and reproductive technologies. Considering the physiologic differences between the two species, application of established technologies like in-vitro production of cattle embryos offers bright promise in water buffalo. Refinement and application of these technologies under Philippine conditions must be enhanced in the production of breeding animals of superior genetic value.

Crucial to the success of any development effort is how to bring these technologies to the intended beneficiaries, the small-hold farmers. For instance, AI technology promotion has to be re-evaluated and improved. Some studies noted the lack of farmer-friendly materials that accounts for the low diffusion of knowledge. Massive training and retooling program for field technicians have to be developed, and for them to be more effective extensionists, they should be technically equipped as well as socially acceptable in the community. Training materials, such as manuals, brochures and visual aids, are equally important support component of the project.

- *Poor Over-all Animal Management*

A host of inter-related factors affects both the production and the efficiency of productivity aspects of water buffaloes and beef cattle particularly in the villages. The problem could range from weak to absence of breeding and selection schemes; lack of training and organization of farmers on proper animal management, feeding management and animal health delivery systems that leads to unwanted losses and deaths of animals.

- *Unavailability of Soft Loans from Financial Institutions*

Livestock production, compared to agricultural production is capital intensive. Access to credit had been regarded as one of the major constraints or limitations in both water buffalo and cattle operations. Soft loans (low interest rate and long-term credit) for production inputs are not available from financial institutions to encourage farmers to engage and improve their livestock farming activities. The AML hoped to address this by providing a better credit scheme.

4. Development Objectives

4.a Long Term

It is the desire of this project to improve the quality of life of the farming communities through the augmentation of their income from livestock raising.

4.b Medium Term

1. To increase the productivity of water buffalo and beef cattle in terms of quality and number of animals by supporting the Genetic Improvement Program (GIP) component of the AML

2. To improve the institutional capability of PCC, BAI, DA-RFU and LGU personnel in carrying out the GIP

3. To intensify technology promotion and information dissemination to DA-RFU and LGU technicians, breeders, livestock cooperatives, smallhold farmers and other stakeholders

4.c. Short Term

1. To formulate a Unified National Artificial Insemination Program for large ruminants and to develop NESF as a satellite center of NABC in Luzon specifically for the conduct of AI and PD training programs for Luzon-based LGU technicians

2. To assist in the operationalization of the GIP component of the AML for water buffalo and beef cattle by using progeny tested animals in the organized breeding activities and intensive artificial insemination program.

3. To strengthen the capacity and capability of PCC and BAI personnel through participation in training programs, seminars and workshops as well as conduct of massive training of LGU technicians (approximately 540 persons in 3 years) and smallhold farmers. This also includes among others, production of appropriate, farmer-friendly information, extension / education and communication (IEC) materials.

4. To make farmer-beneficiaries, socially and technically prepared in beef cattle and water buffalo production to increase their productivity and to improve their respective household incomes. The Project is expected to benefit approximately 24,000 farmers (total number covering localities surrounding the Project sites)

5. Project Description

The Project complements the AML and will be executed under a collaborative scheme by and between PCC, BAI and JICA. While these two livestock agencies have earlier been identified as the project proponents, this does not however preclude the involvement of other agencies like the NDA. A Memorandum of Agreement (MOA) will be signed and enforced, delineating the respective roles of each agency/institution and their actual duties and responsibilities or obligations for the smooth implementation of the Project.

Under this arrangement, three (3) centers have been identified as direct beneficiaries of the Project, the NABC at Malaybalay, NESF at General Tinio (as satellite or support center of NABC) and NWBGP at Muñoz.

The NABC will be strengthened to lead the Unified National Artificial Insemination Program (UNAIP), formulated through the project. It shall also coordinate the activities of the National AI Task Force (NAITF) that will be formed through the Project. The latter shall be responsible in formulating the UNAIP that spells the complementation strategies for improving the AI delivery services in the country. Membership of the Task Force shall be composed of two (2) representatives from each livestock agency / institution involved in AI services. The Terms of Reference (TOR) is found in Annex A.

As a satellite or support center of NABC, the NESF shall strengthen its capacity in semen production, progeny testing, conduct of farmers training programs and development of technology-demonstration areas on beef cattle production systems.

The NWBGP of the PCC on the other hand, shall also strengthen its current activities in the conduct of AI training programs, buffalo semen processing and progeny testing utilizing

existing and new equipment and facilities provided by the Project.

In support to the GIP component of the AML, production of genetically superior breeders from the two animal resources will be supported. Capability enhancement though training of technical staff involved in this activity will be provided. Performance evaluation and progeny testing will be carried out extensively on the progenies (F_1 and F_2) of the infused breeder stock importation of PCC and BAI from 1993 to 1998). Progeny tested animals, particularly proven sires, shall be the source of semen for the UNAIP.

An indicative training of technical manpower of the two agencies shall also be provided by the Project either locally or abroad to enhance project implementation. An inventory of manpower resources shall be carried out in BAI and PCC in order to identify qualified and deserving candidates.

Through the NAITF, a nation-wide assessment of activities and accomplishments of previously trained AI technicians and their actual utilization shall also be carried out. Based on the findings, a massive re-training of LGU technicians may be carried out using the unified AI training approach

The project through the Training and Technology Dissemination Component also ensures improvement in resource mobilization and dissemination of technologies will emanate from the project to its final users. Appropriate farmer-friendly IEC materials (such as manuals, brochures, pamphlets, audio-visual aids, etc.) for both beef cattle and water buffalo shall be produced and disseminated during training programs, techno-demo activities and regular program monitoring activities.

With the massive retooling and training of technicians on both social and technical aspects, enhanced technology dissemination methods and production of appropriate farmer-friendly IEC materials, the direct participation and reinforcement of LGUs and DA-RFUs will be established and will sustain the activities even after project termination.

Another crucial aspect that the project will have to address is the social preparedness of communities in accepting new technologies from the Project. Hence, the Community Organization Component will ensure that in all capability and empowering seminars, value formation must be incorporated. The production and distribution of farmer-friendly IEC materials further support this.

A major concern is the sustainability of UNAIP after the project's termination. It may be considered within the duration of the project to collect fees for the delivery of AI services in pilot areas using the Farm Integrated Animal Health and Production Project – GTZ Project (FIAHPP) approach.

A Project Management Office (PMO) shall be established at BAI to see to the over-all project implementation and monitoring. Staff members coming from both PCC and BAI shall be assigned to complete the project complementation. Additional personnel shall be hired on a contractual basis. Experts and other counterpart support staff from Japan needed in the execution of the project shall also be provided. The Project Joint Advisory Committee (PJAC) on one hand sets the direction and policy guidelines of the Project.

6. Project Components

The project components are:

1. UNAIP Policy Formulation and Institutional Capacity Development Component
2. Genetic Improvement Program Component
3. Training and Technology Dissemination Component
4. Community Organization Component

The activities under the different project's components are:

1. UNAIP Policy Formulation and Institutional Capacity Development Component
   1.1. Formulation of the Unified National Artificial Insemination Program (UNAIP) for large ruminant species by:
   - Formation of National Artificial Insemination Task Force (6 months duration)
   - Assessment of the current AI program
   - Identification of AI program accomplishments, approaches and gaps in program implementation and roles of different agencies and stakeholders
   - Development of schemes aimed at increasing diffusion rate, conception rate and over-all acceptance of AI among smallholder farmers
   - Delineation and improvement of institutional arrangements with regards to the conduct of AI services (BAI, NDA, PCC, DA-RFU, LGU, etc.)
   - Development of a unified monitoring and reporting system
   - Development of strategies for the sustainability of AI after the project termination
   - Training needs assessment and revision or development of basic and advanced AI technicians training program
   - Review of UNAIP document to identify areas/components that the Project can address during its term and determine other areas/components (e.g. training, capital investments, etc.) that can be addressed/assisted by other stakeholders or other projects
   - Finalization of UNAIP document

   1.2. Satellite Center Development for NESF
   - Construction of the following facilities at NESF:
     ⇒ Semen Collection and Processing Laboratory
     ⇒ Individual Bull Shed (10 head capacity)
     ⇒ Multi-Purpose Training Hall
     ⇒ Dormitory for 30 people
     ⇒ Performance and Progeny Testing Facilities

   - Land and Land Improvements at NESF
     ⇒ Pasture Development
     ⇒ Fencing Establishment

