

MINISTRY OF FOOD AND AGRICULTURE

VETERINARY SERVICES DEPARTMENT

**PAN-AFRICAN PROGRAMME FOR
THE CONTROL OF EPIZOOTICS**

GHANA NATIONAL PROJECT

(2000 - 2005)

OCTOBER, 2000

NATIONAL COMPONENT- PACE GHANA

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ACRONYMS

AAGDS	Accelerated Agricultural Growth Development Strategy
ASF	African Swine Fever
CBPP	Contagious Bovine Pleuropneumonia
CLW	Community Livestock Worker
CTF	Complement Fixation Test
BVD	Bovine Viral Diarrhoea
EU	European Union
FAO	Food and Agriculture Organization
FMD	Foot and Mouth Disease
GIS	Geographical Information Systems
GOG	Government of Ghana
IAEA	International Atomic Energy Commission
IBAR	International Bureau of Animal Resources
IBR	Infectious Bovine Rhinotracheitis
ILRI	International Livestock Research Institute
LSD	Lumpy skin disease
MCF	Malignant Catarrhal Fever
MOFA	Ministry of Food and Agriculture
NCD	Newcastle Disease
NGO	Non-governmental Organization
NESS	National Epidemiological Surveillance System
NLSP	National Livestock Project
NIP	National Indicative Programme
OAU	Organization of African Unity
OIE	Office International des Epizooties
PACE	Pan African Programme for the Control of Epizootics
PANVAC	Pan African Vaccine Centre
PARC	Pan African Rinderpest Campaign
PI	Performance Indicators
PNDC	Provisional Defence Council
PPR	Peste des petits ruminants
SAP	Structural Adjustment Programme
SEC	Stomatitis-enteritis Complex
SDG	Sanitary Defence Group
TADinfo	Transboundary Animal Diseases Information
TCP	Technical Co-operation Project
VSD	Veterinary Services Department

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EXECUTIVE SUMMARY

Ghana joined the international programme for the control of rinderpest code named Pan African Rinderpest Campaign (PARC) in 1992. At the end of PARC in March 1999, there were still important milestones in the OIE pathway to be cleared before Ghana could be declared free from rinderpest.

The PACE (Pan African Programme for the Control of Epizootics) being sponsored by the European Union came in at the right time to enable Ghana to complete the rinderpest eradication programme and to tackle other epizootics in the country such as contagious bovine pleuro pneumonia (CBPP). Ghana is among 32 African countries participating in PACE.

Under the PACE programme the country will have the necessary logistic support to conduct serosurveillance for stomatitis-enteritis complex, and where necessary send specimens to world reference laboratories for definitive diagnosis of rinderpest. This is in line with the OIE pathway of declaring Ghana free from rinderpest virus.

Ghana will also participate in regional workshops in economics, epidemiology, wildlife epidemiology, and communications under the common services of PACE.

The overall objective for the programme is to increase the livestock producer incomes, especially of the small holders, to reduce the country's dependence on imports of livestock and livestock products and to reduce the financial burden on the government of services to the livestock sub-sector.

The Veterinary Services Department of the Ministry of Food and Agriculture is the implementing agency and coverage shall be nation-wide covering a five-year period starting from October 2000 to October 2005. Ghana has the capacity to implement the PACE programme considering its present level of staff in the 110 districts in the country.

For the five years a total amount of Euro 996,890 shall be used. This amount will be used to enhance national capacity, improve veterinary services, fight against rinderpest, and control other epizootics in the country.

The Project Co-ordinator for Ghana National PACE Programme is Dr. Samuel Achaw Ofosu. The National Authorising Officer is Mr. Griffiths Danso Apatu of the Ministry of Finance.

A. PROJECT SUMMARY SHEET

1. PROJECT TITLE

PAN- AFRICAN PROGRAMME FOR THE CONTROL OF EPIZOOTICS (PACE PROGRAMME) – GHANA NATIONAL PACE PROGRAMME

2. PROJECT GOAL/OVERALL OBJECTIVE

Livestock producer incomes raised, particularly those of smallholders, to reduce the country's increasing dependence on imports of livestock and livestock products, and to reduce the financial burden on the government of services it provides to the livestock sub-sector.

3. IMPLEMENTING AGENCY

Veterinary Services Department of the Ministry of Food and Agriculture.

4. KEY OUTPUTS

1. Epidemiology services (information and diagnostics) and capacity of veterinary services department to formulate and implement strategic, cost-effective diseases control developed and reinforced.
2. Availability of veterinary services and drugs to livestock owners promoted.
3. Ghana certified free from rinderpest and possible rinderpest infection thus contributing to animal health improvement.
4. National network of CBPP and epidemic diseases surveillance and reporting with functional information feedback implemented.

5. TARGET GROUPS

Personnel of veterinary services department, livestock farmers, butchers, livestock dealers, and policy makers.

6. AREA COVERAGE

Nation-wide.

7. TIME FRAME

Five years – 2000--- 2005.

8. PROJECT COST

An amount of Euro 996,890 will be used. This amount is to cover the following activities of the project:

GLOBAL ESTIMATE OF PACE GHANA

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Enhanced national capacity	233,394.00	132,551.00	91,945.00	67,750.00	2,675.00	528,315.00
2. Improved Veterinary Services	4,000.00	18,000.00	2,000.00	2,000.00	200.00	26,200.00
3. Fight against rinderpest	62,071.00	58,000.00	68,000.00	47,750.00	3,413.10	239,234.10
4. Control of other epizootics	27,000.00	45,636.00	45,092.00	37,842.00	100.00	155,670
Subtotal	326465.00	254187.00	207037.00	155342.00	6388.10	949419.10
Contingencies @ 5 %	16323.25	12709.35	10351.85	7767.10	319.41	47470.96
Totals	342,778.25	266,896.35	217,388.85	163,109.10	6,707.51	996,890.06

9. DISEASES OF STRATEGIC IMPORTANCE

The main diseases of strategic importance are rinderpest, which Ghana was provisionally declared freedom from the disease in 1997; pestes des petit ruminants, a disease of sheep and goats, Newcastle disease which is a threat to the poultry industry especially of the rural chicken, contagious bovine pleuropneumonia, a disease of cattle; foot and mouth disease of cattle, and African Swine fever, an emerging disease of pigs.

I BACKGROUND

1.1 The Government policy

1.1.1 Policy on public and private sector

As part of Government's measures to increase livestock production and improve farm income, the Government of Ghana (GOG) recognised that the role of the public sector in livestock development would be to perform only those activities, which are essentially of a public nature. This will increase protein nutrition and reduce the burden of the public sector in the development of the livestock sector. These would include the formulation of livestock policies and programmes, enforcement of regulations, epidemiological and statistical services, detection and control of major epizootic diseases, and livestock research and extension.

It was in the light of these that Government agreed that she would, to the extent possible, transfer animal health services, which primarily benefit the individual producer to private practitioners. These services would include curative treatments, routine treatment against intestinal and external parasites, non-compulsory vaccinations, castrations and other clinical treatments. Private practitioners would be authorised to sell drugs, chemicals and medicaments. Government would also entrust private veterinarians with performing some of the public functions, such as compulsory vaccinations against notifiable diseases and inspection of animals for movement and slaughter, under specific contracts. There would however be areas of the country, where due to remoteness or low density of livestock or lack of demand, private practitioners would be unable to render animal health services. Government would have to continue providing these services in such areas.

1.1.2 Decentralisation of Ministry of Food and Agriculture

The Government's decentralisation policy aims to transfer functional powers, means and competence to the District Assemblies from the Central Government, Ministries and Departments. The Ministry of Food and Agriculture has been decentralised with new institutional structures, reporting relationships, authority and channels of communication among all staff at the national to the regional and district levels, job descriptions for the various categories of staff and institutional framework for implementing donor funded projects.

There is a shift in orientation and function of the Directorate of Veterinary Services away from actual implementation of veterinary programmes towards policy formulation; planning and programming in the subsector; facilitating the sources of technologies internally and externally and promoting the accessibility of veterinary services; vigorously supervising regional, national and international regulations and agricultural development programmes.

The channel of communication between the Directorate of Veterinary Services and the field staff is through the Regional Director of Agriculture.

1.1.3 Sustainability and achievements of national policy

The Ghana Government has a long-term and broad-based national development policy, Vision 2020. The policy has recognized the critical role agriculture and for that matter livestock plays in bringing about overall economic growth, and its trickle down effect on poverty alleviation and human resource development.

The current Accelerated Agricultural Growth Development Strategy (AAGDS), under the livestock services programme, has the goal to '*promote economic growth and social equity from the activities of small scale producers.*' The Animal Health Services component of the Accelerated Agricultural Growth Strategy is to encourage the private sector to play a major role in animal health delivery. Another area of government policy is decentralisation of the Ministry of Food and Agriculture. This policy has empowered District Veterinary Officers to take appropriate decisions on disease control and surveillance at the district level, though they have to report all diseases to the national Technical Directorate of Veterinary Services. The government decentralisation process and the Accelerated Growth Development Strategy are policies that will ensure sustainability of any livestock programme in Ghana. The policies of the Technical Directorate of the Veterinary Services are in line with the government policies. The policies of the Technical Directorate of Veterinary Services are:

- ◆ Organization, institutions, and recruitment of veterinary personnel for the administration of animal health services delivery.
- ◆ Formulation and review of veterinary legislation.
- ◆ Control and eradication programmes against transboundary animal diseases.
- ◆ Emergency preparedness against epizootics.
- ◆ Monitoring and control of regulatory services to ensure public safety and control animal diseases.
- ◆ Quality control of drugs and vaccines.
- ◆ Quality control of animal products.
- ◆ Promote international relationship in animal health with FAO, Office International des Epizooties, (OIE), International Bureau of Animal Resources (IBAR), and the International Livestock Research Institute (ILRI).
- ◆ Promotion of private veterinary practice.
- ◆ Training and monitoring of community livestock workers.

1.2 The livestock sub-sector in Ghana

1.2.1 Importance of the sector

Ghana's economy is largely based on agriculture. Agriculture (including forestry) contributes 40% of the national Gross Domestic Product and accounts for over 70% merchandise exports. Over 65% of the labour force is engaged full time in agriculture. The share of the livestock sector of the agriculture Gross Domestic Product is estimated at 9%. The estimated livestock population in 1998 is composed of 1.3 million cattle, over 5 million small ruminants and 370,000 pigs. This is incommensurate with the size and grazing potential of the country.

Table1: Domestic animals numbers in Ghana estimated in 1998

Species	Population
Cattle	1.3 million
Sheep	2.5 million
Goats	2.7 million
Pigs	0.37 million
Rabbits	80,000
Horses	2800
Donkeys	14200
Poultry	Lion

1.2.2 *The main diseases of strategic importance*

A major constraint to livestock development in Ghana is attributed to animal diseases. Contagious Bovine Pleuropneumonia, and Dermatophilosis are major diseases of cattle, while Peste des petits ruminants and Mange are menace to small ruminants. The poultry industry is faced with endemic Newcastle disease. An outbreak of African Swine Fever occurred in Ghana in September, 1999. Presently, the Veterinary Service Department with the assistance of FAO and the World Bank has embarked upon a control and eradication program to stamp out the disease in the country. Most parts of the country are infested with tsetse flies making large tracts of rangelands unsuitable for cattle production due to high prevalence of trypanosomosis in such areas. Not included in the network, but are important diseases are bovine tuberculosis, anthrax and brucellosis, blackleg.

The main List A disease (Table 2 and 3) recorded in the country for the past five years are Foot and Mouth Disease (FMD), Contagious Bovine Pleuropneumonia, Lumpy Skin Disease (LSD), Peste des petits Ruminants (PPR), African Swine fever, and Newcastle Disease.

Diseases of strategic importance to be tackled over the five years are discussed below:

Foot and Mouth Disease. Outbreaks of Foot and Mouth Disease have been associated with relatively low mortalities. The policy of the country has been not to vaccinate but enforce strict movement control of animals in affected areas. Aphthisation of in-contacts is done.

Contagious Bovine Pleuropneumonia (CBPP) occurs all over Ghana and is now the most important disease of cattle. The spread of the disease is considered to be associated with illegal livestock movements and introduction of young bulls and heifers, purchased from cattle markets, into village herds.

Lumpy Skin Disease occurs in a sporadic form. There is circumstantial evidence that the disease is introduced by trade cattle brought from the northern neighbouring countries, which are the country's traditional suppliers of cattle. Treatment consists of isolation, nursing and systematic treatment with broad-spectrum antibiotics.

PPR is the most important infectious disease of small ruminants. Losses usually are considerably high. Vaccination until recently has been done using rinderpest vaccine. Currently, the department is using homologous vaccine imported from Cameroon for control of the disease.

Newcastle Disease is enzootic in Ghana. It is considered the major constraint to improving the productivity of indigenous poultry flocks. Despite routine vaccination in commercial flocks, (exotic) the disease is still prevalent. With a view to addressing the problem in rural poultry flocks, technical assistance (consultancy services) on the introduction of feed delivered thermostable, Newcastle Disease Vaccine, ND-V4 (developed in Australia) for application in village situations started late in 1997 and is still on-going. Laboratory trials, using various feeds, indicated that wheat bran was the best-feed carrier. Others, such as maize meal, corn chaff, millet and mill waste, did not provide adequate protection. The master seed of I₂ vaccine, which will be used to produce vaccine locally in our laboratories, has been received from Australia. Pilot mass vaccination to control Newcastle disease in rural poultry with NDV4-HR vaccine was conducted in 1998 in 33 selected epidemiological clusters throughout the country.

African Swine Fever, a disease of pigs was recorded in Ghana for the first time in 1999. It was however quickly brought under control with the assistance of the World Bank and the FAO. The disease is still a threat to the pig industry, as it remains endemic in a number of West African countries.

1.2.3 Privatisation of veterinary services

Privatisation in practice

In implementing the policy of privatising animal health care in Ghana, Government has adopted a two-pronged approach. The first, whose implementation started on the inception of the National Livestock Services Project, has been to train Community Livestock Workers (CLWs) under the Primary Animal Health Care Programme to assist MOFA staff to administer simple prophylactic and basic treatment of livestock ailments. The CLWs have been selected by livestock producers in their communities, trained and licensed by the Veterinary Services Department to perform simple first aid duties such as wound dressing, dusting or bathing of animals to control ectoparasites, deworming, relief of bloat, closed castration and treatment of foot-rot. The CLW would also assist VSD staff in:

- a) organizing vaccinations and other animal health educational campaigns;
- b) carrying out livestock census;
- c) isolating animals in disease emergencies, intercepting sick or dead animals and their products;
- d) selling to farmers non-scheduled veterinary drugs and lotions.

CLWs have a standard training programme. The CLWs go through the following practical training: deworming, dipping and spraying, burdizzo castration, wound care and basic animal husbandry practices like housing, feeding and environmental cleanliness. CLWs also help to mobilize farmers for vaccination and livestock census. The initial stock of drugs and First Aid kits are provided free to the CLWs. The items supplied include acaricide, dewormer, wound

care materials, plastic bowl and plastic bottle, carrier bag, notes book and pen. However, CLWs pay for forceps, scissors and burdizzo supply to them. They charge for service, drugs, chemicals and the revenue used to invest in initial supplies. This is a component of the cost recovery of animal health and part of the sustainability of PACE. Two thousand (2000) CLWs were to be trained by the end of the project in December 1999. But so far over 1000 CLWs have been trained and are spread throughout the country.

The second approach to promoting privatisation of animal health services is the withdrawal of government services in areas where veterinarians establish private practice. Disease control, vaccination campaigns and meat inspection would be contracted out to private veterinary practitioners. Government would maintain adequate animal health personnel to ensure that the quality of service rendered by private practitioners meets acceptable standards and to conduct epidemiological work.

At the mid-term review of the National Livestock Services Project in November 1996, it was known that only four Veterinarians were ready to go into private practice. The low number was said to be due to doubts about sustainability of private practice. An incentive package "golden handshake" was proposed and included the following:

- a) Two-year (24 months) salary to be paid to the prospective private practitioner.
- b) Complete withdrawal of government services in the regions of private practitioners with regard to curative services.
- c) Contracting of such public functions as meat inspection, vaccinations to private practitioners at remunerative contract prices.
- d) Assistance to purchase drugs and veterinary equipment.

One of the pre-requisites for the scheme's implementation was the promulgation of Veterinary Surgeon's Law, PNDC L.305C which was passed in December, 1992 and signed by the President on August 30, 1993. This law established the Veterinary Council of Ghana, which regulates the practice of Veterinary Medicine and Surgery in Ghana and makes provision for Veterinary qualifications, which are registered, and also Veterinary Surgeons who can enter into private veterinary services in Ghana. Presently, the Veterinary Surgeons Law provides the legal framework for privatisation of veterinary services. To accomplish this legal framework for private veterinary services, the minister of Food and Agriculture mandates the Veterinary Council to make the necessary regulations for his approval. There is a provision in the Veterinary Surgeons Law to regulate private veterinary practice in Ghana. The Veterinary Council shall prescribe all disciplinary measures and establishment of procedures for the private veterinary practice in Ghana. The operations of private veterinary medical practice are enshrined in S. 27 of the Veterinary Surgeons Law, 1992 (PNDCL 305C). This law defines specific regulations, disciplinary measures, registration fees, and place of practice for private veterinarians.

In addition the Veterinary Services Department established a committee in 1992 to deal with the implementation of the veterinary privatisation scheme.

Under PARC, livestock farmers associations have been formed in some livestock communities in the Upper East and Upper West regions of the country. These sociological aspects of livestock development will largely be addressed by the livestock component of Ghana's AGSSIP.

1.2.3.1 *The implementation of cost recovery system*

The Government of Ghana implemented the Structural Adjustment Programme (SAP) in the 1980s. Under the SAP, subsidies were removed from agricultural inputs. Government instituted privatisation of veterinary supplies and equipment. The veterinary services department started charging for services, which were hitherto rendered free of charge to livestock farmers. The revenue earned over the last five years has been considerable (table 2).

Table 2 : Annual revenue earned through cost recovery (Cedis)

Year	Drugs	Vaccines	Service Charges	Total
1994	152,340,253	144,801,923.50	63,300,829	360,443,005.50
1995	179,658,535	169,416,720	84,502,740	433,577,995
1996	27,295,962	374,087,359	199,563,675	600,946,996
1997	10,096,105	351,684,715	263,220,653	625,001,473
1998	16,871,870	491,561,268	227,596,364.24	736,035,502.24
Total	386,262,725	1,531,551,985.50	838,184,261.24	2,756,004,971.74

The Technical Directorate of Veterinary Services will continue to implement the cost recovery system. Details of the services are listed.

Vaccination services

Poultry Vaccination

All commercial poultry vaccinations are under full cost recovery. All commercial poultry are vaccinated against Newcastle Disease (NCD) three times at the ages of second, sixth and sixteenth weeks of age. Rural poultry are vaccinated using a different thermostable vaccine. During the project a similar vaccine, I₂ will be produced locally for use in rural poultry. Cost recovery initially will be at half rate for vaccination against rural poultry. This will increase the number of birds vaccinated against Newcastle Disease as compared to the other types of poultry vaccinations. Marek's vaccination is done at day one at the hatcheries. Gumboro vaccination is done at the third week. Fowl pox vaccination is conducted at 7th week and repeated at the 12th week. Farmers fully pay for this too. This is a component of the cost recovery of animal health services.

Small Ruminants Vaccination

Livestock owners will pay for the cost of vaccination against PPR. This is currently free of charge.

Cattle Vaccination

Livestock owners will pay for cost of vaccine and services for vaccination against CBPP. There will also be a gradual introduction of cost recovery for Anthrax (Zoonosis) and Blackleg vaccinations.

Regulatory services

The animal health services component renders regularly services, which are of importance in disease control measures.

Livestock Movement Permit

There are veterinary service charges for the issue of movement permit for livestock movement in the country. This varies according to animal species.

Livestock Slaughter Permit

There are charges for veterinary services for ante-mortem inspection of animals at slaughterhouses. The amount charged for ante-mortem inspection depends on the type of animal species.

Quarantine Inspection

There are veterinary service charges for inspection of live animals at the country's entry points.

Health Certificate for Export

There are veterinary service charges for the inspection/examination and issuance of health certificates for live animals for export. In addition exporters pay for the examination and issuance of sanitary certificates for export of such items as birds, skins and items made of animal products.

Import Permit

There are veterinary service charges for the issue of import permits for live animals, veterinary drugs and chemicals and all animal products.

Laboratory services

Individuals, organisations and companies pay for diagnostic services. These services are: haematology, parasitology (blood), parasitology (faeces), bacteriology (culture), bacteriology (sensitivity test), bacteriology (biochemical), and histopathology.

1.2.4 Pan African Rinderpest Campaign (PARC)

1.2.4.1 Rinderpest eradication

Ghana has benefited from two successive PARC projects. The last project, PARC II, ended in 1999. The country has ceased vaccinating cattle against Rinderpest in December 1996.

Ghana declared itself provisionally free from rinderpest in 1997 and has embarked on the OIE pathway for declaring freedom from rinderpest. The last case of rinderpest was recorded in 1988.

Ghana has established an Epidemiology Unit to help set up a network of epidemic-surveillance and epidemic-vigilance to achieve the required performance indicators of the "OIE pathway", for the declaration of freedom from rinderpest.

1.2.4.2 Milestones of the OIE pathway

Under the PARC, rinderpest vaccination started in 1992 and ended in 1996. Ghana was declared provisionally free from rinderpest in 1997. Sero monitoring to establish sero-conversion rates among cattle herd continued till March 1999. The OIE pathway for the final eradication in Ghana is represented in Annex VII.

1.2.4.3 The transition between the PARC and the PACE programme

The Pan African Rinderpest Campaign (PARC) funded by the European Union and executed by OAU/IBAR was aimed at eradicating rinderpest from the continent and strengthening veterinary services in the member countries. The global campaign ended in March 1999. A new programme, the Pan -African Programme for the Control of Epizootics (PACE) has been prepared to succeed it. The PACE programme was approved by the EDF Committee and started on 31 October 1999. It aims at establishing national and continental epidemiological surveillance networks and developing efficient and sustainable distribution of veterinary products and services. The programme will cover 32 African countries.

Information on the objectives of the programme and detailed discussions on the content and justifications of the different project components have been the subjects of the working sessions held between the Ghanaian Ministry of Food and Agriculture (MOFA) representatives and visiting OAU/IBAR Mission in April 1999.

Results of PARC

There are many overwhelming results of PARC. *First*, Ghana was provisionally declared free from rinderpest as a result of the vaccination campaign of the PARC. Mass vaccination against rinderpest started in 1992 and ended in December 1996. Vaccination coverage was impressive and reached 92% of the national cattle population in 1996. The results of PARC vaccination is shown in Table 3.

PACE is a monitoring phase of PARC. The technical reasons for a change of strategy from vaccination in PARC to monitoring in PACE is due to technical and financial reasons.

Financially, vaccinations are expensive and extremely difficult, and technically, it is impossible to have 100% vaccination coverage. Besides, some farmers have become uninterested in the vaccination against rinderpest, because they have never experienced it in their lifetime.

TABLE 3 RINDERPEST VACCINATIONS 1978 TO 1996

YEAR	NO.OF CATTLE VACCINATED	HERD TOTAL	% COVERAGE
1978	177,937	835,912	21
1979	180,433	857,004	21
1980	262,862	876,841	30
1981	460,997	903,724	51
1982	395,181	923,698	43
1983	56,695	1,002,015	6
1984	536,489	1,007,843	50
1985	761,140	1,064,778	71
1986	471,056	1,134,870	42
1987	310,812	1,170,805	27
1988	513,472	1,143,812	45
1987	616,684	1,136,421	54
1990	636,063	1,144,787	56
1991	588,183	1,194,633	49
1992	906,035	1,159,431	78
1993	960,854	1,168,640	82
1994	430,241	1,204,155	36
1995	494,792	1,122,730	44
1996	1,023,402	1,114,166	92

Second, the institutional capacity of staff of the veterinary services was built through training programmes. *Third*, there were border harmonization meetings with neighbouring countries that improved disease surveillance and reporting. *Fourth*, Livestock farmers' associations (LFAs) and women groups (WGs) were formed during PARC.

The group formation component of the Ghana PARC project started on a pilot basis and was later expanded to cover the Upper East, Upper West and Northern regions of Ghana.

Activities of the women's groups include income-generating activities such as rearing of poultry, rabbits and grasscutters. As at March 1996, ninety-one (91) LFAs and thirty-nine (39) Women's groups had been formed and were functional. The growth of the associations is shown in Table 4.

TABLE 4: THE GROWTH OF LFAs AND WGs AS AT MARCH 1996

PERIOD	UPPER WEST REGION		UPPER EAST REGION		NORTHERN REGION	
	LFAs	WGs	LFAs	WGs	LFAs	WGs
1993	40	5	9	6	0	0
1994	10	0	12	2	4	0
1995	1	7	5	9	10	10
March, 1 st 1996	51	12	26	17	14	10

Livestock farmers associations were formed as a unifying force to improve livestock productivity. *Fifth*, was the establishment of a sero-bank at the Accra Laboratory. Sero-monitoring to establish sero-conversion rates among the national herd continued till March 1999 when PARCII officially came to an end. The sero-monitoring teams are located in the Veterinary laboratories in Accra and Pong Tamale where capacity for the diagnosis of rinderpest has been established. The Central Veterinary Laboratory, Pong Tamale and the Regional Veterinary Laboratory are equipped with functional AGID and ELISA to do preliminary tests within the time set as standard. The overall results of seropositive antibodies showing immune levels of the national herd over the project years is shown in Table 5. The International Atomic Energy Commission has assisted in training our laboratory staff and also provided the needed reagents, computers and associated software for effective sero-monitoring.

Ghana stopped vaccinations against rinderpest at the end of 1996 and in 1997 was declared provisionally free from rinderpest. Ghana has therefore started the OIE pathway towards eventual declaration of freedom from rinderpest. An Epidemiology unit has been created with the Veterinary Services Department to help set up a network of epidemio-surveillance and epidemio-vigilance. An emergency Preparedness Unit has also been set up within the department. *Sixth*, was the acquisition of logistic support for the department through the purchase of vehicles and laboratory equipment. Attached, as annex VI is the list of equipment including vehicles procured during the PARC. The list also indicates the present condition of the equipment.

TABLE 5 PREVALENCE OF RINDERPEST ANTIBODIES IN THE NATIONAL HERD:

REGION	1992/93 PREVALENCE (%)	1996/97 PREVALENCE (%)	1999 PREVALENCE (%)
Upper West	85	56.5	15.9
Upper East	83	53.6	10.3
Northern	86	57.8	9.9
Brong Ahafo	88	59.2	25
Ashanti	87	62.5	31.7
Eastern	95	53.6	21.6
Western	88		28
Central	76		26.7
Greater Accra	88	62.5	31
Volta	92	31.1	6.9

While PARC aimed at mass vaccination to fight against rinderpest, the PACE programme is targeted to fight rinderpest through observations and sero-monitoring.

1.2.4.4. Implementation of a network

Epidemiology surveillance network

The Epidemiology Unit will prepare a protocol of the Epidemiology surveillance network, which will indicate clinical surveillance and sero-surveillance. The Unit will involve itself mainly in clinical surveillance of List A diseases and scheduled diseases which are of prime importance to Ghana. A list of activities scheduled to be undertaken by the Epidemiology Unit during the five years of PACE programme is presented in 2.5.1.3.

History

The initial task of the Epi-Unit was to monitor the extent and economic importance of 10 scheduled diseases known to pose threat to the livestock industry in Ghana.

The diseases to be monitored are:

For Cattle

1. Rinderpest
2. Contagious Bovine Pleuropneumonia
3. Tuberculosis
4. Foot and Mouth Disease
5. Brucellosis

For Small Ruminants

1. Peste des Petits Ruminants
2. Mange

For Pigs

1. African Swine Fever

For Poultry

1. Newcastle Disease
2. Gumboro Disease Infectious Berosal Disease
3. Bacillary White Diarrhoea

The Unit's approach to epidemiological surveys is as follows:

Three (3) Epidemiology teams have been established corresponding to both the three main agro-ecological zones and three main veterinary laboratories in the country. A total of 32 permanent clusters throughout the country have been established. Each cluster comprises 3-4 villages, which is under the supervision of a Vet Technician.

The distribution of the epidemiological clusters through out the country is shown in the map of Ghana in Annex VIII.