   1.3. Facility Support to Semen Processing Laboratories of PCC and BAI
   - Equipment Procurement

2. Genetic Improvement Program Component
   2.1. Performance evaluation and progeny testing of superior genetic stock

- Water Buffalo – NWBGP
- Beef Cattle – NABC / NESF

3. Training and Technology Dissemination Component
   3.1. Training Aspect
      3.1.1. Training of PCC and BAI technical personnel
         - Selected PCC and BAI personnel will be trained locally or abroad (in Japan) to enhance their technical capability in handling project operations and activities and to conduct trainors' training program.
         - Other local experts not available within the PCC and BAI but present in other institutions such as in the academe will be invited to join the project to complement the teams or to train project personnel in their respective fields
         - Identification of large ruminant production topics for training

      3.2.1. Massive training of LGU technicians and re-training of trained technicians
         - LGU technicians with previous training
           Identification of LGU technicians with previous national or local training
           Re-orientation and re-training of trained technicians as trainors
         - LGU technicians without training
           Identification of LGU technicians
           Massive training of these LGU technicians

      3.3.1. Conduct of Basic or Advanced Artificial Insemination (AI) and Pregnancy Diagnosis (PD) Training Program for government, private, RFU, LGU, and livestock cooperative technical personnel
         - Review, assessment of effectivity and standardization of different agencies' current AI and PD training programs
         - Preparation of syllabus, pre-test and refinement of training program
         - Repackaging or development of new training programs

   3.2. Technology Dissemination Aspect
      3.2.1. Evaluation and assessment of present IEC materials (including technical manuals) for both beef cattle and water buffalo
      3.2.2. Production of improved farmer-friendly IEC materials
      3.2.3. Dissemination of farmer-friendly IEC materials (such as manuals, brochures, pamphlets, audio-visual aids, etc.) conducted during training programs, seminars, workshops, regional and provincial sorties and regular program monitoring activities
      3.2.4. Technology-demonstration (techno-demo) activities and actual on-the-job training (OJT) programs conducted (smallholder farmers, students, private, livestock cooperative officers, DA-RFU & LGU technicians, national and other stakeholders) on large ruminant production and management systems

4. Community Organization Component
   4.1. Social preparation of recipient farmers in terms of conduct of farmer meetings or social laboratories and value formation
   4.2 Technical training of farmers on production and management of cattle and water buffaloes
   4.3 Consultations with NGO and LGU officers to sustain viability of Project activities

The detailed plan is shown in Annex B

7. Implementation Strategy

The Project shall establish a Project Joint Advisory Committee (PJAC) and a Project Management Committee (PMC) to operationalize each of the different project components and activities.

Likewise, a Project Coordinator (PC) shall be nominated / appointed from qualified PCC and BAI personnel to directly supervise and coordinate all activities to be undertaken by the project. (see Annex C - the schematic diagram on the Project Implementation Structure and Its Linkages)

The following schemes and strategies shall be implemented by the PMC in order to formulate the UNAIP, develop institutional capacity (NESF as the NABC's satellite center), support the genetic improvement program and conduct training, technology dissemination and community organization activities. The target beneficiaries are DA-RFU and LGU technicians who will eventually transfer the technology to smallholder farmers, livestock cooperative technicians, progressive private breeders' personnel and other interested individuals.

- UNAIP Policy Formulation and Institutional Capacity Development Component

Formulation of the Unified National Artificial Insemination Program (UNAIP) for all large ruminant species by:

⇒ Formation of the National Artificial Insemination Task Force (NAITF)
⇒ Assessment of the current AI program
⇒ Identification of AI program accomplishments, approaches and gaps in program implementation and roles of different agencies and stakeholders.
⇒ Development of schemes aimed at increasing diffusion rate, conception rate and over-all acceptance of AI among smallholder farmers
⇒ Delineation and improvement of institutional arrangements with regards to the conduct of AI services (BAI, NDA, PCC, DA-RFU, LGU, etc.)
⇒ Development of a unified monitoring and reporting system.
⇒ Development of strategies for the sustainability of AI after the project termination
⇒ Training needs assessment and revision or development of basic and advanced AI technicians training program
⇒ Review of UNAIP document to identify areas/components that the Project can address during its term and determine other areas/components (e.g. training, capital investments, etc.) that can be addressed/assisted by other stakeholders or other projects
⇒ Finalization the Unified National Artificial Insemination Program document for signature by the DA Secretary
⇒ Implementation of the UNAIP in large ruminants to be coordinated and monitored by NABC

Satellite Center Development for NESF

⇒ Construction of the following facilities at NESF:
- ➢ Individual Bull Shed (10 head capacity)
- ➢ Multi-Purpose Training Hall
- ➢ Dormitory for 30 people

Land and Land Improvements at NESF
- ➢ Pasture Development
- ➢ Fencing Establishment

Facility Support to Semen Processing Laboratories of PCC and BAI

⇒ Equipment Procurement

- Genetic Improvement Program Component

Performance evaluation and progeny testing of superior genetic stock

⇒ Water Buffalo – NWBGP
⇒ Beef Cattle – NABC / NESF

- Training, Technology Dissemination and Community Organization Component

Training Aspect

⇒ Training of PCC and BAI technical personnel
- ➢ Selected PCC and BAI personnel will be trained locally or abroad (in Japan) to enhance their technical capability in handling project operations and activities and to conduct trainors' training program.
- ➢ Other local experts not available within the PCC and BAI but present in other institutions such as in the academe will be invited to join the project to complement the teams or to train project personnel in their respective fields
- ➢ Identification of large ruminant production topics for training

⇒ Massive training of LGU technicians and re-training of trained technicians
- ➢ LGU technicians with previous training
  - Identification of LGU technicians with previous national or local training
  - Re-orientation and re-training of trained technicians as trainors
- ➢ LGU technicians without training
  - Identification of LGU technicians
  - Massive training of these LGU technicians

⇒ Conduct of Basic and Advanced Artificial Insemination (AI) and Pregnancy Diagnosis (PD) Training for government, private, RFU, LGU, and livestock cooperative technical personnel
- ➢ Review, assessment of effectivity and standardization of different agencies' current AI and PD training programs
- ➢ Preparation of syllabus, pre-test and refinement of training program
- ➢ Repackaging or development of new training programs

Technology Dissemination Aspect

⇒ Evaluation and assessment of present IEC materials (including technical manuals)

⇒ Production of improved farmer-friendly IEC materials

⇒ Dissemination of farmer-friendly IEC materials (such as manuals, brochures, pamphlets, audio-visual aids, etc.) conducted during training programs, seminars, workshops, regional and provincial sorties and regular program monitoring activities

⇒ Technology-demonstration (techno-demo) activities and actual on-the-job training (OJT) programs conducted (smallholder farmers, students, private, livestock cooperative officers, DA-RFU & LGU technicians, national and other stakeholders) on large ruminant production and management systems

- Community Organization Component

⇒ Social preparation of recipient farmers in terms of conduct of farmer meetings or social laboratories and value formation

⇒ Technical training of farmers on production and management of cattle and water buffaloes

⇒ Consultations with NGO and LGU officers to sustain viability of Project activities

Complementation Strategies

- *Supply of Liquid Nitrogen*

An improved distribution scheme should be included as another output of the UNAIP as this is a common constraint identified both by BAI and PCC affecting the delivery of AI services particularly of the LGUs. This can be carried through an organized LN2 distribution system utilizing project equipment available such as use of project service vehicles and identification of strategic LN2 depot supply centers.

There are six (6) mini-liquid nitrogen plants provided by a special fund from JICA and will be installed at specific regional centers. These initially may address the long and recurring problem on availability of LN2. The NAITF should however provide for the mechanism to sustain their operation and maintenance.

- *Training of LGU Technicians*

There are currently three (3)-recognized institutions providing AI training programs. These are the NABC, PCC and DTRI. A review of the AI training systems with the end in view of standardizing the conduct of AI training programs will be conducted.

A trainer's pool should also be identified who could be readily tapped in future training programs and similarly the use of training facilities.

- *Frozen Semen Production and Distribution System*

Buffalo semen production and repository in Luzon will be carried out by PCC while NESF for beef cattle. Both institutions shall however utilize the same distribution scheme with the LN_2 since the latter is critical in the supply and distribution of frozen semen.

NABC is currently producing both cattle and buffalo semen shall continue and improve its current system. Pedigreed animals shall be provided as a result of the GIP program as donors.

- *Localization of AI Program*

The UNAIP shall be localized among the LGUs. The approach in the localization efforts shall be standard and generic for large ruminants.

8. Implementation Schedule/Work Program

8.a Organization and UNAIP Formulation

Organizational planning, UNAIP formulation, institutional capacity development, satellite center development for NESF, equipment procurement and identification and fielding of JICA Experts will be conducted on the first year.