The Unit has designed forms for use in the field by the technical staff. The goal is to develop a data collection system where each technical officer records data on the following parameters:

❖ Livestock production

- Farmer's livestock holding by breed, sex and age
- Yields (milk, meat and traction)
- Management practices (calf management, new introduction, culling of animals)

❖ Disease situation

- Disease incidence/prevalence
- Morbidity and mortality by age group, breed, and sex

❖ Economic data on

- Current disease control cost
- Output prices of animals by age and sex
- Output prices of milk and traction

From the above discussion, it can be seen that the areas, which need strengthening in terms of

developing the true epidemiology data collection, will be capacity building of the technical officers in charge of the clusters.

Even though the Unit was re-established in 1996, operational funds for running the unit effectively has been lacking. It is believed that PACE will provide the necessary funds to support the complete take off of the intended epidemio-surveillance network system to the state in which the Government of Ghana after the first three years can sustain it.

There is a long and strong tradition among livestock owners to report any disease to veterinary staff. Information collected in this way is recorded by the veterinary officer (special duties) and passed on to Regional Development Officer (Veterinary) as a monthly report. The RDO (Veterinary) compiles disease occurrence and other technical and administrative information and send a summary report to the Veterinary Technical Directorate where the Epidemiology Unit enters the reports to an Access based database for analysis and reporting. National summary reports are prepared for Veterinary Services Department and the OIE.

Further, the FAO has installed and trained three Epidemiologists in TADinfo programme, which is to be used in disease mapping. This programme was used extensively during the outbreak of African Swine Fever in the country in 1999. The disease mapping which gives a pictorial impression will be used to convince the policy maker for the need to sustain the Epidemio-surveillance network. As at now, the Epidemiology Unit is the only unit in the entire Ministry of Food and Agriculture, which uses Geographical Information System technology in presentation of reports.

Before September 1998, passive disease surveillance was efficient, fast and reliable, however, by the introduction of decentralization and restructuring of the Ministry of Food and Agriculture in Ghana, the direct link between the different levels of Veterinary Services has been lost and disease reporting affected. There is therefore the need for the Epidemiology Unit to develop a new strategy of collecting reports from the districts without interfering in the present administrative structure. It has been decided that the Unit prints and distributes disease reporting formats and stamped addressed envelopes to all the veterinary sections in the 110 districts of the country. Veterinary Officers are supposed to just fill the Disease Reporting Formats and mail them to the Epidemiology Unit in Accra every month. There is also the need to train the field staff yearly in disease investigation and reporting, especially of List A. diseases.

Concerning active disease surveillance, no serious clinical disease search and questionnaire survey has been conducted even though Ghana provisionally declared itself free from rinderpest disease in 1998. The Epidemiology Unit has developed a questionnaire survey format to be used in the field for Rinderpest-like diseases and Contagious Bovine Pleuropneumonia, hence the need to conduct workshops for field staff in interview techniques to help improve the technician-farmer linkage.

1.2.5 Fight against Contagious Bovine Pleuropneumonia

A provisional national eradication strategy was prepared under which cost recovery was introduced. There has been low vaccination coverage over the years. As indicated in Table 6, in 1992, vaccines were not imported and there was no vaccination against CBPP (Table 6). Some of the major obstacles hampering CBPP control and eradication are:

- The difficulty of controlling cattle movement in the country especially across the northern borders,
- The complications of applying quarantine and slaughter policies,
- The lack of data on economic impact,
- The absence of a pen-side test for diagnosis
- The relatively short duration of post-vaccinal immunity,
- Insufficient funds to implement CBPP programmes.

Table 6: CBPP vaccination coverage in Ghana (1988-1997)

YEAR	National cattle population	Number of animals vaccinated	% of cattle vaccinated
1988	1,143,812	88,714	7.8
1989	1,136,421	21,218	1.9
1990	1,144,787	76,219	6.2
1991	1,194,633	636	0.05
1992	1,159,431	0	0
1993	1,168,640	21,259	1.8
1994	1,216,677	11,291	0.9
1995	1,112,106	5,800	0.52
1996	1,247,861	6,593	0.5
1997	1,267,826	1,846	0.01

1.3 Beneficiaries and main actors of PACE.

The beneficiaries of the project are small scale, medium scale and large-scale livestock farmers, cattle traders, butchers and the Ghanaian consumer.

Among the main actors are staff of Veterinary Services at the district, regional and national level. Their role should be increasingly concentrated on government core functions such as the definition of priorities and the formulation of disease control policies, disease surveillance and monitoring, regulation, licensing and control of importers, wholesalers, retailers and private veterinary practitioners. The Government is, in principle, in favour of the private sector becoming more and more involved in the direct delivery of veterinary services and drug distribution to farmers and in the development of a reliable reporting system. Under the PACE Programme, limited support will be given to promote the development of the distribution of veterinary medicines and inputs in outlying rural areas. The Veterinary Services department has applied for additional, complementary funding to promote the establishment of private veterinary practice under the Agricultural Sector Services Investment Programme (AGSSIP), which is yet to be implemented.

1.4 Diagram of problems

The problems to be solved through the project are represented in the diagram of problems (Annex X). They limit livestock disease control, which in turn limits animal production and animal protein availability for human population. This is due to inefficient channel of drug delivery to the livestock owners, insufficient awareness of most animal disease situation, and limited government services delivery capacity.

PACE Ghana will focus on the eradication of rinderpest, the control of CBPP and will support the development of national capacities needed for sustainable disease surveillance and control. The project will provide very limited funding to support the development of veterinary regulations needed for the delivery of veterinary medicines and services.

1.5 On going projects in the country and other interventions in the livestock sub-sector

On going projects in the country (funded by government or other donors) have been taken into consideration since they will complement the new PACE programme.

The most recent intervention in the livestock sector was the National Livestock Services Project (NLSP), which started in 1994 and ended in December 1999. Some of the important objectives included institutional and policy reforms aimed at better cost recovery and involvement of private veterinary practitioners in vaccination campaigns and meat inspection services, and restructuring and strengthening of livestock services, in particular to improve control of animal diseases. As at December 1998, the promotion of private practice, the introduction of thermostable vaccine NDV4-HR to control the menace of Newcastle Disease in village chickens, and other components have not been fully implemented. Therefore, GOG requested for one-year extension of the project, which finally ended in December 1999.

The only projects, which tackled livestock and poultry development, were the just ended PARC (March 1999) and the NLSP (December 1999). Currently there is no on-going project in the sector apart from the follow-up of veterinary laboratory activities to PARC project, and an Emergency Technical Co-operation Project from the FAO to control the recent outbreaks of African swine fever (ASF) in the country. This project, TCP/GHA/8925 (E), shall end in November 2000. Extension agents trained in the monitoring of ASF will have the capacity of assist in the sero-monitoring of PACE.

In Ghana, several major epizootic diseases constitute serious threats to cattle (CBPP), small ruminants (PPR), pigs (African swine fever) and poultry (Newcastle disease). While the PACE Programme will focus on the eradication of rinderpest and the development of a regionally co-ordinated strategy to remove CBPP, other projects will be launched to address the other major epizootic diseases, as funding becomes available.

1.6 Documentation

Find below a list of some of the main documents compiled by the Veterinary Services Department. These include:

- Annual and mid-year reports

- Final report on PARC
 - Final report on National Livestock Services Project
 - A critical Analysis of the selection and support of community livestock workers in Ghana
 - Assessing the impact of community animal health care programme: Some experiences from Ghana.
 - Monthly reports on transboundary disease situation in Ghana to OIE and FAO
 - Rabies reports to the WHO
-

II. PREPARATION AND DESIGN OF THE PROJECT

2.1 Rationale

To increase animal production through epizootic disease control and eradication.

2.1.1 The concept

The conceptual basis for the project design is in line with the overall PACE strategy, which aims to:

Improve services to livestock farmers;

- ◆ improve Pan-African co-ordination in the control of animal disease (control of trans-boundary diseases, evolution and harmonization of animal health policies, privatization of veterinary services and strengthening of state services to better assume their regulatory and monitoring functions); and
- ◆ eradicate rinderpest from Africa.
- ◆ encourage donors to better co-ordinate their support and standardize

2.1.2 Objectives of PACE project

The global objective of PACE is to fight against poverty of livestock stakeholders (farmers, service providers, consumers) to improve the animal productivity, exchanges and food security.

The policy orientations decided by the Ghana Government form a good basis for the preparation of a National PACE project for the country, in particular the cessation of rinderpest vaccination, the declaration of provisional freedom from rinderpest in 1997 and privatization of drug importation and distribution. Other policy decisions regarding promotion of private distribution of veterinary services and drugs, delegation of government activities to private veterinarians and preparation of an enabling regulatory framework are also in line with the project objectives but still need to be formalised and completed and supported by vigorous political will.

The specific objectives are :

- ◆ Enhanced national capacity for analysis and action in the fields of epidemiology, socio-economics of animal health, communications and project management.
- ◆ Improved accessibility and distribution of veterinary services and medicines based on developing a harmonized approach to the privatization process and coherent links between public services and private operators.
- ◆ Fight against rinderpest, based on halting vaccinations as soon as possible and on giving aid to countries to fulfil the OIE procedure for being declared "countries free from the disease", including active research into the disease, strengthening the surveillance network and setting up rapid response systems;

- ◆ Improved control of other epizootic diseases, particularly CBPP, by drawing up epidemiological and socio-economic data enabling the states concerned to assess the advisability of future campaigns based on full cost recovery. Vaccine funds could possibly be made available for the most badly affected areas.

2.2 Global Objectives

The objectives of the PACE Ghana will be in total harmony with the global objectives of the PACE programme.

The great principles of PACE will not be written here in details but can be found in the final report of the mission of Drs Renard and Blanc for the support of OAU/ IBAR.

2.3 Specific Objectives

The Programme of PACE-Ghana has in place a system of epidemiological surveillance. Equipment for laboratories and posters will be purchased to enhance this system of epidemiological surveillance.

Reinforcement of public services

The development of capacities in service delivery and epidemiological surveillance in different forms of network, which are important components of the PACE-Ghana programme. Another component of the PACE-Ghana programme is wildlife epidemiological surveillance.

Ghana will enforce all necessary functions and regulations with respect to epidemiological surveillance.

The programme of PACE has the concept to fight against all animal epizootics of technical and economic importance in the country.

Improvement of services to livestock owners

Provision will be made to improve access of necessary information to livestock owners.

2.3 Expected Results

The expected results of PACE are outline as follows:

Capacity building in the public services so that:

- ◆ The national unit of Epidemiological surveillance is strengthen
- ◆ A system of awareness and appropriate interventions are always operational
- ◆ Field staff of the veterinary services are well trained and sensitised
- ◆ An expertise in the economy of animal health is strengthen and put in operation
- ◆ A standardised system of disease reporting is adopted

Improved distribution of services and veterinary drugs to livestock farmers

- ◆ Legislative context for veterinary practice is improved
 - ◆ Private veterinary practice is in operation in rural communities
 - ◆ Community livestock workers of service delivery is improved
 - ◆ Private veterinarians participate in epidemio-surveillance
-

Private veterinarians have access to credit

A guaranteed fund is established in a commercial bank for private veterinarians

Fight against rinderpest

- ◆ The OIE procedures for the eradication of rinderpest are completely fulfilled in the appropriate manner
- ◆ Monitoring or surveillance of wildlife is integrated with the Unit of Epidemiological surveillance
- ◆ The epidemiological surveillance of the country is integrated with the regional common services and international organizations (OIE, OAU/IBAR, FAO)

Control of CBPP and other epizootics

- ◆ The national system of epidemiological surveillance net enhances the strategic control of other epizootics
- ◆ The national capacity has been built and trained in diagnostic techniques of diseases and socio-economic assessment of diseases and diseases surveillance
- ◆ Vaccination against CBPP will continue, but the vaccine will not be purchased from funds of PACE

2.5 ACTIVITIES

2.5.1 Enhancement of national capacities

2.5.1.1 Veterinary Laboratories

Sero-surveillance to statistically ascertain or refute the absence of rinderpest according to OIE pathway. This will require three consecutive years of testing of 4,500 samples annually; enhancement of laboratory equipment-one ELISA reader, additional laboratory technicians, training of two per year and replacement of vehicles for sero-surveillance teams at Accra and Pong Tamale.

The Accra and Pong Tamale laboratories have built capacity to assay Rinderpest and PPR, cELISA for Rinderpest and PPR antibodies, Immuno-capture for Rinderpest and PPR antigen detection and agar gel immuno-diffusion for Rinderpest. One each of cELISA kits and PPR kits will be required each year for three years.

During PARC, two teams, one from each laboratory collected about 8,000 sera samples per year independent of vaccination teams. The two laboratories also operated the five-year quality assurance programme run by I.A.E.A. In 1998/99, sero-surveys were undertaken to determine rinderpest virus activity in Ghanaian herd, which is provisionally free from rinderpest. In the year 2000, clinical surveys, purposive surveys and random sero-survey of rinderpest like diseases such as FMD, BVD, IBR will be sent to designated reference laboratories.

Accra and Pong Tamale are the rinderpest diagnostic laboratories, which have in place serum collection network in place, processing about 5,000 sera annually. Laboratory consumables required have been listed in Annex. XI. Accra will send rinderpest like disease such as FMD, BVD, IBR, MCH to designated reference laboratories. This requires sample collection and transporting equipment to laboratories outside the country.

Accra and Pong Tamale laboratories have a Technical Co-operation (TCP) agreement with IAEA. At the moment (April 2000), the Central Veterinary Laboratory is validating CBPP cELISA from I.A.E.A.. The two laboratories are to be strengthened in the diagnosis of CBPP with the use of complement fixation test. The Accra has built diagnostic capacity for ASF based on Direct immuno-flourescence and Indirect Immuno-flourescence tests.

The Accra, Pong Tamale and Kumasi Laboratories situated in the three main agro-ecological zones of the country will be involved in the Epidemiosurveillance network activities. The diagnostic capacity of all the regional laboratories to undertake routine diagnostic work has been enhanced through the National Livestock Services Project. The regional laboratory capacities will be used to support the PACE programme.

The Accra and Pong-Tamale laboratories conduct disease surveys, whereby the staff moves to the field to collect, monitor samples. This is aimed at obtaining appropriate and correct samples, which are essential for good diagnosis. About four times in a year, the laboratories receive samples from the field. However, the laboratory staff attends to request by field staff when they are faced with laboratory issues.

.2.5.1.1.1 Quality assurance for laboratories and epidemiological surveillance

For any testing laboratory it is essential that assurance can be given that the test results produced are valid and reliable. It is also very important that results are comparable between different laboratories involved in similar assessment.

I.A.E A has developed control charts to monitor the performance of assays involving the use of the Rinderpest cELISA, PPR, Brucellosis, CBPP, Babesiosis, for the estimation of antibodies and the detection of antigens. These are available for use in the Accra laboratory. The constant evaluation is termed Internal Quality control.

Therefore, there is systematic approach to data management which impose a level of control on all laboratories, in which the laboratories in Ghana are involved to use the same kit. IQC data are an integral component of External Quality Control Assurance Programmes (EQAP) since the results from one laboratory can be examined and correlated with results obtained after an EQA exercise whereby, the same limited number of samples are assayed at given times by all laboratories involved in a network of sero-surveillance.

The External Quality Assurance Programme (EQAP) consists of three equally important items; the questionnaire; the monitoring of the Internal Quality (IQ) data and the External Control (EQC) test panel. The EQAP is conducted twice per year.

2.5.1.1.2 *Proposed measures to strengthen laboratory capacity*

- ◆ Training of personnel in specific areas (e.g. African Swine Fever diagnosis; data management; CBPP diagnostics; performance monitoring).
- ◆ Expansion of laboratory space and renovation of the existing area, creation of distinct subsection that would be responsible for specific diagnostic procedures.
- ◆ creation of a central samples collection for point (a sort of registry for samples).
- ◆ creation of a biological section for handling samples that might contain highly infectious agents (Rabies, TB, Brucellae, Salmonellae).
- ◆ Equipment supply and regular supply of reagents and other consumables.
- ◆ Vehicles for laboratory related field activities.

2.5.1.2 CO-ORDINATION OF THE PROGRAMME

2.5.1.2.1 *The linkages with regional disease surveillance network*

The project will be managed by the Technical Directorate and implemented by the various units under the Ministry of Food and Agriculture (MOFA) of Veterinary, the Regional Agricultural Development Units (RADUs), the District Agricultural Development Units (DADUs). There will be some activities, which will be carried out by the Technical Directorate (Vet) such as by the Laboratories, Epidemiology and Economist Units.

The Veterinary network in Ghana has established its presence in all 110 districts of the country. These submit returns and reports to the Veterinary Technical Directorate headquarters in Accra. The reports and returns are submitted through the Regional Development Officers (vet) of the ten regions of Ghana. The links are already established in the country.

2.5.1.2.2 Training needs and maintenance of diseases surveillance for PACE implementation

The Veterinary Services Department has a wide range of training needs. Whilst they may all be relevant to the implementation of the PACE Programme, it will mainly support short, skills-oriented training courses. The training needs are outlined in Table 7.

Table 7: Training Needs for PACE Implementation

CATEGORY	TRAINING NEEDS	PROPOSED TYPES OF TRAINING
Project management staff	Project Management, Basic training in French	Short training
Laboratory personnel	Modern techniques in serological diagnoses for CBPP,ASF, Rinderpest, PPR, Newcastle disease	Training to for four vets in diagnostic capacity. Short training for six technicians in diagnostics
Epidemiologists	More epidemiologists to be trained to serve in the ten regions of Ghana. To train epidemiologists in rural appraisal techniques	Short courses
Animal Health Economist	Disease Modelling Techniques, basic training in French	Short course
Community Livestock worker	Basic animal health care	In-service training; use of communications materials
Field Veterinarians	Management in disease surveillance Training in Epidemiology, Public health Training in microcomputer	Short training courses in Epidemiology for two vets, Public health
Wildlife Veterinarian and field agents.		Short course in wildlife capture

2.5.1.2.3 Cross-border interaction and activities to harmonize surveillance

The recent outbreak of African Swine Fever in Ghana, which was traced to have come from Togo, indicates the importance of cross-border interaction. Emphasis is also made on the culturally important and close friendly relations that exist between the countries in the West African Sub-region. Culturally, they are one, but separated by international borders. Some of the activities that will be undertaken during the PACE Programme to promote cross-border harmonization of disease surveillance are:

- ◆ Border harmonization meetings
- ◆ Border harmonization workshops
- ◆ Passive and active surveillance
- ◆ Common local markets regulations
- ◆ Co-ordinated vaccination campaigns
- ◆ Common quarantines regulations

For the other epizootic diseases, the viability of control programmes depends on the strengthening of veterinary services and the imperative re-establishment of the direct command line from the Veterinary Services Directorate to the veterinary field technicians for the correct

implementation of emergency plans against trans-boundary diseases in the framework of FAO's EMPRES Programme.

The sustainability of the epidemio-surveillance programme under PACE will strictly depend on the forthcoming and the timeliness of Ghana Government's counterpart funding.

2.5.1.3 ACTIVITIES OF EPIDEMIOLOGY UNIT UNDER PACE

Training of Field Officers:

Under PACE, the Epidemiology Unit at the Veterinary Technical Directorate will be part of the national PACE Technical Committee. It will be in charge of input of sanitary data collected from the field and prepare various formats and handouts for the field officers to use in sanitary data collection. The Epidemiology Unit will therefore have to train these field staff in sanitary data collection. For training purpose, the Unit will require training and demonstration aids, including LCD projector (teleject) and stationery. There will be two levels of training: the field officer in charge of an epidemiology cluster will have more detailed training in epidemiology and economic data collection (the details of the type of data required of him are attached), while the other field officers will be only concentrating on sanitary disease data. See Figure 1.

Sanitary and Economic Data Collection:

For ease in sanitary and economic data collection, the field officers in charge of the clusters must be mobile and motivated through the payment of per diem. The field officers will have to be provided with protective clothing, notebooks, 5 litre coleman boxes and sampling kits. These are budgeted for in the estimate of the work programme.

Active Disease Search:

The second phase of OIE pathway, that is freedom from rinderpest disease, will require an active search. It is proposed that the three mobile teams will conduct an active search and monitor the questionnaire survey on rinderpest-like and Contagious Bovine Pleuropneumonia disease. Mobility of the three teams is of prime importance in achieving the second phase of the OIE pathway, besides the motivation in the form of per-diem to the personnel. Field equipment like Global Positioning System (GPS), camping sets, sampling and postmortem sets would also be required. In the third year of the project, when these exercises are completed, the mobile teams will tend to function as emergency teams.

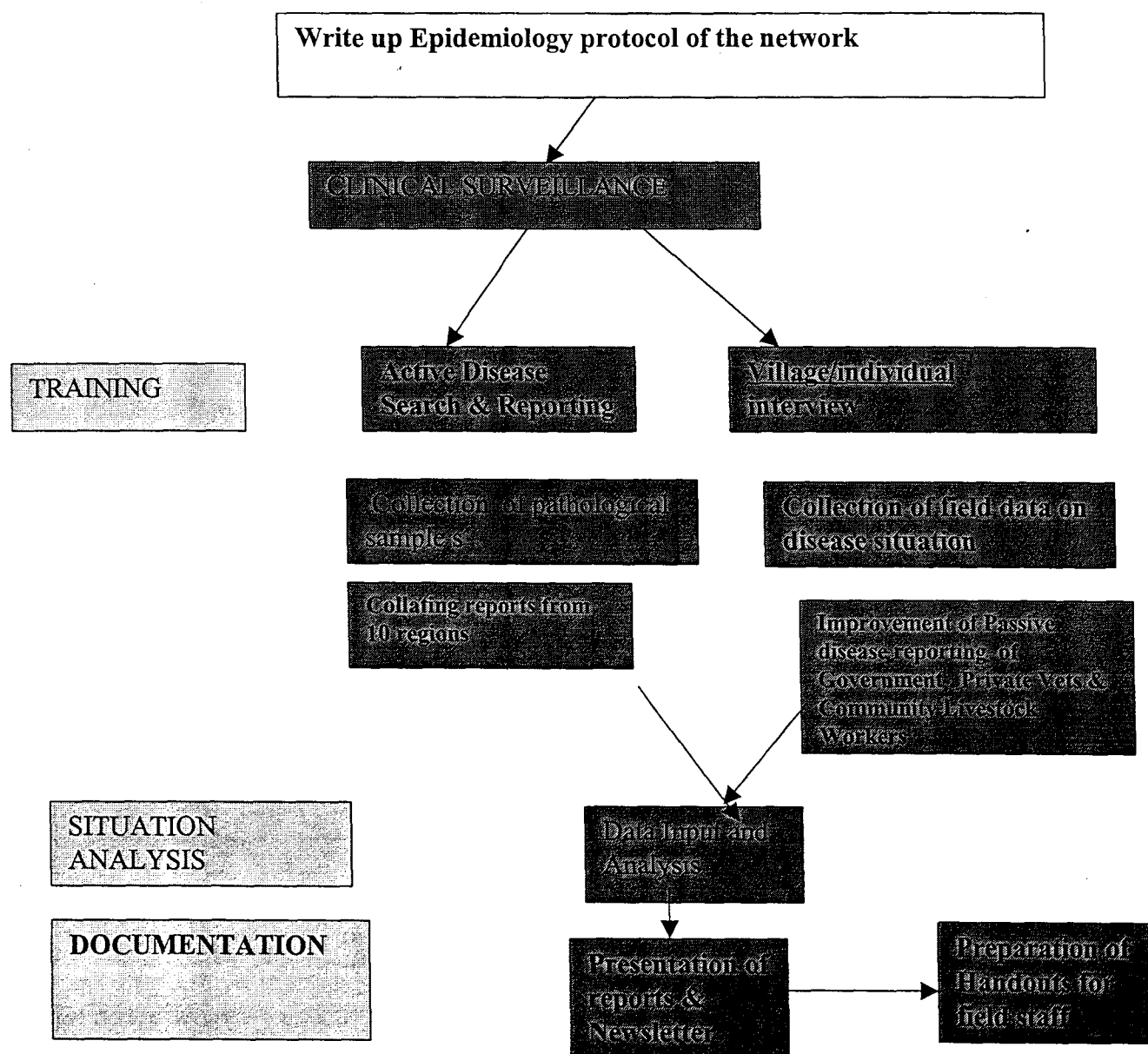
Data Inputs and Analyses:

The Epidemiologists at the Veterinary Technical Directorate will input and analyse sanitary data from the 110 districts of Ghana and produce quarterly, semi-annual, and annual disease situation reports for all levels including the policy maker. It will also produce newsletters quarterly, which will serve as a feedback to the field officers as well as market Ghana internationally. To be able to discharge these activities, the Unit will require computers and their accessories, photocopier and stationery. Costs estimates are made in the work programme.

Training of Epidemiologists

The rapid changes in Information Technology, require the Epidemiologist to keep abreast with current developments in disease control, data analyses and reporting. Participation of the Epidemiologists in regional workshops and their imparting of the acquired knowledge to the field officers through local training, will therefore contribute immensely to the human capacity building of the Veterinary Services of Ghana.

Figure 1: EPIDEMIO-SURVEILLANCE NETWORK IN GHANA



2.5.1.4 ECONOMICS OF DISEASES

The Economics section has recently started operations in the Veterinary Services Department. It is the economics section that is responsible for the collection, analysis, and organisation of all socio-economic data of importance on all animal diseases in the country.

SOCIOECONOMIC ASSESSMENT OF DISEASE IMPACT

For the PACE programme, data on the economics of CBPP will be collected from all over the country, especially in areas where vaccinations have occurred and outbreaks recorded in the last ten years. The economist is drawing up a programme to start the socio-economic impact assessment of the outbreak of African Swine Fever in the country. This will involve travels through out the country to administer open-ended questionnaires, and organizing focus group discussion with stakeholders..

QUESTIONNAIRES DESIGN

The economist will also carry socioeconomic assessments of Mange, Peste des petits ruminants, Newcastle disease, Foot and Mouth disease, and dermatophilosis. The economists will ask for missions from the Common Services to come to Ghana and assist in such studies from time to time. Analyse of disease control strategies through surveys will also be conducted. Questionnaires will be designed and methodologies established for carrying out surveys.

Emergency Plans

The economist will be involved in the preparation of annual work programmes, quarterly and annual reports of PACE. The emergency plans of disease control protocols well spelt out, which the economist will be involved.

2.5.1.5 COMMUNICATION UNIT

A PARC Communication officer was appointed at the beginning of the project. In the PACE project a communication officer will be appointed. The responsibilities of the PACE communication officer will be to:

- ◆ assist the national PACE Co-ordination to organise workshops and training
- ◆ make posters relevant to the rinderpest eradication for farmers and animal health workers
- ◆ hold radio and television discussions on disease situations on FM stations in the local languages
- ◆ assist the epidemiological unit to publish newsletter and reports
- ◆ coordinate the activities of the technical and steering committees to compile reports

TECHNICAL COMMITTEE

This committee will consist of the, the Director of Veterinary Services (Privatisation),

National PACE Co-ordinator, the Epidemiologist, the Principal Laboratory Investigation Officer, Communication Officer, the Economist, and Wildlife Veterinarian. The committee will discuss the different activities of the implementation and monitoring of the PACE programme. The committee will meet monthly for the first and second year of PACE and quarterly from the third year of the project.

STEERING COMMITTEE

The committee will consist of the Supervising Director of MOFA, Chief Wildlife Officer, Veterinary Council, one butcher and a farmers' representative. The committee will meet annually to evaluate the four objectives of PACE. The PACE national co-ordinator will present to the committee activities of reports of the PACE programme in Ghana. The PACE national co-ordinator will not be a member of the committee. These personnel who are not members of the veterinary services department will be paid some sitting allowances at the rate of \$27.5 dollars. per sitting per person.

2.5.1.6 WILDLIFE EPIDEMIO-SURVEILLANCE NETWORK

There would be a network of epidemiosurveillance of wildlife. This would involve :

- Clinical and cadaverous surveillance and,
- A serum surveillance of darted and hunted animals.

Serum surveillance will be done by darting wild animals in national parks and by collecting blood samples from legally hunted animals.

The surveillance would involve the veterinary services and the wildlife department of Ghana.. The network is conservation friendly since it would be monitoring disease situation in wild animals and providing a serum bank on wild animals for other research purposes.

The network will organise a regional workshop for 2 management personnel and provide a complete capture equipment.

The network would be centered at Mole National Park, because the large number of wild animals, especially buffaloes, and because of the large number of domestic cattle in the area.