8.b Maintenance of superior genetic stocks

Performance evaluation and progeny testing of superior genetic stocks will be conducted at both centers.

8.c Training and Information and Technology Dissemination

Manpower / staff development will commence on the third quarter of the second year until the duration of the project. Training of DA-RFU and LGU technicians (approximately 180 per year or a total of 540) and smallhold farmers (approximately 8,000 per year or a total of 24,000) shall start on the third year and continue until the end of the Project. Adoption and packaging of technologies will commence on the third year, utilizing on-farm and on-farmers level.

Dissemination of technologies will follow utilizing farmer-friendly information, extension or education and communication (IEC) means.

8.d Joint Meeting

Committee meetings will be held twice (2) a year to set and review the policy guidelines of the project as well as evaluate its performance and output. Regular team meetings will be conducted on a monthly basis and as the need arises.

8.e Evaluation of the Project

Pre-evaluation and final evaluation of the Project will be conducted a joint evaluation team.

At the termination of the Project, it is expected that approximately 720 technical personnel and technicians working in the concerned areas and approximately 32,000 farmers will be given newly developed technologies.

Moreover, even if the Project is terminated, the output will be sustained by incorporating developed technology into PCC and BAI's routinary activities. Technical manuals and other technology publications produced by the Project will have far-reaching effects even beyond Project life.

9. Expected Project Benefits and Beneficiaries

The establishment of the Project will enhance production technology for cattle and buffalo as well as community development and enterprise development among livestock farmers and will generate employment in the rural communities. Continued support to the WB and BC genetic improvement program will generate improved production systems for cattle and buffalo and thus help increase the breeder base for both animals.

9.a. Direct Benefits

1) Improve way of life of farmers and increase their income through livestock production
2) Focused Artificial Insemination Program
3) Gene Pool for Beef Cattle developed at NESF
4) Focused GIP characterized by good recording system, evaluation and monitoring procedures.
5) Progeny tested and proven sires for semen collection
6) Trained and skilled manpower
7) Enhanced technical capabilities of BAI and PCC technicians (government, DA-RFU and LGU), livestock cooperative officers and smallhold farmers.
8) Farmer-friendly information, education or extension and communication (IEC) materials produced and disseminated.

9.b. Indirect Benefits

1) Alleviation of poverty in livestock farming communities
2) Increased animal population and productivity.
3) Sustainable water buffalo and beef cattle production systems.
4) Increased employment opportunities in the rural areas and improvement of people's nutrition.
5) Increased farm income.

9.c. Direct Beneficiaries

1) Smallholder/Livestock Farmers
2) PCC and BAI technical personnel
3) DA-RFU and LGU Technicians
4) Livestock Cooperatives' Personnel

9.d. Indirect Beneficiaries

1) Ordinary farmers and rural families and livestock farming communities
2) Water buffalo milk processors
3) Meat processors
4) Leather and by-product processors

10. JICA Expert Requirement

The Project will require the dispatch of Experts in the different fields stated below. The Experts' office will be located at NABC, NWBGP and NESF.

1. Long-term Experts

- Project Coordinator (1)
- Team Leader (1)
- Reproductive Physiologist (1) – reproductive diseases
- Artificial Insemination (1)
- Breeding and Genetics (1) – recording systems and evaluation processes

2. Short-term Experts

- Male Reproductive Physiologist (1) – assessment of ruminant semen
- Female Reproductive Physiologist (1)
- Ruminant Nutritionist (1)
- Veterinarian (1) – Animal Health Expert
- Dairy Technologist (2)
- Data Management and Analysis

11. Required Equipment

The project will require provision of equipment in the following areas:

- Semen Collection and Processing Laboratory
- Performance and Progeny Testing Equipment
- Project Service Vehicles to include Motorcycles for selected Technicians
- Artificial Insemination Equipment and Paraphernalia
- Production of Farmer-Friendly Information, Education/Extension and Communication (IEC) Materials
- Data Storage and Analysis Equipment
- Office Equipment and Supply

See List of Equipment needed for the Project Annex D

12. Counterpart Training in Japan

On an average of four trainees per course, the project counterparts shall attend the training course (under individual training courses or group courses) in Japan to enhance their technical capability in the fields of:

- Male Reproductive Physiology - assessment of ruminant semen
- Female Reproductive Physiology
- Artificial Insemination
- Breeding and Genetics - recording systems and evaluation processes

- Embryo Transfer
- Ruminant Nutrition
- Animal Health - Ruminant Diseases
- Dairy Technology
- Data Management and Analysis
- Technology Dissemination

13. Financial Support to Workshop and Demonstration Program

Both BAI and PCC will shoulder the training of DA-RFU and LGU technical personnel and technicians and smallhold farmers. Training of Project personnel in handling Project operation and activities will be shouldered by JICA. Other unprogrammed training programs, workshops and seminars that may arise within the duration of the Project will be decided by the PMC in collaboration with the JICA Experts.

14. Financial Support to Facility Program

The financial support to facility development is necessary in view of the facility requirement for the project equipment and facilities at NESF

– Multi-purpose Training Hall (1)	–	US$ 17,500.00
– Dormitory for 30 people (1)	–	32,500.00
– Individual Bull shed (10 head capacity)	–	25,000.00
– Semen Collection and Processing Laboratory	–	- existing -
– Performance and Progeny Testing Facilities (1)	–	- existing -

15. Philippine Counterpart for the Cooperation Project

15.a Budget

The Philippine Carabao Center and the Bureau of Animal Industry will provide the required counterpart funds needed for the implementation of the project. For the duration of the Project, BAI has programmed US$ 771,500 for Maintenance and Other Operating Expenses (MOOE) and US$ 75,000 for Capital Outlay (CO) while PCC has programmed US$ 771,500 for MOOE and US$ 60,000 for CO. The bulk of the MOOE for both agencies is programmed for the training of DA-RFU and LGU technical personnel and technicians (approximately 540) and smallhold farmers (approximately 24,000).

15.b Personnel

The PCC and BAI will provide qualified permanent staff to serve as counterpart personnel for the long-term and short-term experts through re-organization and re-assignment of existing personnel or hiring of new staff. The budget required for the hiring of new personnel is already included in PCC and BAI's 1999 budget proposal. Other technical personnel will be hired on a contractual basis.

The list of existing staff at NABC are:

Qualifications	Existing	For Hiring
1. Animal Husbandry Officer	1	0
2. Qualified Veterinarian	2	0
3. Agriculturist I to be trained as Scientist	2	0
4. AI Technician trained as Reproductive Physiology Specialist	1	0
5. Administrative Officer Designate	1	0
6. Laboratory Aide	3	0
7. Typist	1	0
8. Farm Worker/Cattle Attendant	5	0
9. Driver	2	0
10. Guard	1	2
11. Radio Operator	1	0
12. Tractor/Heavy Equipment Operator	2	0
13. Project Development Officer II – Progeny Testing Specialist	0	1
14. Project Monitoring and Development Officer I	0	2
15. Data Encoders	0	4

The list of existing staff in NESF are:

Qualifications	Existing	For Hiring
1. Animal Husbandry Officer	1	0
2. Qualified Veterinarian	2	0
3. Agriculturist I to be trained as Scientist	2	0
4. AI Technician trained as Reproductive Physiology Specialist	0	2
5. Administrative Officer Designate	1	0
6. Typist	1	0
7. Cattle Attendant	6	0
8. Driver	3	0
9. Guard	1	2
10. Laboratory Worker	3	0
11. Radio Operator	1	0
12. Tractor/Heavy Equipment Operator	2	0

The list of existing staff in PCC are:

Qualifications	Existing	For Hiring
1- Reproductive Physiology	1	0
2- Reproduction, Male Physiology	1	0
3- Reproduction	4	0
4- Breeding	1	0
5- Animal Health	3	0
6- Community Organization	2	0
7- Technology Dissemination	2	0
8- Dairy and Meat Technology	2	0
9- Farm Support	6	0
10- Project Development Officer II – Progeny Testing Specialist	0	1

See attached List of Additional Personnel required by the Project (Annex E)

15.c Maintenance and Other Operating Expenses (MOOE) and Capital Outlay (CO)

BAI

MOOE			
Travelling expenses	-	US$	10,000.00
Communication	-		3,000.00
Repair of Government Facilities	-		2,500.00
Repair of Government Vehicles	-		2,500.00
Transport Services	-		1,500.00
Supplies and materials	-		325,000.00
Training and Seminar Expenses	-		390,000.00
Fuel, Oil and Lubricants	-		15,000.00
Other Miscellaneous Expenses	-		22,000.00
	Sub Total		**771,500.00**
CO			
Infrastructure / Facility Outlay	-		75,000.00
	Grand Total		**846,500.00**

PCC

MOOE			
Travelling expenses	-	US$	10,000.00
Communication	-		3,000.00
Repair of Government Facilities	-		2,500.00
Repair of Government Vehicles	-		2,500.00
Transport Services	-		1,500.00
Supplies and materials	-		325,000.00
Training and Seminar Expenses	-		390,000.00
Fuel, Oil and Lubricants	-		15,000.00
Other Miscellaneous Expenses	-		22,000.00
	Sub Total		**771,500.00**
CO			
Infrastructure / Facility Outlay	-		60,000.00
	Grand Total		**831,500.00**

See attached Details of Budgetary Requirements (Annex F)

16. Organization and Management

16.a Committees / Teams

There shall be a Project Joint Advisory Committee and a Project Management Committee to operationalize the project.