Activities of the network are as below and in the tables attached.

i – network expenditure :

This would be in every year of the network, and cost expenditure would be on running costs for the surveillance network.

ii – network training :

The network would run a training course for field agents, intermediate level personnel and

management level personnel.

Two management personnel (wildlife veterinarian and wildlife officer) would have 8 days training, 2 days for 10 intermediate level, and 2 days for 30 field agents. Intermediate level personnel would be from selected national parks.

Expenditure would cover per diem, transportation and training equipment.

One training during year 1 to explain the basis of the network, another in year 3 to reinforce the knowledge and evaluate the first year activities.

iii – regional workshop :

The first one in year 1 would be 7 days regional workshop probably in Bamako for the 2 management personnel where the wildlife surveillance program would be discussed.

This would be before the network training. Transportation and per diem are the major costs involved.

The second one would be in the field about practical themes and capture training, and also reinforce the knowledge and evaluate the first year activities.

iv – capture operation during training session

This is a week capture operating to collect sera during the network training. It is a field training and would also provide sera samples. Major cost would be on equipment for capture and running cost of vehicle.

v – one week capture for serology :

Capture during the training would not provide enough sera samples. There would be a need to organize a week capture operation to collect more sera to meet OIE pathway recommendations.

vi – blood sampling on hunting animals :

This is a collection of blood for sera from freshly legally hunted animals. The exercise provide cheap source of sera and can provide sera from different animal species which might not be covered during the capture operation. Expenditure will be on a orientation workshop for hunters and transportation and per diem for lab technician. This would be done when necessary. Funding could be from external source or from internal source (veterinary services or wildlife department).

Budget :

A budget is attached, the first 3 years being funded by EDF, the last 2 years must be funded by the Government of Ghana. That would be only running cost for the network..

2.5.2 ACCESS AND DISTRIBUTION OF VETERINARY DRUGS AND SERVICES TO LIVESTOCK OWNERS

2.5.2.1 Progressive involvement of private veterinarians in surveillance

The government of Ghana has initiated a programme of encouraging government paid veterinarians to into private practice since 1999. So far, nine of veterinarians have gone into private practice. The programme is to encourage progressively ten veterinarians to go into private practice each year under the Agricultural Services Subsector Investment Programme (AgSSIP). These private veterinarians submit monthly reports of veterinary activities to the Director of Veterinary services. The practice of private veterinary medicine is covered by legalisation of the Veterinary Surgeon's Law PNDC 305C. It is envisaged that as the private veterinarians increase in number and become well-established, certain mandatory regulations will be contracted out to the private veterinarians by the Directorate of Veterinary Services.

2.5.3 SURVEILLANCE FOR RINDERPEST

Random clinical and serological surveillance (OIE pathway procedures)

The country will be considered as a single stratum. A list of the epidemiological units (the village herd) based on 1998 census will be compiled by the Epidemiology Unit as the sample frame. A procedure based on proportional random sampling of cattle herds within the ten regions of Ghana and four categories of herd size will be used to draw a sample of 299 herds for the clinical surveillance and 314 or 598 herds for the serological surveillance. Preparation for clinical surveillance has started and the serological surveillance will start in October 2000 and end in 2002. A visit will be made to each epidemiological unit (the chosen village herds) each year and when both clinical and serological surveillance have to be done the same year, they will both be implemented in the same herds. The clinical investigations will be detailed enough to have 100% chances to detect rinderpest symptoms if they are present (complete clinical observation of all the animals in the village herd). The number of blood samples to be collected in the herds will depend on the number of non-vaccinated animals and the probability of detection chosen for the surveillance.

Three mobile epidemio-surveillance teams will be formed and equipped. The team will comprise of an epidemiologist, a laboratory investigation officer, a communication officer, an animal health economist, and 3 technicians (two of which should come from districts). These teams will be responsible for conducting the clinical and serological surveillance part of the PACE programme.

Oriented surveillance

The priority areas of Ghana's animal disease control programmes are the control of CBPP, PPR, Tsetse and Trypanosomosis in cattle, Newcastle disease in village chicken and control of African swine fever. However, under the PACE programme, RP, CBPP, PPR, Newcastle disease, and ASF are the main concerns.

For rinderpest, the oriented surveillance will focus on the main markets (at Bawku, Salaga, Techiman, Kumasi Mayanka, TMA kraal, Agbozome, Dromankese), the border entry points; and serosurveillance of sample of the herds around the main wildlife areas which would act as sentinel herds.

2.5.3.1 Emergency Preparedness Programme (EPP):

As part of the contingency plans drawn for the declaration of the country free from Rinderpest, the Veterinary Services set up the Emergency Preparedness Unit. The composition of the team is as follows:

- 2 Senior Field Officers
- 1 Epidemiologist
- 1 Veterinary Economist
- 1 Veterinary Laboratory Investigator
- The Regional and District Development Officers of the outbreak area

The emergency preparedness vision is for the better containment and control of most serious epizootics and for their progressive elimination throughout the country. The unit is, therefore, responsible for rapid implementation of a pre-planned disease control strategy, which should be based on the thorough epizootiological assessment of the situation.

Emergency preparedness plan means the amount of activities that will be realised to fight RP when it is re-introduced in the country. The EPP means three documents. First, is the technical document, which means what each one will do day by day when RP is re-introduced. Second, the financial document that will pay for the expenses, when, and how. We need to budget for EPP. Third, is the legal document. The document must be revised. The document must be discussed with different stakeholders. Meetings with the different stakeholders have no financial obligations. It is necessary to have EPP at the district level. The EPP team was called to duty during the recent outbreaks of ASF in Ghana. However, funds for its operations were provided by the FAO through a TCP and the World Bank through the National Services Livestock project funds. To effectively control any future emergencies, the VSD has created an emergency Fund of twenty million cedis as stand fund to be used by the EPP team under any such emergency calls. No provision is made for EPP for the first year. However, any such situation can be catered for from the 5 % reserved contingency funds. For years 2-4, provisions have been made to cater for any such emergencies under PACE.

2.5.4 SURVEILLANCE FOR CBPP AND OTHER DISEASES

Apart from rinderpest and CBPP, surveillance system will be extended to African swine fever disease, which caused major losses in neighbouring countries and PPR in sheep and goats, which seems to be a major problem on small ruminants in the country.

The PACE strategy for CBPP control and eradication conform to national programme. In these programmes cost/benefit analysis will be addressed. It is planned to carry out blanket vaccination against the disease for five years. Stringent control of cattle movement will reinforce the vaccination campaign. The eradication phase, which will include slaughtering measures, will be instituted following reduction of CBPP incidence. Regional and

international coordination will be conducted to control international cattle movements, and to harmonize control strategies.

Serological and pathological CBPP search is to cover the whole country with particular emphasis in the areas identified as infected areas and the areas at risk. It will be carefully combined whenever possible with the statistically based surveillance activities required for rinderpest. The epidemiology teams will conduct clinical and questionnaire-based inquiries and sera collected from cattle for rinderpest will also be tested for CBPP and the results included in an epidemiological database. Specific investigations and sera collection will be conducted in slaughterhouses and at a few selected cattle markets and stock routes. The Veterinary Services will establish control posts at Buipe, Makango, Bamboi, Damankò, Gemini and Kpelungu to inspect trade cattle. Pong Tamale, Accra and Kumasi laboratories will be provided with CFT and CBPP-ELISA capabilities.

2.5.4.1 Epidemiological Surveillance of African Swine Fever

For African Swine Fever the surveillance will focus on these areas: pig markets, slaughterhouses, imports, border entry points along the Ghana –Togo, Ghana-Burkina and Ghana-Cote d'Ivoire borders. Regions along the border with Togo have formed sero-surveillance teams. Similar teams will be formed in the other border regions. These teams will continue to conduct sero-surveillance quarterly on the herds located in border areas. The National Diagnostic Laboratory at Bingerville, in the neighbouring Cote d'Ivoire will continue to serve as the reference laboratory for the African swine fever sero-surveillance.

The Communication Officers will develop communication strategy for use by Extension Agents of MOFA with the aim of creating more awareness of the disease to the people along the Togo border. The Communication Officers will also help to form Sanitary Defence Group (SDG), an association which would consist of pig farmers, butchers, pig dealers and other people associated with the pig industry. The SDG and the field technicians will be trained in early detection and reactions.

The Economist will conduct an impact assessment of the eradication process and the containment of other transboundary diseases.

In many of the activities outlined below, the PACE Ghana project will receive support from the personnel of the PACE Common Services, particularly in the areas of epidemiology, wildlife sampling, economics, communications, privatization, legislation and project management. It is envisaged that specific support will be provided through the regional diagnostic laboratory network to upgrade and maintain diagnostic standards throughout the programme.

A specific database will be created using software, such as ACCESS, to manage the data collected by the network. The Arcview and Idrissi (GIS softwares) will be used to analyse the database. The Epidemiology Unit will publish quarterly reports, specifically on calculation of the surveillance performance indicators, (including at least the FAO/IAEA proposed performance indicators for Rinderpest). Relate to epi unit.

When the field staff make a suspicion or when a cattle owner makes a declaration of a surveyed disease a precise procedure has to be followed:

- ◆ confirmation that the clinical signs observed correspond to the case definition ;
- ◆ filling the “disease specific suspicion form” ;
- ◆ collecting the samples to confirm the clinical diagnosis ;
- ◆ filling the sample format ;
- ◆ sending all the data to the regional laboratory ;
- ◆ sending the information about the suspicion through the administrative way.

The Regional Development Officers (Vet) will supervise veterinary field staff and monitor private veterinarians in conducting the continuous active surveillance. The human resource presently available for the project is presented in Annex V. With active disease surveillance functioning correctly, outbreaks of Bovine Viral Diarrhoea, Infectious Bovine Rhinotracheitis and Malignant Catarrhal Fever should be detected, sampled, and reported.

2.5.5 Phased activities of Ghana Global Plan

Indicative schedule of major activities of Ghana Global Plan is detailed out in Annex III..

III ASSUMPTIONS, RISKS AND FLEXIBILITY

3.1 Assumptions

3.1.1 Support to Government Services

At the purpose level, the assumption is made that Government funding is increased sufficiently in real terms, to maintain effective levels of animal disease surveillance and veterinary services. The Agricultural Services Sector Investment Programme (AGSSIP) to fund other, complementary activities related to animal disease control.

Veterinary services staff, under decentralized administrations, should have adequate resources provided through government budgets to be able to co-operate effectively in data collection, reporting & application of control measures.

With regard to the improvement of the accessibility to veterinary services, it has been assumed that the prices of veterinary inputs are perceived to be affordable by livestock owners. That veterinarians are willing to take up private sector employment in outlying areas, and that the distribution of veterinary products in outlying areas is profitable.

In the context of Pan-African disease control, the effective co-ordination of surveillance and livestock movement control should be maintained with neighbouring countries. With regard to disease surveillance, it is assumed that veterinary staff remains sufficiently motivated to maintain adequate vigilance. The timely availability of funds for the annual work programmes is an important precondition to implementation of the programme.

- Appropriate legislation defining tasks and responsibilities of veterinary authorities regarding control and eradication of epidemic diseases is enacted and enforced. Veterinary inspectors should carry out ante-mortem and post mortem inspection at slaughter slabs/houses in consonance with international practices. The legislation on meat inspection will help enforce the control and eradication of CBPP.
- Effective co-ordination between veterinary staff under MOFA in the districts and the Veterinary Directorate MOFA. Re-establishment of direct co-ordination between the Veterinary Services Directorate and the regional and district veterinary staff.
- Responsibilities of the public and private services are clearly defined.

3.1.2 Development of veterinary services

- The general trend towards liberalisation of the economy continues.
- The national policy is, and remains, firmly committed to restructuring and privatisation of veterinary service delivery.

3.2 Risks and flexibility

Re-incursion of rinderpest from Central and Eastern African countries such as Sudan, Kenya, Somalia will remain a risk if all necessary steps to control the disease are not taken in these countries.

Control/eradication of CBPP will remain difficult if existing tools to diagnose and control the disease are not improved and if cattle movement control is not developed and enforced.

Institutional factors may have an adverse impact on project organization and implementation, especially if the Veterinary Directorate is not allowed to direct and control the field activities.

Development of disease surveillance for rinderpest and CBPP may lead to the identification of other emerging diseases that may influence the project.

IV PROJECT IMPLEMENTATION

4.1 Physical and non-physical means

1 Enhance national capacity

1.1 Personnel

The national Co-ordinator of PACE Ghana will be the project manager of all services in Ghana. The Co-ordinator will inform the Director of Veterinary Services of all activities of PACE and the Director will participate in some of the activities of PACE at the regional level. Other staff of the Veterinary Services Department of the Ministry of Food and Agriculture will work with the PACE Programme Ghana. These will include, one director of the VSD, three epidemiologists, one veterinary economist, thirty-three technicians, an accountant, store-keeper and supply officer. The Government of Ghana will pay salaries and allowances of the staff and also pay for running cost of disease surveillance in years 4 and 5.

1.2 Equipment

1.2.1 Computers and accessories

These will be purchased on the local market to increase the capacity of the veterinary services. Three laptop computers will be purchased for the PACE national co-ordinator, epidemiological unit, and the veterinary economist at the cost of 12,000 Euros and five desktop computers at 15,000 Euros. Three of the desktop computers will be used at the PACE Co-ordination office, and two for the laboratory and the southern epidemiologists. An amount of 3050 Euros will be used for networking of computers through internet connection with a server, for email services. For back up of record, four back-up drives will be purchased for the PACE co-ordination. Three virus guards will also be purchased at the cost of 580 Euros. This budget is for the first year.

1.2.3 Vehicles

Five vehicles will be purchased. The vehicles that were purchased under PARC are unserviceable, because their life span is long overdue. The type and costs of vehicles include one cross-country 4x 4 Wheel Drive @ 33,000 Euros and four wheels Drive-double cabin pick-ups @25,000 each for 100,000 Euros. This budget is for the first year. These vehicles are to be used by the PACE Co-ordinator the two regional epidemiologists in two of the three ecological zones of Ghana, the veterinary economist and veterinary laboratory investigation. Vehicles are budgeted for the first and second years.

1.3 Running cost

1.3.1 Travel

1.3.1.1 International (air fares, DSA, visas)

Provision is made to enable the PACE Co-ordinator, the Director of veterinary services and other staff of PACE Co-ordination for travels at regional meetings and seminars. Budget is made for three international travels at 1200 Euros per trip at the cost of 3600 Euros and DSA @ 200 Euros per person for 4 days. Annual budgets are made for the four years.

1.3.1.2 (National DSA) Provision is made under this item with a total of 35087 Euro earmarked to enable field veterinary staff and their drivers undertake various field veterinary activities with livestock producers

1.3.2 National meetings, workshops and training

The cost of organising PACE meetings, workshops and short training courses in Ghana will be met from the provision made. Costs will include hire of venues, secretarial equipment and consumables, audio-visuals aids, refreshment and other relevant materials. A total of 60 participants will attend each of the workshops including 40 veterinary officers and 20 technical officers. DSA will be paid to members of the Technical Committee of PACE, when they meet annually. Budgets are made annually for four years from EDF funds.

1.3.3 Office running costs

Provision is made to purchase tonners and reams of A4 papers for office use in Yr 1. Annual budgets are made for four years of PACE Co-ordination office.

1.3.4 Vehicle running costs

No provision is made under this item for the costs of fuel, lubricants, tyres, repairs, insurance and maintenance of all vehicles for Yr 1-Yr 5 of PACE. The government of Ghana has budgeted for the running costs of vehicles in the fourth and fifth year of the PACE project.

1.3.5 Laboratory running costs

No provision is made under the item for the five-year period. Government of Ghana budgets is made for the 4 and 5 years.

1.3.6 Communications and public utilities

Email rent, telephone and other postal services will be paid for. Budgets for four-year period are made.

1.3.7 Maintenance of equipment

Provision is made for the 3 and 4 years. Government of Ghana is made for Yr 4 and Yr 5.

1.3.8 Communications materials

No provision is made for all five years.

1.3.9 Commissioned studies

No provision is made for Yr 1-Yr 5.

1.3.10 Wildlife network

It is budgeted to provide wildlife network and training for wildlife veterinarians and field agents, for regional workshops, capture operation training and capture operation. This is for the first three years of PACE.

1.3.11 Wildlife network training

Provision is made for the first and third year.

1.3.12 Regional wildlife network training

Provision is made for the wildlife veterinarians to attend regional workshops for the first and second year of PACE.

1.3.13 Capture wildlife operation training.

Provision is made only in the second year of PACE.

1.3.14 Wildlife capture operation training.

Provision is made only in the second year.

1.3.15 Capture wildlife operation

Provision is made only in the second year.

2 IMPROVE ACCESS AND DISTRIBUTION OF VETERINARY SERVICES AND DRUGS

2.1 PERSONNEL

2.1 Local staff

No provision is made under this item. Staff of government Veterinary Services will be used as staff of the PACE-Ghana project.

2.1.1 Technical assistance

2.2 EQUIPMENT

2.2.1 Computers and accessories

No provision is made under this item. The same equipment purchased to enhance national capacity will be used for improved veterinary services.

2.2.2 Office furniture & equipment

The same equipment purchased to enhanced national capacity will be used for improved veterinary services.

2.2.3 Vehicles

No provision is made under this item. The same vehicles purchased will be for use in duties related to improved veterinary services.

2.2.4 Field equipment

No provision is made under this item. The same equipment purchased to enhanced national capacity will be used for improved veterinary services.

2.2.5 Laboratory equipment

No provision is made under this item. The same equipment purchased to enhanced national capacity will be used for improved veterinary services.

2.3 RUNNING COSTS

2.3.1 Travel

2.3.1.1 International (air fares, DSA, visas)

Provision is made each year under this item to enable staff to tour countries that have implemented privatization schemes. Budget is made for four-year period.

2.3.1.2 National (DSA)

No provision is made under this item for the five-year period.

2.3.2 National meetings, workshops & training

No provision is made under this item for YR 1-Yr 5 of PACE.

2.3.3 Office running costs

No provision is made under this item for the five-year period.

2.3.4 Vehicle running costs

No provision is made under this item for the five-year period.

2.3.5 Laboratory running costs

No provision is made under this item for the five-year period.

2.3.6 Communications and public utilities

No provision is made under this item for the first 4 years but made for the fifth year.

2.3.7 Maintenance of equipment

Under maintenance of equipment, no allocation is made for Yr 1, Yr 3, Yr 4 and Yr 5, but estimate is catered for under year two.

2.3.8 Communications materials

Under maintenance of equipment, no allocation is made for Yr 1, Yr 3, Yr 4 and Yr 5, but is catered for under year two.

2.3.9 Commissioned studies and services

This is taken care of in year 2 only to conduct economic surveys on CBPP and other diseases, where necessary.

3 FIGHT AGAINST RINDERPEST

3.1. PERSONNEL

No recruitment of new staff, but staff of VSD will be used. This will include the technical staff in the 33 epidemiological clusters.

3.2 EQUIPMENT

3.2.1 Computers and accessories

No provision is made under this item for the five-year period of PACE.

3.2.2 Office furniture and equipment

No provision is made for the five year-period of PACE.

3.2.3 Vehicles

No provision is made for the five-year period of PACE.

3.2.4 Field equipment

An estimate is made from 1-3 years of PACE.

In the first year, field equipment will be purchased and will include ice chest (4.5 litres), field boots, specimen containers, vacutainer tubes with traditional stoppers (100x10), vacutainers tubes with anticoagulant (10ml), and postmortem kits.

3.2.5 Laboratory equipment

Reagents for ELISA reader will be procured under this item for only the first year of PACE. No estimates are made for Yr 2, Yr 3, Yr 4, and Yr 5.

3.3 RUNNING COSTS

3.3.1 Travel

3.3.1.1 International (air fares, DSA, visas). Provision is made for staff of VSD to participate in PACE common services meetings at the regional levels. Budget estimates made for four year-period of PACE.

3.3.1.2 National (DSA)

No provision is made under PACE, but clinical surveillance is taken care under objectives 1 and 4 under PACE.

3.3.2 National meetings, workshops & training

Provision is made under this item to cater for meetings and training workshops during years two, three and four. Provision is made by government under this item for years four and five.

3.3.3 Office running costs

No provision is made under this item. Ghana Government provision is made for years four and five.

3.3.4 Vehicle running costs

A substantial provision is made under this item for the costs of fuel, lubricants, tyres, repairs, insurance, and maintenance of all vehicles to be used in the fight against rinderpest. Annual estimates are made for the four-year period of PACE.

3.3.5 Laboratory running costs

Provision is made to include the cost of sending of specimens to world reference laboratories for definitive diagnosis against rinderpest and rinderpestlike diseases. Budget estimates are made for the five-year period of PACE.

3.3.6 Communications and public utilities

Provision is made under this item during the second year only.

3.3.7 Maintenance of equipment

No provision is made under this for all five-year period of PACE.

3.3.8 Communications materials

Provision is made to purchase needed communication materials such as flip chart stand, overhead projector, white boards, felt pens and papers. Estimates made for four-year period.

3.3.9 Commissioned studies and services

No provision is made for the five years of PACE.

3.3.10 Emergency fund

Substantial amount has been made to take care of emergency disease situation for the second, third, and fourth years.

4 CONTROL OF CBPP AND OTHER EPIZOOTICS

4.1 PERSONNEL

Staff of Veterinary will be used for PACE activities.

4.2 EQUIPMENT

4.2.1 Computers and accessories

No provision is made under this item for the five-year period of PACE.

4.2.2 Office furniture & equipment

No provision is made under this item for the five-year period of PACE.

4.2.3 Vehicles

No provision is made under this item for the five-year period of PACE.

4.2.4 Field equipment

Provision is made under this item to procure BIO_PACK-1, BIO-PACK-2, bottle with clear glass, wide mouth without CAP, *) Zcapacity, neck R3/48 H119 mmx, field boots, raincoats, and postmortem kit. Estimates are made for years 1,2,3 of PACE.

4.2.5 Laboratory equipment

No provision is made under this item for the five-year period of PACE.

4.3 RUNNING COSTS

4.3.1 Travel

4.3.1.1 International (air fares, DSA, visas)

Provision is made for staff of Ghana National PACE Programme to participate in CBPP initiatives such as meetings conference/seminar/workshop for 4 days 1200 Euro/trip and 200 Euro/ person at the regional level. Estimates are made for years 1, 2, 3, 4 of PACE.

4.3.1.2 National (DSA)

Provision is made to include the DSA costs of staff working for the implementation of clinical, serological and pathological search for CBPP and other epizootics. Estimates are made for years 1, 2, 3, 4 of PACE.

4.3.2 National meetings, workshops & training

No provision is made under this item for the first year, but made for years 2, 3,4 of PACE.

4.3.3 Office running costs

No provision is made under this item for the five-year period of PACE.

4.3.4 Vehicle running costs

Provision is made under this item to cover the cost of fuel and lubricants of field staff working to monitor stock movement in strategic border points and stock routes to reduce the risks of introduction of CBPP and other epizootics for the four year period of PACE. Estimates are made for Yr 1, Yr 2, Yr3, and Yr4.

4.3.5 Laboratory running costs

Provision is made to collect and analyze specimens or submit specimens to world reference laboratories as an integral part of a national CBPP and other epizootic surveillance system for the four-year period of PACE. Ghana government budget is made for this in years 4 and 5 under its annual budgetary allocation.

4.3.6 Communications and public utilities

No provision is made under this item for the five-year period. Ghana government budget is made for this in years 4 and 5.

4.3.7 Maintenance of equipment

No provision is made under this item for the five years of PACE. Ghana government budget is made for this in years 4 and 5.

4.3.8 Communications materials

No provision is made under this item for the first year. Budget estimates are made for Yr 2, Yr 3, and Yr 4.

4.3.9 Commissioned studies

Provision is made for economic surveys and epidemiological data collection on strategic diseases in years 2 to 5 of the project.

4.2 Organisation and implementation procedures:

The project will be implemented on the basis of annual work programmes, and contracts for supplies, as necessary. The procedures for the award of contracts and execution of payments will follow the rules in force for the EDF (or updates of those rules, where applicable).

The PACE Manual of Procedures describes in detail the implementation procedures of the programme. Under the terms of a memorandum of understanding the Regional Authorising Officer (RAO) of the EDF will delegate to Ghana's National Authorising Officer the authority to make payments for PACE Ghana. The national project will be managed through a structure similar to that used for the implementation of PARC. A National Co-ordinator (the PACE Co-ordinator) will head the project. He will oversee the administration and finance of the project, the Epidemiology Unit's co-ordination of the activities of the field activities, the laboratory linkage, data processing, communication, economic analysis and the interdepartmental and international linkage. The National PACE Co-ordinator will be supported as needed by the Nairobi-based PACE Co-ordination Unit through the Bamako Sub-regional Co-ordinator. A Technical and a Steering Committee will oversee the project's activities at the national level. The steering committee will meet once a year, and the technical committee will meet every quarter.

As a whole, the PACE programme will be monitored by the European Commission delegation in Nairobi, Kenya. The Programme's Regional Authorising Officer is the Director of OAU/IBAR, Nairobi, Kenya.

4.3 Work programmes and budget procedures

Programming will be done at two levels: a global operational plan for the five years of the project, which will be submitted, to the PACE Advisory Committee for approval before the beginning of operations. Subsequently, annual programmes, approved by the National Authorising Officer and the Delegation of the EC, will be submitted through the Sub-Regional Co-ordinator to the PACE Programme Co-ordination Unit (PCU). The PCU will consolidate the work programmes of those countries whose work programmes have been approved. After RAO has approved and the EC's lead Delegation in Nairobi has endorsed the consolidated work programme, advance payments will be made to individual countries upon receipt of the appropriate request to the EC Delegation in Accra. Payment will be made to a bank account, the details of which will be given in the contractual document annexed to each work programme. The National Co-ordinator will periodically justify the expenditure of funds and when replenishment is required, he will submit financial justifications regarding the expenditure of previous fund allocations to the PACE Financial Control Unit for review. The first work programme will commence in October 2000, although the official financial year extends from January to January.

4.4 Reporting

The Veterinary Services' monthly national reporting system will require more attention and co-ordination. Specific information concerning rumours or confirmed rinderpest cases and other transboundary disease outbreaks has to be received within 24 hours. Regional Development Officers (Vet) are to submit reports on the continuous active surveillance on monthly basis to the National Project Co-ordination Office (NPCO) with copy to the Regional Director of Agriculture.

The National Co-ordination Office submits monthly reports through the Directorate of Veterinary Services to the Minister and quarterly reports to the OAU-IBAR based PACE Co-ordination Unit in Nairobi. The NPCO will assist the Epidemiology Unit in the production of annual reports on animal health status and main activities in the country. A standardised regular system of information that will be compatible with the needs of the GIS and the PACE CU systems will be implemented. The data collected will be analysed and discussed whenever needed.

4.5 Implementation time schedule

The project will be implemented over a period of 5 years from 16 October 2000 to 31 October 2005. This will permit Ghana to pursue the OIE pathway sufficiently to apply to the OIE for certification for freedom from rinderpest disease (See Annex 4).

4.6 Tentative costs and financing plan

4.6.1 EDF Funds

Tentative cost estimates for the project cover a 5-year period. The table of the project's cost estimate is presented in Annex VI attached to the main document. The estimated total cost for Ghana is 996 890 (Table 8).

Table 8: Breakdown of estimated expenditure of EDF funds for PACE Ghana

Item		Estimated annual costs (Euros)					Total EDF	Contribution of GOG		
		Year 1	Year 2	Year 3	Year4	Year5		Year4	Year5	Total
1.Enhanced national capacity		233 394,00	132 551,00	91 945,00	67 750,00	2 675,00	528 315,00	45 000	46 000	91 000
2.Improved veterinary services		4 000,00	18 000,00	2 000,00	2 000,00	200,00	26 200,00	2 200 273	2 197 273	439754
3.Fight against rinderpest		62 071,00	58 000,00	68 000,00	47 750,00	3 413,10	239 234,10	34 000	42 000	76 000
4. Control of other epizootics		27 000,00	45 636,00	45 092,00	37 842,00	100,00	155 670,00	28 000	33 000	61 000
Sub-total		326 465,00	254 187,00	207 037,00	155 342,00	6 388,10	949 419,10	2 307 273	2 318 273	4 625 54
Contingency 5 %		16 323,25	12 709,35	10 351,85	7 767,10	319,41	47 470,96	115363,7	115913,7	231277,
Total estimated expenditure		342 788,25	266 896,35	217 388,85	163 109,10	6 707,51	996 890,06	2 422 637	2 434 187	4 856 82

4.6.2 The Ghana Government Contribution to Recurrent Costs of Disease Surveillance to the PACE Programme Ghana

The Government of Ghana provides annual budget allocation for the administration and management of animal health services delivery. Therefore, recurrent cost of general disease surveillance will be covered by national government through the payment of salaries and allowances of staff, running and maintenance costs of vehicles and equipment. The National Veterinary Services has three epidemiologists according to the three ecological zones of the country. Each epidemiologist has a number of veterinary technicians who are involved in disease surveillance both passively and actively. Regular monthly returns are submitted to the national headquarters on disease situations in the country.