1. The Project Joint Advisory Committee (PJAC)

The PJAC will be established to set the direction and policy guidelines of the Project. It will be tasked to review / evaluate the progress of project implementation. The PJAC shall likewise assign the National Project Coordinator (NPC) and the various Team Leaders of the project. The PJAC will be composed of:

Chairperson	:	DA - Undersecretary for Livestock Operations
Members	:	AML Program Director
		PCC Executive Director
		BAI Director
		JICA Team Leader (Expert)
		National Project Coordinator

The PJAC will also be responsible for linkages with other institutions and agencies particularly with:

a. PCARRD / BAR / other R & D institutions
b. NEDA
c. DBM
d. JICA Office
e. Japanese Embassy

2. The Project Management Committee (PMC)

The PMC will be established for the purpose of smooth and efficient management of the project's daily operations. It will ensure the full implementation of project activities. The PMC will be composed of:

a. National Project Coordinator (NPC)
b. JICA Team Leader / Experts
c. UNAIP Formulation and Institutional Capability Development Component Leader
d. Genetic Improvement Program Component Leader
e. Training, Technology Dissemination and Community Organization Component Leader

The NPC will report directly to the PJAC regarding the status/progress of project implementation. Direct supervision of all project activities for smooth implementation and preparation / recommendation of annual plans and budgetary requirements shall likewise be the responsibilities of the NPC.

The Project will have three (3) major components. Each component is in turn composed of several units that will be headed by Team Leaders. These are:

1. UNAIP Formulation and Institutional Capability Center Development Team Leader
   a) NAITF / UNAIP Formulation Unit
   b) Satellite Center Development Unit
      Facilities Management Section
      Pasture and Fencing Management Section
   c) Facility Support to Semen Processing Laboratory Unit
      Equipment Maintenance Section

2. Genetic Improvement Program Team Leader
   a) Animal Management and Propagation Unit
   b) Performance Evaluation and Progeny Testing Unit
   c) Recording and Monitoring Unit

3. Training and Technology Dissemination Team Leader
   a) Training Unit
   b) Technology Dissemination Unit
   c) Community Organization Unit

4. Community Organization Team Leader
   a) Social Preparation and Value Formation Unit
   b) Technical Training Unit
   c) NGO and LGU officers Consultative or Coordination Unit

See Proposed Project Organizational Structure (Annex G)

17. Role of PCC and BAI to the Management and Operation of the Project

a. PCC & BAI will assign knowledgeable technical personnel to implement programs and activities related to Water Buffalo and Beef Cattle production and improvement program.
b. Will establish sustainable training, information and technology dissemination program that will directly address the needs of the farming families through a collaborative network with the DA-RFUs and LGUs.
c. In collaboration with the State Colleges and Universities (SCUs), will develop/identify and conduct a training program for personnel involved in the project.
d. Will establish a databank of information related to artificial insemination, breed performance, reproduction and other economic traits for use by the management in policy formulation.
e. Oversees the development and implementation of the project.
f. Shall assist in the design of an appropriate selection and scientific breeding scheme/system for breed improvement and development.
g. Shall provide technical personnel knowledgeable in the production of farmer-friendly IEC materials
h. Shall assist in the establishment of NESF as Satellite Center of NABC.

18. Roles and Relationships of the Different Components to the Project Operation and Management

UNAIP Policy Formulation and Institutional Capacity Development Component

This component will form the NAITF Task Force who will be tasked to formulate the UNAIP that will be the basis of all AI activities in the country. The satellite center development for NESF will contribute to the institutional capacity development of BAI as well as facilitate in Project implementation. The facility support to semen processing laboratories on the otherhand will further strengthen operations and thus make available good quality frozen semen.

Genetic Improvement Program Component

Progeny tested animals will be the donors for the UNAIP.

Training and Technology Dissemination Component

Training and capability development activities are needed in carrying out the various activities identified by the UNAIP.

Community Organization Component

Well-informed, socially prepared and technically trained stakeholders with proper values would create appreciation and ensures continued application of technologies therefore leading to the over-all success of the project. NGO and LGU consultative meetings to coordinate, facilitate and produce viable activities after termination of JICA's support.

19. Project Cost

19.a. Counterpart Contribution ('000 US$)

The total project cost is US$ 4,623.325 M. Of this, the foreign counterpart is approximately US$ 2,612.50 M and the GOP counterpart is US$ 2,010.825 M.

Foreign counterpart contribution :

1. BAI Equipment	-	US $	1,140.00
2. PCC Equipment	-		250.00
3. Training and Extension Equipment	-		50.00
4. Technology Dissemination Equipment	-		32.50
5. Staff/Manpower Development	-		500.00
6. Project Management Team Equipment	-		435.00
7. Technicians Equipment	-		255.00
Sub Total		US $	2, 612,500.00

Philippine counterpart contribution :

1. Personnel Services			
a) Existing Plantilla	-	US $	201,200.00
b) For Hiring (contractual basis)	-		131,625.00
2. MOOE	-		1,543,500.00
3. Infrastructure Development	-		135,000.00
Sub Total		US $	**2,010,825.00**
TOTAL PROJECT COST		US $	**4,623,325.00**

19.b. Financial Allocation ('000 US$)

Counterpart Funding	Year 1	Year 2	Year 3	Year 4	Year 5
Foreign counterpart	2,212.50	100.00	100.00	100.00	100.00
Philippine Counterpart	620.425	190.40	400.00	400.00	400.00

ANNEX A - National Artificial Insemination Task Force (NAITF)

Terms of Reference

Rationale

Convergence and harmonization of AI efforts and resources from BAI, PCC, NDA and the Regional Field Units of the Department of Agriculture is the call of time and the blue print of a long-term unified national AI development program is long over-due.

Taking the observation from the report of the JOCV Project entitled "Strengthening of the National Artificial Insemination Project" as a baseline, the framework towards an improved AI delivery system has to be shaped.

Composition

The NAITF shall be composed of two (2) key officers involved in the AI program from each of the National livestock agencies, namely the Bureau of Animal Industry (BAI), the Philippine Carabao Center (PCC) and the National Dairy Authority (NDA). Representation shall also be sought from the University of the Philippines at Los Baños - Dairy Training and Research Institute (UPLB-DTRI) and three (3) representatives from the DA-RFUs representing each of the island groupings of Luzon, Visayas and Mindanao.

Duties and Responsibilities

The NAITF shall be responsible in formulating the Unified National Artificial Insemination Program (UNAIP) for large ruminants in the country within six (6) months after the group's foundation. In coming out with the program, the task force undertakes:

- A thorough assessment on the current state of the AI program and be able to identify gaps / weaknesses and strengths.
- Develop schemes / mechanisms aimed at improving AI diffusion and conception rates.
- Recommend other measures in improving convergent and harmonization strategies.

Duration

The NAITF shall automatically be dissolved after the formulation and signing of the UNAIP program document by the Secretary of the Department of Agriculture.

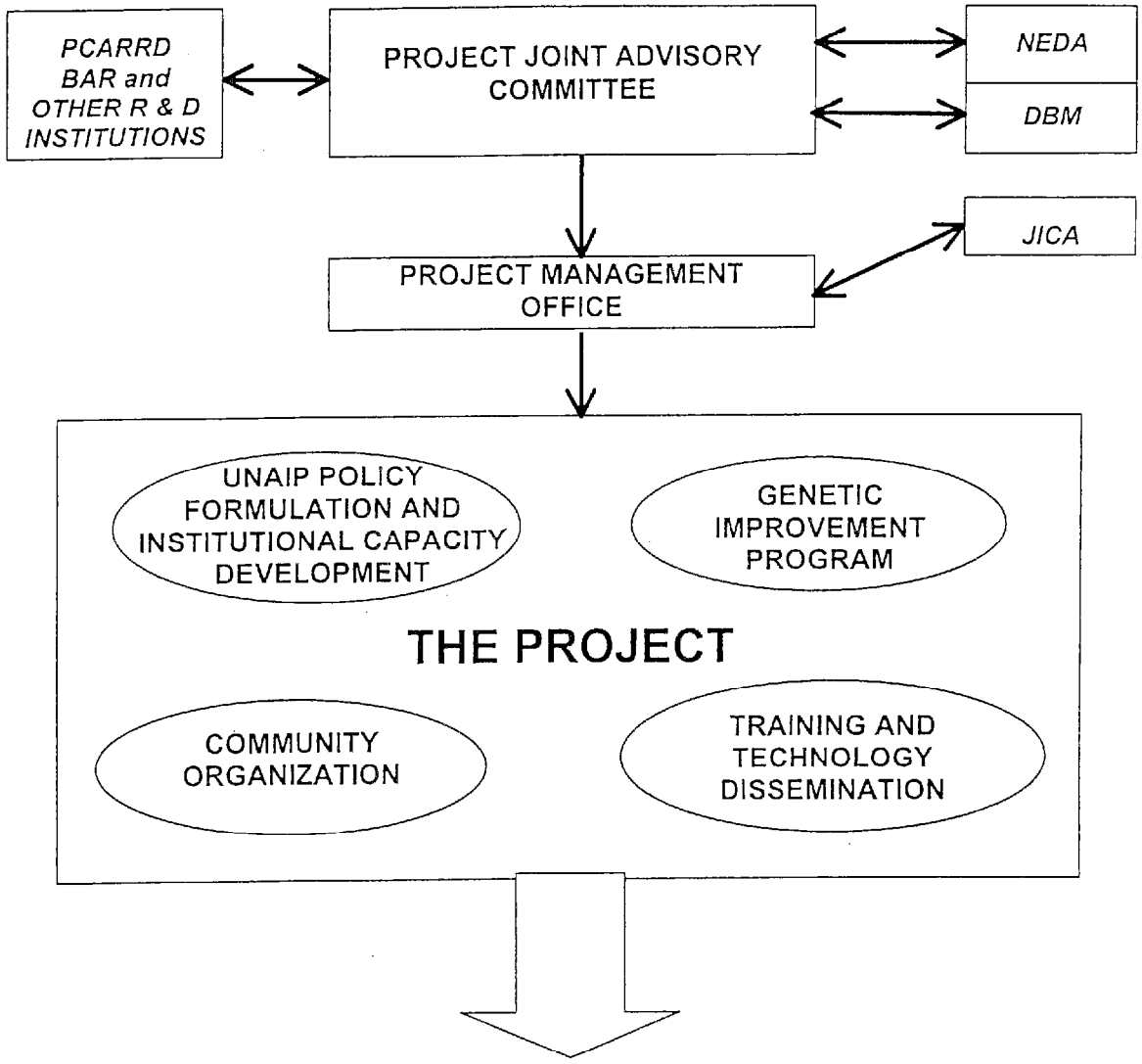
Annex B - Detailed Plan of Project Activities

Activities	Year 1	Year 2	Year 3	Year 4	Year 5
UNAIP Policy Formulation and Institutional Capacity Development					
Formulation of the Unified National Artificial Insemination Program (UNAIP) for all LR species					
• Formulation of the NAITF					
• Assessment of the current AI program					
• Identification of AI program accomplishments, approaches and gaps in program implementation and roles of different agencies and stakeholders					
• Development of schemes aimed at increasing diffusion rate, conception rate and over-all acceptance of AI among smallholder farmers					
• Delineation and improvement of institutional arrangements with regards to the conduct of AI services (BAI, NDA, PCC, DA-RFU, LGU, etc.)					
• Development of a unified monitoring and reporting system					
• Development of strategies for the sustainability of AI after the project termination					
• Training needs assessment and revision or development of basic and advanced AI technicians training programs					
• Review of UNAIP document to identify areas/components that the Project can address during its term and determine other areas/components that can be addressed/assisted by other stakeholders or other projects					
• Finalization of the UNAIP document for signature by the DA Secretary					
• Implementation of the UNAIP in large ruminants to be coordinated and monitored by NABC					
Satellite Center Development for NESF					
Construction of the following facilities at NESF					
• Individual Bull Shed (10 head capacity)					
• Multi-Purpose Training Hall					
• Dormitory for 30 people					
Land and Land Improvement at NESF					
• Pasture Development					
• Fencing Establishment					
Facility support to Semen Processing Laboratories					
• Procurement of Equipment					
Genetic Improvement Program Component					
Performance evaluation & progeny testing of superior genetic stock					
• Water Buffalo – NWBGP & HQ					
• Beef Cattle – NABC / NESF					

Activities	Year 1	Year 2	Year 3	Year 4	Year 5
Training and Technology Dissemination Component					
Training Aspects					
• Training of PCC and BAI technical personnel					
⇒ Selected PCC and BAI personnel will be trained locally or abroad (in Japan) to enhance their technical capability in handling project operations and activities and to conduct trainors' training program					
⇒ Other local experts not available within the PCC and BAI but present in other institutions such as in the academe will be invited to join the project to complement the teams or to train project personnel in their respective fields					
⇒ Identification of large ruminant production topics for training					
• Massive training of LGU technicians and re-training of trained technicians on production systems					
⇒ LGU technicians without training					
➢ Identification of LGU technicians					
➢ Massive training of these technicians					
⇒ LGU technicians with previous training					
➢ Identification of LGU technicians with previous national or local training					
➢ Re-orientation and re-training of trained technicians as trainors					
• Conduct of Basic and Advanced AI and PD Training for government, private, DA-RFU, LGU and livestock cooperative technical personnel					
⇒ Review, assessment of effectivity and standardization of current AI and PD training programs					
⇒ Preparation of syllabus, pre-test and refinement of training program					
⇒ Repackaging or development of new training programs					
⇒ Conduct of revised basic and advanced AI & PD training					
⇒ Evaluation/Assessment of new revised training program under UNAIP					

Activities	Year 1	Year 2	Year 3	Year 4	Year 5
Technology Dissemination Aspect					
• Evaluation and assessment of present IEC materials (including technical manuals)					
• Production of improved farmer-friendly IEC materials					
• Dissemination of farmer-friendly IEC materials (such as manuals, brochures, pamphlets, audio-visual aids, etc.) shall be conducted during training programs, seminars, workshops, regional and provincial sorties and regular program monitoring activities					
• Evaluation of the farmer-friendly IEC material produced					
• Technology-demonstration (techno-demo) activities and actual on-the-job training (OJT) programs conducted (smallholder farmers, students, private, livestock cooperative officers, DA-RFU & LGU technicians, national and other stakeholders) on large ruminant production and management systems					
Community Organization Component					
• Farmer meetings or social laboratories					
• Social preparation and value formation of recipient farmers					
• Technical training of farmers on production and management of cattle and water buffaloes					
• Consultative meetings with NGO and LGU officers on Project viability and sustainability after termination of JICA's support					

Annex C - Project Implementation Structure and Its Linkages



SMALLHOLD FARMERS
NGO INVOLVEMENT
OTHER STAKEHOLDERS
DA-RFU & LGU TECHNICIANS
LIVESTOCK COOPERATIVE OFFICERS

Annex D - List of Equipment required by the Project

1. UNAIP Formulation, Institution Capacity Development & Site Development

Type Equipment	List of items and Specifications	No.	Cost (US $)
PCC Semen Processing Equipment			250,000.00
	Semen storage tanks. Wide mouth, 600 liters capacity	6	
	Clean bench, 60" minimum width with HEPA filter, stainless working surface supplied with UV lamp	2	
	Cold handling cabinet. Stainless steel surface with 1 unit freezer, 2 units evaporator	2	
	Automatic straw printer w/ electronic counting device, stop & accessories	2	
	Video microscopy system. Includes microphotography apparatus.	2	
	Carbon dioxide incubator, water jacketed	2	
	Osmometer	1	
	pH meter, heavy duty	2	
	Water purifier with replaceable cartridge	3	
	Stereo microscope, binocular	4	
	Analytical balance, digital with maximum capacity of 200 – 300 grams, sensitivity of 0.0001 gm. 220V	2	
	Power generator, diesel engine, 15 KVA	2	
	Autoclave/sterilizer, front loading	2	
	Large animal squeeze chute	3	
	Standard ultra low freezer (-85°)	1	
	Portable electronic weighing scale, AC/DC power supply	15	