With the outbreak of notifiable disease, however, a report is conveyed to the Directorate of the Veterinary Services by telephone, the fastest means available.

The activities of these field officers are currently covered through the Government of Ghana sources-recurrent expenditure under the national budget and World Bank project source-the National Livestock Services project (NLSP), which ended in December 1999. It is therefore imperative that a source of funding is realized for the recurrent cost of disease surveillance where the NLSP hitherto covered.

The Government of Ghana will provide funds to cater for the running costs of disease surveillance in years 4 and 5. This is budgeted for in the Global cost estimates as in the Table above.

4.7 Special Conditions and Government Accompanying Measures

4.7.1 Special conditions

Necessary conditions for the successful implementation of the project have been satisfied during the PARC II and NLSP projects.

- ***Rinderpest eradication:*** PARC structure and modus operandi will be retained during the PACE Programme. Ghana has officially entered into "OIE pathway" by declaring the country provisionally free from rinderpest and needs the support of the PACE Programme to fulfil the remaining "OIE pathway" requirements.
- ***Privatisation:*** steps have been taken to clearly define state and private sector responsibilities with regard to animal health services. The promulgation of Veterinary Surgeon's Law, PNDC L.305C that established the Veterinary Council of Ghana, to regulate the practice of veterinary medicine, has secured a proper legal environment for private veterinary services in Ghana. In addition to contractual agreement of sub-letting CBPP vaccination to private veterinarians, the Ministry of Food and Agriculture has decided to relocate public veterinarians from areas where private practice is functioning to decrease and ultimately suppress unfair competition.
- ***CBPP and main epidemics assessment and control:*** There is progressive cost recovery procedure being put in place. Vaccination against CBPP is compulsory but attracts user fee. It is not budgeted in PACE to buy vaccines for CBPP.

- Veterinary Services Department has in place a computerized monthly reporting system, which conforms to OIE/FAO data requirements. This comprises of a network of 10 regional reports.
- Ghana will comply with PACE financial and accounting policies.

4.7.2 Accompanying measures

The main accompanying measures needed to ensure proper project implementation are the following:

- Government commitment to comply with the OIE pathway recommendations until its completion.
- Continued commitment to the implementation of the privatisation process.
- Institution of a contingency plan for emergency preparedness to control epizootics.
- Preparation and approval of guidelines for instituting epidemio-surveillance programme.
- Utilisation of only PANVAC certified CBPP and RP vaccines in controlling the two diseases.
- National Indicative Programme (NIP) of the ninth European Development Fund (EDF) may be able to allocate additional resources for control of rinderpest and other epidemic diseases should an outbreak occur in Ghana.

The Government of Ghana shall respect the following prerequisites:

- to ensure long-term sustainability, progressively increase government financial commitments to meet the full recurrent costs of a functional and effective epidemio-surveillance network at national level, which shall be linked effectively to regional and continental networks; and
- undertake continuous environmental impact of stockbreeding management and its impact on rangeland conditions.

4.8 Technical assistance (Missions)

Technical assistance will be needed to assist build the capacity in the following areas:

- ♦ economics of animal health
- ♦ epidemiological surveillance
- ♦ communications

During the PACE programme, the Co-ordination will call some of these missions to come to Ghana.

V VIABILITY

5.1 Support policies

The viability of the project's achievements is highly dependent on the sustained government commitment to the specific objectives such as the emergency preparedness team in implementation of epidemic disease control/eradication and the Epidemiology Unit continuously undertaking disease surveillance programmes.

It is also dependent on the government ability to enforce the Animal Disease Act and also enforce Veterinary Surgeons Law PNDC L305C to regulate veterinary practice in Ghana.

The dynamic nature of livestock trade makes the project's viability rest upon the epidemiological situation of other countries in the sub-region. There is the need to encourage the establishment of an effective sanitary cordon in Central Africa in order to avoid extending the infection into the free West and Central Africa countries, which unofficially trade with Ghana in cattle.

5.2 Appropriate technologies

Existing tools for the diagnosis and control of rinderpest are generally very efficient.

Existing tools for CBPP diagnosis and control are on the other hand poorly efficient. The vaccine protects the animals for only 6 to 8 months. The antigen used for the Complement Fixation Test (CFT) diagnosis has a short validity period which makes it difficult to use in remote areas and the c Elisa test for CBPP, which would allow for multiple testing in a short period of time, is not yet officially validated. Research is however on going to improve these tools, notably under the auspices of OAU/IBAR, and a new vaccine with a longer immunisation capability (up to 16 months) will be soon tested in the field.

Ghana has one main laboratory, the Central Veterinary Laboratory at Pong-Tamale and nine other laboratories in the regions. All but one laboratory - at Winneba in the Central Region - have been refurbished and equipped to some degree under the National Livestock Services Project.

All the laboratories carry out routine disease diagnosis (pathology, bacteriology, parasitology).

5.3 Environment

Cattle production is an integral part of the farming system. Cattle are mainly concentrated in the Guinea, the Transitional zone and the Coastal Savannah vegetation zones. There is very limited transhumance. The Upper East, Upper West and the Northern regions, which are of these vegetation zones, contain about 77% of the cattle population in Ghana. About half of the farmers in the Upper East and Upper West regions use bullocks for ploughing their fields. Of these about 40% rent their bullocks. Studies show that bullock-owning households cultivate 60% more land than those who don't. Despite the fact that Ghana is endowed with vast forage resources for increased livestock production, the current livestock census figures do indicate that the livestock resource base is incommensurate

with the potential that exists. Consequently, Ghana still imports meat, milk and milk products in significant quantities to supplement the protein requirement of her populace.

By limiting the risk of epizootics, the project will encourage the smallholder livestock owner to increase livestock productivity in meat, milk, hides and egg and draft animals for the development of the crop sector. It is thus considered that prevention against the main epidemic diseases will not result in accumulation of livestock and overstocking, but rather will allow for increased off-take to satisfy both the internal demand and possibly exports in future. In the mixed farming areas, livestock is an important factor of agricultural intensification. Animals provide manure and recycle agriculture waste and, through additional cash income, allow investments for crop production and diversification. They thus contribute to the long-term preservation of the productive potential of natural resources.

By providing better security to livestock in terms of reducing losses from diseases, the PACE programme will constitute an important step in the intensification process and indirectly in the long-term protection of the environment. In addition, improved control of zoonoses, marketing routes and meat inspection will reduce hazards to human health.

5.4 Socio-cultural aspects: women and development

Cattle production is gender biased. In Ghana, very few women (less than 1%) are cattle owners. Livestock is a community and family asset, which provides security through cash income used for family purpose (food, household goods, clothes, health and education) and for agricultural, needs (drought power, fertilizer, energy). An increase in productivity due to low rates of disease outbreaks will result in an increase of the family revenue and contribute to improve the living standards and financial security. Therefore, women will benefit from the project activities because they are more prone to family risks such as health and to other family issues (marriage, children education, day to day food preparation, etc.).

In mixed farming areas, where women often handle money matters, particularly with what regards milk production and small animals, they will even be more directly benefiting from the project outputs. Increased income in the rural areas will also give them access to other services (water, electricity, education, transport). Under the present conditions in Ghana, there is much awareness creation on women issues as a result of the Beijing conference on women. Besides, there are non-governmental organisations (NGOs), which champion the causes of women and these NGOs operate in most of the livestock communities. Therefore, through participatory rural appraisal techniques, it is easy to involve women to be trained as CLWs. Farming communities in the country have always acknowledged the honesty, hard work and integrity of women

5.5 Institutional and management capacity

Ghana has the human resource base to carry out the project. Presently, there are 168 veterinary surgeons, 81 animal health diplomates, 560 technical officers and 81 technical assistants who will be available to work for the project. A number of veterinary surgeons have had postgraduate training in epidemiology and laboratory techniques. For the economic

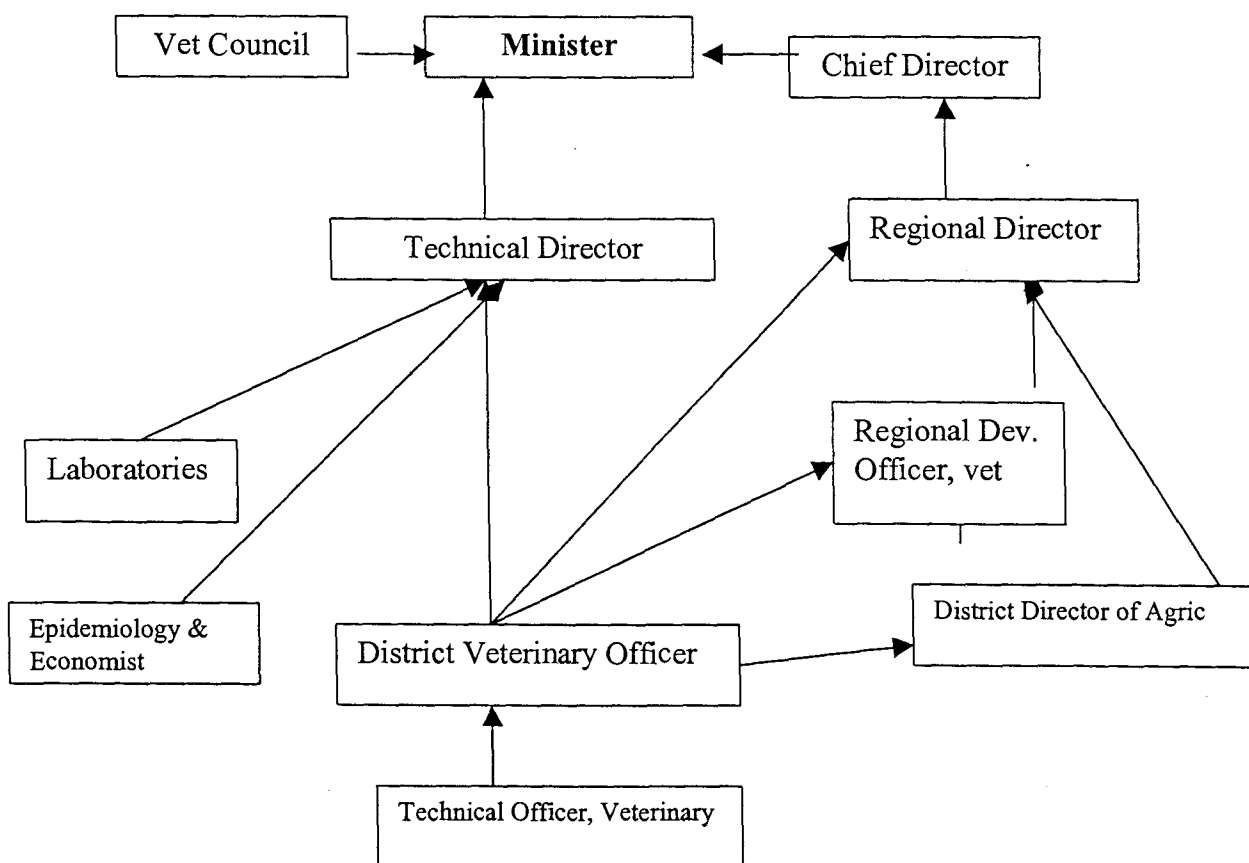
aspect of the project, a veterinarian has been trained in veterinary economics in a postgraduate course in Animal Health Economics at Cornell University. The recent restructuring of the Veterinary Services Department, and the decentralization of Ministry of Food and Agriculture threatened to adversely affect the vertical chain of command between the Veterinary Directorate and field staff for the correct implementation of emergency plans against transboundary diseases in the framework of FAO's EMPRESS Programme. However, this potential problem has been overcome and all field staff are required to report on all disease-related matters to the Veterinary Services Directorate.

5.5.1 *The capacity of the country to implement the PACE programme*

Ghana has the capacity to implement PACE because there are already some institutional reforms and physical resources through the implementation of PARC and the National Livestock Services Project. The institutional reforms are the privatization of animal health services, in which nine government veterinarians have started private veterinary services in 1999; and the training of community livestock workers in all livestock communities in Ghana. The Epidemiology Unit has acquired GIS equipment to improve disease control and surveillance. The FAO has installed TADinfo for disease analyses and surveillance. Ghana is the only country in the West African Sub-region with the TADinfo system. The Epidemiology Unit has an Economist to analyze the impact of some epizootics.

The veterinary set up is nation-wide with well-established links with the Veterinary Technical Directorate and other Ministry of Food and Agriculture units and departments.

Figure 2 : **Information linkages of animal health delivery**



The veterinary laboratory set up is rich in trained veterinary investigation officers. There are ten regional laboratories in the ten regional capitals. The central veterinary laboratory at Pong-Tamale produces bacterial vaccines. The Accra laboratory, in addition to other activities, is charged with the responsibility of forwarding specimen to reference laboratories outside Ghana (e.g. world reference centres for the major epizootics). Training will increase competence and equipment reinforced.

5.6 Financial and economic analysis

The PACE programme approach is regional, particularly with what concerns rinderpest and CBPP, which control and eradication cannot be envisaged but through multinational or regional strategies and therefore at a supra-national scale. The economic and financial justification for activities, which are needed in the implementation of these strategies thus, can only be assessed through a regional approach.

The veterinary services delivery programme finds its justification through a slight improvement of livestock productivity.

The economic justification of activities not directly productive if not backed up by specific measures, as the building of an epidemiological network (NSES) or the strengthening of public services, will essentially depend upon the Government commitment to support the sub-sector. Each of the member states will benefit though the PACE project from economic evaluation tools which will permit to optimally define the economic and financial justification of the efforts it will make using its own resources or those procured through external donors assistance.

The economic benefits from PACE will be realised from decreased mortality rates of livestock, increased knowledge of disease control among farmers, timely diagnosis of diseases that will prevent their spread, and enhanced productivity of livestock resulting from improved service delivery. In terms of livestock productivity there will be decrease in the age at first calving, the calving interval will decrease, while birth weights of calves and calf survival rate will increase. These economic parameters can be used in the small ruminant sector.