Type Equipment	List of items and Specifications	No.	Cost (US $)
BAI Semen Processing Equipment			1,000,000
	Cooling Chamber	1	
	Freezing Chamber	1	
	Microscopes-compound/photo microscope/photo contrast	3	
	Pipette Shaker	1	
	Magnetic Stirrer	1	
	Water Bath	1	
	Semen Straw Sterilizer	1	
	Water Distilling Apparatus	1	
	Centrifuge	1	
	Autoclave	1	
	Oven	1	
	TV Monitor	1	
	Electric Balance, "A&D" ER-180A	1	
	Suction Machine	1	
	Refrigerator	1	
	Straw Printing Machine	1	
	Hand Tally Counter	1	
	Timer/Stop Watch	3	
	Hemocytometer including Cover Slip	1	
	RBC and WBC Pipette	1	
	Semen Examination Plate and Cover Slip	10	
	Test Tube		
	Test Tube Brush large/small		
	BTB		
	Test Tube Rack		
	Slide Warmer, 220 V FA220, FHK	6	
	Straw Powder		

Type Equipment	List of items and Specifications	No.	Cost (US $)
BAI Semen Processing Equipment	Collecting Tube Bar Thermometer –150 - +30 Paper Towels Towels Pegboard Filling Nozzle Bubblier with comb Inoculating Loop Semen Straw Tubes, 500 pcs/case, FA 332, FHK Straw Printing Ink Goblets Rice Jar Straw Catcher Straw Hanger Long Forceps Forceps for Straw Stirring Bar Agglutination Slide Syringe Rubber Bands Glassware Reagents Liquid Nitrogen Tanks	100	

Type Equipment	Specifications	No.	Cost (US $)
Semen Collection Equipment	Artificial Vagina Set (AV), FHK FA-53 KY Jelly Bar Thermometer, -20C-100C AV Sterilizer Hot Water Sterilizer Electric Stove Rubber Bands Paper Towels Stirring Rod	20 20	7,500

2. Genetic Improvement Program Component

Type Equipment	Specifications	No.	Cost (US $)
Progeny Testing Equipment	Desktop Computers (Macintosh) Laser Printers (Colored and Black and White) LCD Projector (Infocus) Laptop computer unit (Apple)	2 2 2 2	25,000

Type Equipment	Specifications	No.	Cost (US $)
Liquid Nitrogen Generation and Storage	Liquid Nitrogen Plant (30 Liters per day) LN_2 Depositories (3 primary and 3 secondary depots)	1 6	140,000

Type Equipment	Specifications	No.	Cost (US $)
Artificial Insemination Equipment			90,000
	Straw Sheaths	120	
	Plastic Gloves	120	
	Straw Cutter (metal, scissors type)	120	
	Straw cutter (plastic, round)	120	
	AI Booklet	120	
	Speculum	120	
	Straw Gun .5 (French type)	120	
	Straw Gun .5 (FHK)	120	
	Straw Gun .25 (FHK)	120	
	Portable LN2 Tank	120	
	LN2 Big Tanks	120	
	Thermos Thawing Jug	120	
	Thawing Thermometer	120	
	Paper Towels	120	
	Tweezers	120	
	AI Carrying Case	120	

3. Training, Technology Dissemination and Community Organization Component

Type Equipment	Specifications	No.	Cost (US $)
Audio-Video And IEC Production Equipment			14,000
	Colored Television, 29 inches	2	
	VHS Player/Recorder	2	
	Karaoke Sound System, complete accessories, high quality, durable microphone, all jacks provided	2	
	Overhead Projector, 500 W	2	
	Video Camera	2	
	Photo Camera, 28-70 lens, 70-200 mm lens, flash unit	2	
	Risograph	1	

4. Project Management Committee Equipment

Type Equipment	Specifications	No.	Cost (US $)
Service Vehicles			435,000
	Project Service Vehicle, 4 x 4 capability	3	
	Coaster, 50 – 60 passenger capacity	2	
	Truck for LN_2 Distribution (with tanker for LN_2 transport)	3	
	Motorcycle, 125cc, with carrying rack over rear fender	120	

Annex E - List of Additional Personnel Complement for the Project

Center	Number	Position	Salary Grade
NABC	2	Project Monitoring and Evaluation Development Officer II	18
	4	Data Encoders	8
PCC	1	Project Development Officer II (Progeny Testing Specialist)	18

Annex F - Details of Budgetary Requirements

	BAI	PCC
MOOE		
Traveling Expenses	10,000.00	10,000.00
Communication	3,000.00	3,000.00
Repair of Govt. Facility	2,500.00	2,500.00
Repair of Govt. Vehicle	2,500.00	2,500.00
Transport	1,500.00	1,500.00
Supplies	325,000.00	325,000.00
Training/Seminar	390,000.00	390,000.00
Gasoline/Fuel	15,000.00	15,000.00
Others	22,000.00	22,000.00
SUB TOTAL	**771,500.00**	**771,500.00**
CO		
Infrastructure Development	60,000.00	75,000.00
SUB TOTAL	**60,000.00**	**75,000.00**
GRAND TOTAL	**831,500.00**	**846,500.00**

List of SUPPLIES:

1. Liquid Nitrogen
2. AI Straw Sheaths
3. Office Supplies
4. Feeds/Medicines

List of TRAINING PROGRAMS / SEMINARS:

1. Artificial Insemination Technicians Training Program
2. Farmers' Training Programs
    a. Social Preparation
    b. Technical Training

List of OTHER EXPENSES:

1. Printing Services
2. Production of Posters
3. Videos/Tapes and Visual Aids
4. Comics
5. Honoraria

4．要請概要

1．プロジェクト名
　水牛及び肉用牛生産計画

2．実施機関
（1）畜産局　Bureau of Animal Industry （BAI）
（2）フィリピンカラバオセンター　Philippine Carabao Center （PCC）

3．プロジェクトサイト
（1）畜産局国立家畜人工授精所　National Artificial Breeding Center（NABC）/ BAI
　ミンダナオ島ブキッドノン州マライバライ
（2）畜産局ヌエバエシハ種畜牧場　Nueva Ecija Stock Farm （NESF） / BAI
　ルソン島ヌエバエシハ州ジェネラルティニオ
　※NABCのルソン島におけるサテライトとしての位置付け
（3）フィリピンカラバオセンター水牛遺伝子プール本部
　National Water Buffalo Gene Pool （NWBGP) and Headquarters / PCC
　ルソン島ヌエバエシハ州ムニョス

4．関係省庁
　農業省　Department of Agriculture (DA)

5．プロジェクト期間
　5年

6．目的
（1）長期目標
　畜産収入の増加を通じた農村社会生活の質的向上

（2）中期目標
　1） 水牛と肉牛の質的・量的な生産性の向上
　2） PCC、BAI、農業省地域事務所および地方自治体の畜産技術者の技術向上
　3）農業省地域事務所、地方自治体、ブリーダー、畜産組合及び小農家などに技術・情報の提供を強化

（3）短期目標
　1）国家統一人工授精計画の策定
　2） NESFの強化、特にルソン島の技術者に対する人工授精研修の開催
　3）後代検定と人工授精による家畜の改良
　4） PCC、BAI職員の技術の強化
　5）地方自治体職員（540人/3年）と農民の研修開催

6） 農民に分かりやすい技術普及資料の作成
7）家畜の生産性向上を通じた収入増加
（プロジェクトサイト周辺の24,000戸の農家）

7．プロジェクト活動
（1）国家統一人工授精計画の策定と組織強化
（2）検定による遺伝的改良
（3）研修と技術移転
（4）農民組織の支援

8．プロジェクトの運営管理
（1）政策マターを扱うProject Joint Advisory Committeeを設置
（2）実務マターを扱うProject Management Committeeを設置
（3）Project Joint Advisory Committee はProject Coordinatorを任命
（4）プロジェクト活動を上記7に示した4分野に分け、各分野にリーダーを任命
但し、研修と技術移転、農民組織の支援の2分野のリーダーは兼任
（5）国家統一人工授精計画の実施に先立ち6ヶ月間全国人工授精タスクフォースを設置し、人工授精の評価、計画策定、見直し等を行う

9．専門家派遣およびカウンターパート研修
（1）長期専門家
1）チームリーダ
2） 業務調整
3）繁殖生理/繁殖疾病
4）人工授精
5） 育種・遺伝/記録と評価

（2）短期専門家
1） 繁殖生理（雄）/精液評価
2）繁殖生理（雌）
3）家畜栄養
4）獣医師/家畜衛生
5）酪農（2人）
6）データ管理・分析
（3）カウンターパート研修
繁殖、人工授精、育種・遺伝、ET、家畜栄養、家畜衛生、酪農、
データ管理・分析、技術移転

10. 予算

（1）日本側

約３．１４億円（５年合計）

精液生産施設、凍結精液生産機材、後代検定機材、車両
単車（１２０台）、人工授精機材、普及用資料及び機材
コンピュータ、事務用品など

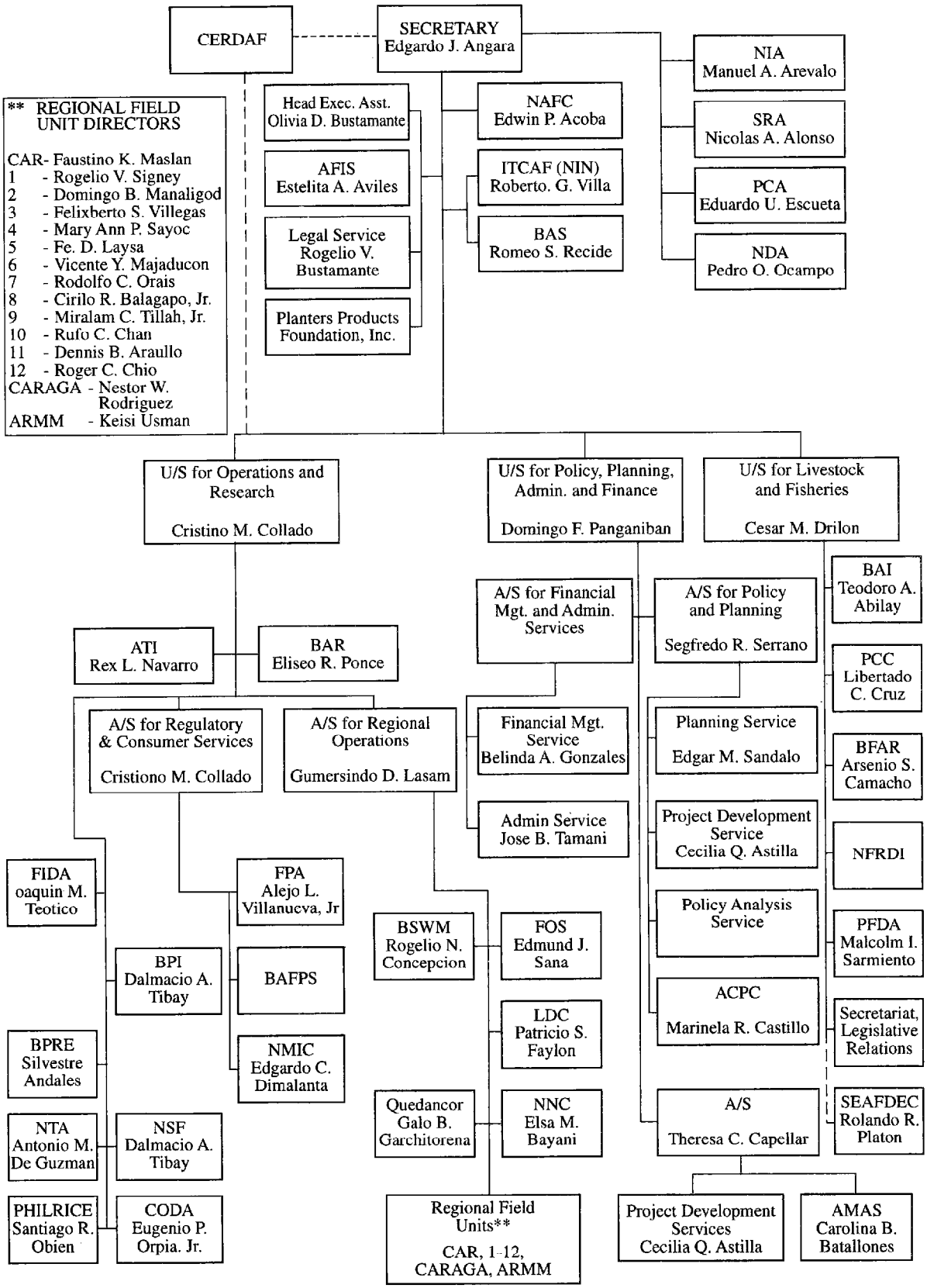
（2）フィリピン側

約２．４１億円（５年合計）

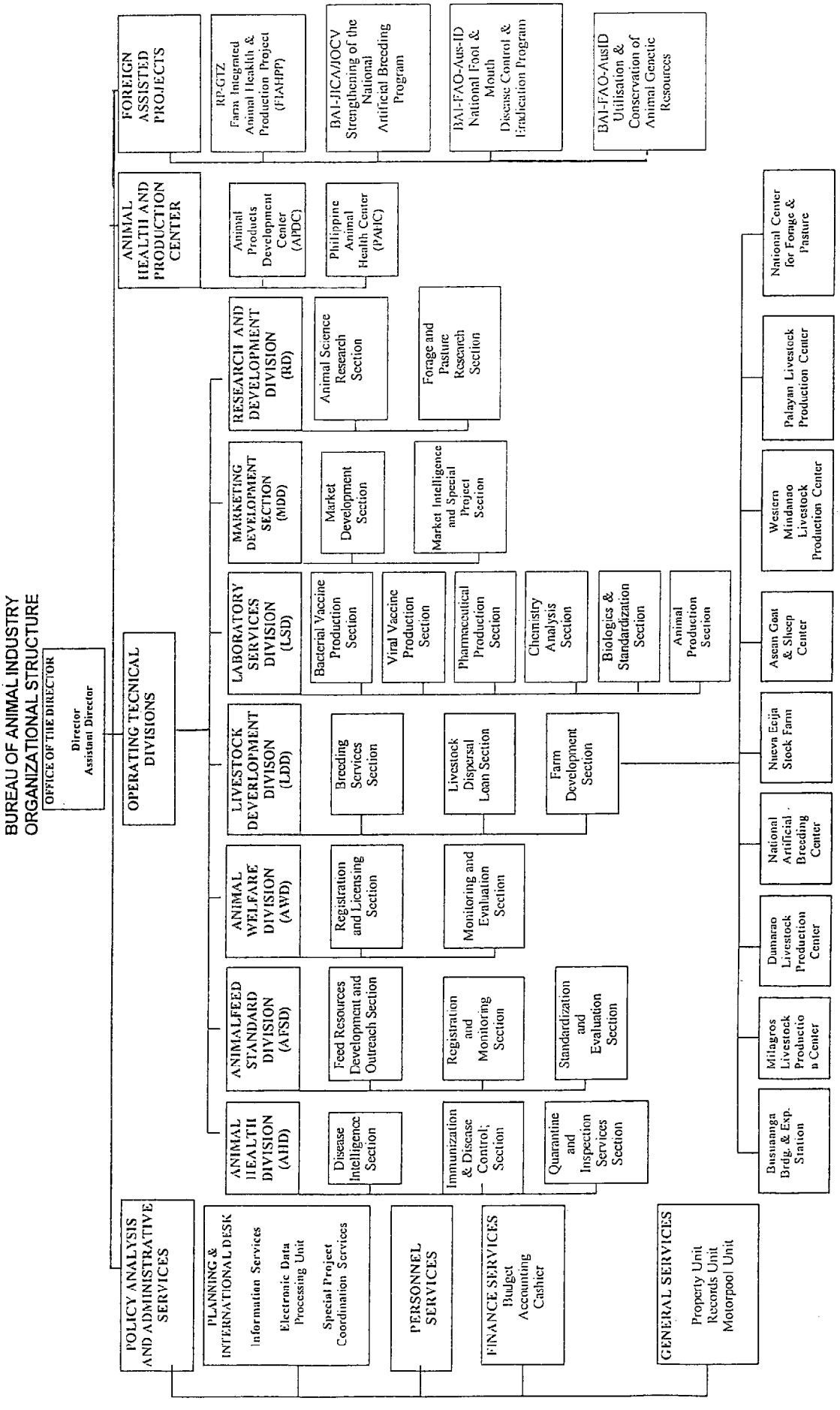
維持管理費、人件費、施設設備費など

5．農業省組織図

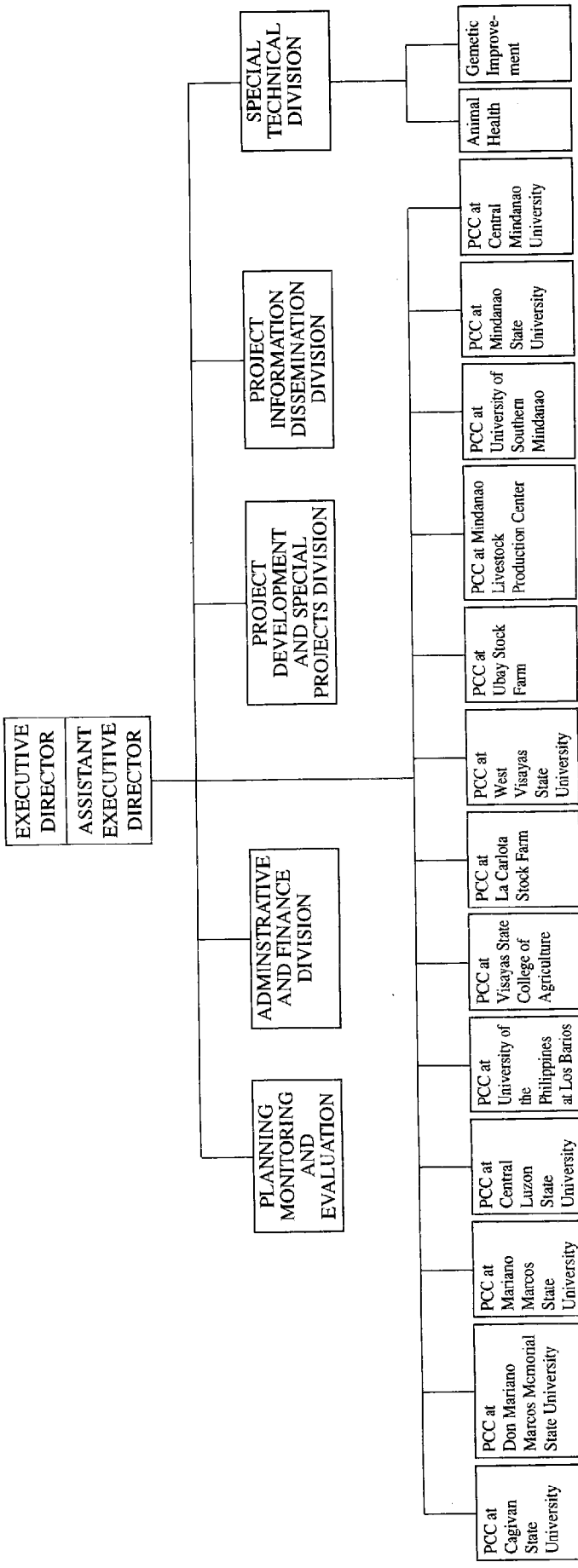
ORGANIZATIONAL STRUCTURE
DEPARTMENT OF AGRICULTURE



6．畜産局組織図


BUREAU OF ANIMAL INDUSTRY
ORGANIZATIONAL STRUCTURE
OFFICE OF THE DIRECTOR
Director
Assistant Director
FOREIGN ASSISTED PROJECTS
RP-GTZ Farm Integrated Animal Health & Production Project (FIAHPP)
BAI-JICA/JOCV Strengthening of the National Artificial Breeding Program
BAI-FAO-Aus-ID National Foot & Mouth Disease Control & Eradication Program
BAI-FAO-AusID Utilisation & Conservation of Animal Genetic Resources
ANIMAL HEALTH AND PRODUCTION CENTER
Animal Products Development Center (APDC)
Philippine Animal Health Center (PAHC)
OPERATING TECNICAL DIVISIONS
RESEARCH AND DEVELOPMENT DIVISION (RD)
Animal Science Research Section
Forage and Pasture Research Section
MARKETING DEVELOPMENT SECTION (MDD)
Market Development Section
Market Intelligence and Special Project Section
LABORATORY SERVICES DIVISION (LSD)
Bacterial Vaccine Production Section
Viral Vaccine Production Section
Pharmaceutical Production Section
Chemistry Analysis Section
Biologics & Standardization Section
Animal Production Section
LIVESTOCK DEVELOPMENT DIVISON (LDD)
Breeding Services Section
Livestock Dispersal Loan Section
Farm Development Section
ANIMAL WELFARE DIVISION (AWD)
Registration and Licensing Section
Monitoring and Evaluation Section
ANIMALFEED STANDARD DIVISION (AFSD)
Feed Resources Development and Outreach Section
Registration and Monitoring Section
Standardization and Evaluation Section
ANIMAL HEALTH DIVISION (AHD)
Disease Intelligence Section
Immunization & Disease Control; Section
Quarantine and Inspection Services Section
National Center for Forage & Pasture
Palayan Livestock Production Center
Western Mindanao Livestock Production Center
Ascan Goat & Sheep Center
Nueva Ecija Stock Farm
National Artificial Breeding Center
Dumarao Livestock Production Center
Milagros Livestock Productio n Center
Busnanga Brdg. & Exp. Station
POLICY ANALYSIS AND ADMINISTRATIVE SERVICES
PLANNING & INTERNATIONAL DESK
Information Services
Electronic Data Processing Unit
Special Project Coordination Services
PERSONNEL SERVICES
FINANCE SERVICES
Budget
Accounting
Cashier
GENERAL SERVICES
Property Unit
Records Unit
Motorpool Unit

7．フィリピンカラバオセンター組織図



8．農業大臣の家畜生産に係る演説についての新聞記事及び要約

MANILA BULLETIN　October 6, 1999

Sperm banks

Government putting up a sperm bank in every region?

Yes, not for humans, though – but strictly for four-legged, hoofed animal species only – particularly cattle.

According to Agriculture Secretary Edgardo Angara, the country has already put up one such facility in Malaybalay, Bukidnon since 1995. But he said the Estrada Administration was bent on putting up similar establishments or "pilot areas" in Davao, Cebu, Manila, Nueva Ecija, San Fernando, Pampanga and other viable sites, saying the artificial insemination facilities were necessary to accelerate modernization in the livestock sector.

He made the remark in a keynote address before a forum organized by the National Research and Development System for Agriculture and Fisheries (Nardsaf) and the International Agricultural Research Centers at the Edsa Plaza Hotel in Pasig City Monday.

"For livestock, we will direct research toward the setting up of regional sperm banks and the development of community-based artificial insemination programs," Angara told the forum, consisting mostly of world-class scientists and researchers.

For over three years now, the artificial breeding center in Bukidnon has successfully allowed scientists and veterinarians to impregnated local cows using semen drawn from American and Australian bulls that were brought earlier into Mindanao for reproduction.

But efforts to replicate the feat in other cattle-growing areas of the country have been met with technical difficulties, according to Angara. This has prompted the agriculture department to put greater priority of finding better ways at establishing sperm banks whose ultimate goal would be to reproduce bigger, stronger, and meatier bulls and cows for distribution to the regions and down to the municipalities and barangays.

During the same forum, Angara identified some of the more urgent requirements of the farming sector which local and international agricultural research scientists may work on through research partnerships.

"Our most urgent needs from the agricultural intellectual community include germplasm exchange to improve the genetic makeup of our strategic crops such as fruits, corn and rice," he said.

He pointed out local scientists also wanted to exchange notes on information and technology – and management techniques in both running research and development and in developing human resources.

He also called on international agricultural research centers like the Los Baños-based International Rice Research Institute and the Asian Vegetable Research and Development Center in Taiwan to incorporate specific Philippine agricultural concerns when the program their priority research projects.

「精子銀行」
農業大臣Edgaldo Angaraは全国農業研究発展システム会議の中で次のように基調演説をおこなった。
１９９５年にブキッドノン州に精子銀行（NABC）を設立したが、エストラダ政権は同様な施設を他にも作ることを熱望している。
パイロットエリアとして、ダバオ、セブ、マニラ、ヌエバエシハ、パンパンガ州サンフェルナンドなどである。
家畜部門の近代化の促進に、各地に人工授精施設が必要である。
ブキッドノン州（NABC）では、輸入した牛から採取した精液を利用して、この地域の牛の生産に貢献している。
しかし、他の地域では技術的な難しさに直面している。
農業省は精子銀行の設立に大きな優先順位を付けている。
その最終的な目的は大型で強い牛を町村レベルまで届けることである。