For poultry, economic indicators will be based on average egg consumption or annual sales and mortality rate.

Control of epizootics will improve quality of animal products such as meat, hides, and meat products. Economic aspects of disease control under PACE Ghana will be discussed with the PACE Senior Economist who will be based at IBAR, Nairobi. Joint protocols will be devised to enable comparative studies to be made of the socio-economic impacts of CBPP and, possibly, other major epizootics of importance to Ghana, such as PPR and African swine fever. Specific studies will be commissioned to gather data at farm, district and national levels.

Monitoring indicators will depend on the project's components and will be linked to the implementation according to the scheduled activities.

Indicators for strengthening of government services will mainly comprise:

- ◆ maintenance of the National PARC Co-ordination,
- ◆ existence of an approved emergency preparedness plan,
- ◆ establishment of an epidemiological network (ESNS),
- ◆ existence of efficient communication and reporting systems,
- ◆ the number of specific diseases of suspected cases reported by field staff,
- ◆ the number of sera collected and relevant laboratory records, and
- ◆ reviewing of existing veterinary legislation.

Concerning the development of veterinary service delivery, the main indicators will be the actual numbers of private practices in operation in the main food animal production areas. The number of private and public good activities transferred to the private veterinarians (vaccinations of food animals, meat inspection, sanitary mandate and active continuous disease surveillance) and the satisfaction of the farmers.

Eradication of rinderpest will be assessed through OIE assessment reports, the number and results of field surveys and samples and the reports to OIE. Performance Indicators design to monitor the progress towards establishing effective surveillance programmes are as follows:

Table 9: Performance Indicators

Component		Performance Indicator
General Surveillance	Disease	No. of districts filing general disease reporting formats within 30 days, for at least 10 months of the year, per total number of districts annually.
Active Surveillance	Disease	No. of districts survey using active disease search techniques (participatory, questionnaire-based or clinical) with results reported within 60 days / total number of districts per annually. No of livestock owner reports of stomatitis/enteritis (3Ds) received, recorded and reported within 30days per million heads of susceptible species annually.
Stomatitis- Enteritis Outbreak Investigation		Number of reports of stomatitis/enteritis (3Ds) investigated within 7 days of first report per million heads of susceptible species annually. Number of clinical stomatitis/enteritis (3Ds) cases sampled within 7 days of detection per million heads of susceptible species annually.
Laboratory Confirmation		No. of cases examined by rinderpest antigen or RND detection techniques with preliminary results reported within 14 days per million heads of susceptible species annually. No. of stomatitis/enteritis (3Ds) cases diagnosed definitively by laboratory methods within 30 days of receipt of samples per million head of susceptible species annually (e.g. RP, BVD, MCF, etc.)
Sero-surveillance		No. of serum samples collected and tested, with result reported within 90 days of collection per million heads of susceptible animals annually.
Wildlife Surveillance		No. of serum samples collected and tested with results reported within 90 days of collection per ten thousand heads of susceptible species.

This is a first set of indicators to be used in the first year. But we will create our own indicators in subsequent years.

Assessment and control of main epidemic diseases will be appreciated through the incidence figures and mapping of the endemic areas, the number and results of samples analysed, control strategies developed and tested and the level of involvement of private veterinarians.

6.2 Project evaluation

Evaluations will be done at three different levels:

- ◆ The National co-ordination office will set up a specific mechanism for continuous monitoring and evaluation of activities and outputs. It will be based on the annual work programme's schedule of activities and will feed the data base with data collected from the field related to pre-defined significant criteria, and use the data base information to substantiate the conclusions. A mid-term independent technical evaluations will be carried out by consultants recruited by the Regional Authorising Officer and the European Commission.
- ◆ Regular evaluations will be done, together with the National co-ordination by members of the OAU/IBAR co-ordination unit.

The impact of the livestock development in the country will be assessed at the national, the private sector involvement (private veterinarians), the farmer and the consumer levels. The parameters of such assessments are indicated in Table 10.

Table 10: Project Impact Evaluation

Category of Stakeholder	PACE Achievement	Assumptions
Government of Ghana	Sustainable livestock policy Effective regulatory services mechanism Full participation of the private sector	Government commitment to counterpart funding
Private sector	Effective channel for distribution of veterinary drugs and services	Government veterinarians prepared to enter into private veterinary practice
Farmers	Reduction of livestock mortalities Increase of income from livestock enterprises Easy accessibility to livestock services and drugs Increased knowledge in livestock husbandry	Preparedness of farmers to work in harmony with veterinary staff
Consumer	Consumption of quality and sufficient quantities of animal products (meat, milk, eggs)	Supply will meet the demand of consumers

Objectively verifiable indicators will be used to determine the impact of PACE. These will focus on the main objectives of PACE: *e.g.* enhanced capacity (training, staff establishment and funding levels); improved veterinary services (outlets for veterinary medicines); epidemio-surveillance network (laboratory diagnostic support capacity for rinderpest, CBPP and PPR); the existence of the Emergency preparedness programme; the OIE certification of Ghana's freedom from rinderpest; results of surveys and surveillance as a basis for strategy development, especially related to the control of CBPP.

ANNEX I: LOGICAL FRAMEWORK OF GHANA PACE PROJECT

Intervention logic	Objectively verifiable Indicators	Means of Verification	Assumpti
Overall objective Livestock producer incomes raised, particularly those of smallholders, to reduce the country's increasing dependence on imports of livestock and livestock products, and to reduce the financial burden on the government of services it provides to the livestock sub-sector.	<p>By 2003, livestock mortalities are reduced significantly from the baseline levels of 2000 in selected priority epidemiological clusters.</p> <p>By 2004, the on-farm earnings derived from livestock in mixed, small-holder farming systems are increased significantly above baseline levels, in selected priority areas at greatest risk of CBPP.</p> <p>By 2004, small-holder farmers in a selected areas have easier access to affordable veterinary medicines and other animal health inputs, compared to baseline levels in 2000.</p>	<p>Veterinary Services Department census and statistical records.</p> <p>Socio-economic survey reports of the PACE Ghana economist.</p> <p>Market survey report.</p>	

<p>urpose</p> <p>engthening the capacity of national animal alth services to plan, implement, monitor and aluate the strategic control of epizootic eases.</p>	<p>By the end of Year 4, the VSD strategic plan is based upon up to date cost:benefit (C:B) studies of the control of epizootics, completed in relevant regions of Ghana, conducted between 2001 and 2003.</p> <p>By the end of Year 3 (2003), at least 95% of all government veterinary officers have each attended a minimum of three technical meetings to review the national emergency plan for the control of epizootic diseases.</p> <p>Audited disbursement rates for EDF funds provided for annual work programmes are at least 80% of the provision, annually between 2001 and 2004.</p> <p>At least one representatives of Ghana VSD attends each meeting of the regional diagnostic network and submits reports to IBAR on schedule, throughout PACE.</p>	<p>VSD strategic plan and C:B study reports.</p> <p>VSD statistics based on registration forms completed at each meeting.</p> <p>Audit reports.</p> <p>IBAR reports</p>	<p>Government fundi increased sufficien real terms, to m effective levels of disease surveillanc veterinary services. [Government budge</p>
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Intervention logic	Objectively verifiable Indicators	Means of Verification	Assumptions
Results 1. Epidemiology services (information and diagnostics) and capacity of veterinary services department to formulate and implement strategic, cost-effective disease control developed and reinforced.	Epidemiology and economics units database analyses are reported regularly to district level staff. VSD ¹ produces accurate up to date quarterly reports on the results of rinderpest surveillance from January 2001 to October 2004. Annual work programmes and cost estimates approved on time, technical reports distributed within one month of the end of the reporting period, and audit certificates issued within three months of end of each period of expenditure.	Surveillance reports. VSD reports Analysis of PACE programme records.	Complementary funding is provided by the AGSSIP for animal disease control. [AGSSIP reports] Veterinary services staff, under decentralized administrations, have adequate resources to co-operate effectively in data collection reporting & application of control measures. [District Vet reports]
2. Availability of veterinary services and drugs to livestock owners developed and promoted	By the end of 2003, updated regulations related to the establishment of veterinary distributors ² in outlying areas have been approved by the Minister of Food and Agriculture. By the end of 2003, Veterinary Council investigations reveal that government-employed veterinarians are not offering private veterinary services that compete with established veterinary practices in Ghana.	Regulations. Veterinary Council annual report.	Prices of veterinary inputs are perceived to be affordable by livestock owners. [Sales figures] Veterinarians are willing to take up private sector employment in outlying areas. [Veterinary register] Distribution of veterinary products in outlying areas is profitable. [Listing of outlets]

¹ VSD = Veterinary Services Department of the Ministry of Food and Agriculture.

² Veterinary distributors : outlets under veterinary supervision in rural (non-municipal) areas that sell animal health inputs, including over-the-counter medicines to livestock owners.

Intervention logic	Objectively verifiable Indicators	Means of Verification	Assumptions
3. Ghana certified free from rinderpest and possible rinderpest infection thus contributing to animal health improvement	OIE certifies that Ghana is free of rinderpest disease by the end of 2003, based upon compliance with the conditions of the OIE pathway.	Report of the OIE FMD and other epizootics Committee.	Effective co-ordination of surveillance and livestock movement control is maintained with neighbouring countries. [Reports of co-ordination meetings – IBAR reports] VSD staff are sufficiently motivated to maintain adequate vigilance. [VSD reports]
4. National network of CBPP and epidemic diseases surveillance and reporting with functioning information feedback implemented	Between 2000 and 2004, VSD representatives from each of Ghana's 10 regions participate in annual departmental epizootic surveillance meetings, and review emergency preparedness plans for the control of rinderpest, CBPP and other priority epizootics. From January 2001, each initial telephone report of a case clinically suspicious of rinderpest, CBPP, ASF, PPR or NCD, is followed up with a written report that is received at VSD headquarters within 7 days of the initial report.	VSD reports. VSD Scheduled diseases report file/register.	Complementary funding is available through AGSSIP to improve the level of computerization of VSD offices.
			Preconditions Timely availability of funds

Global Budget

	Estimated annual costs (Euros)					Total EDF	Contribution of GOG		
	Year 1	Year 2	Year 3	Year4	Year5		Year4	Year5	Total
d national capacity	233 394,00	132 551,00	91 945,00	67 750,00	2 675,00	528 315,00	45 000	46 000	91 000
d veterinary services	4 000,00	18 000,00	2 000,00	2 000,00	200,00	26 200,00	2 200 273	2 197 273	4397546
ainst rinderpest	62 071,00	58 000,00	68 000,00	47 750,00	3 413,10	239 234,10	34 000	42 000	76 000
of other epizootics	27 000,00	45 636,00	45 092,00	37 842,00	100,00	155 670,00	28 000	33 000	61 000
	326 465,00	254 187,00	207 037,00	155 342,00	6 388,10	949 419,10	2 307 273	2 318 273	4 625 546
ncy 5 %	16 323,25	12 709,35	10 351,85	7 767,10	319,41	47 470,96	115363,65	115913,65	231277,3
nated expenditure	342 788,25	266 896,35	217 388,85	163 109,10	6 707,51	996 890,06	2 422 637	2 434 187	4 856 823

ANNEX II									
Table 1.1	Global budget for PACE Ghana -16 October 2000 to 31 October 2005								
	(in Euros)								
Code	Cost Item	Estimated annual expenditure					Total EDF	Total GoC	
		Year 1	Year 2	Year 3	Year 4	Year 5		Year 4	Year 5
1	Enhanced national capacities								
1,1	Personnel	0	0	0	0		0	0	0
1,1,1	National PACE Coordinator								
1,1,2	DSA for wildlife veterinarian	2 487	2 267	1 540	0	0	6 294	0	0
1,1,3	DSA wildlife officer	2 487	2 267	1 540	0	0	6 294	0	0
1,1,4	DSA for intermediate agents	577	197	577	0	0	1 351	0	0
1,1,5	DSA for field wildlife agents	395	289	395	0	0	1 079	0	0
1,1,6	DSA for wildlife driver	360	360	360	0	0	1 080	0	0
1,1,7	Technical Assistance								
	Subtotal	6 306	5 380	4 412			16 098	0	0
1,2	Equipment								
1,2,1	Computers and accessories	35 000	2 000	22 000	0	0	59 000	0	0
1,2,2	Office furniture & equipment	20 000	2 000	2 000	0	0	24 000	0	0
1,2,3	Vehicles	100 000	33 000	0	0	0	133 000	0	0
1,2,4	Field equipment	0	0	0	0	0	0	0	0
1,2,5	Laboratory equipment (ELIZA Reader)	0	0	0	0	0	0	0	0
1,2,6	Equipment wildlife network	1 524	0	0	0	0	1 524		0
1,2,7	Equipment wildlife training	1 052	153	899			2 104		0
1,2,8	Capture wildlife operation	0	6 012	0	0	0	6 012		0
	Subtotal	157 576	43 165	24 899	0	0	225 640	0	0
1,3	Running costs								
1,3,1	Travel	0	0	0	0		0	0	0
1,3,1.1	International (air fares, DSA, visas)	6 000	8 000	8 000	10 000		32 000	4 000	5 000
1,3,1.2	National (DSA)	35 087	50 000	40 000	45 000		170 087	12 000	15 000
1,3,2	National meetings, workshops & training	18 000	10 000	5 000	5 000		38 000	8 000	10 000
1,3,3	Office running costs	3 000	6 000	2 000	2 000		13 000	5 000	2 000
1,3,4	Vehicle running costs	0	0	0	0		0	7 000	6 000
1,3,5	Laboratory running costs	0	0	0	0	2 675	2 675	3 000	3 500
1,3,6	Communications and public utilities	2 037	3 000	2 000	2 000		9 037	1 000	1 500
1,3,7	Maintenance of equipment	0	0	2 000	3 750		5 750	3 000	2 000
1,3,8	Communications materials	0	0	0	0		0	2 000	1 000
1,3,9	Commissioned studies and services	0	0	0	0		0	0	0
1,3,10	Wildlife network	2 757	2 757	2 757		0	8 271		
1,3,11	Network wildlife training	877	0	877			1 754		
1,3,12	Regional wildlife workshop training	1 754	1 754	0	0	0	3 508		
1,3,13	Capture wildlife operation training		237			0	237		
1,3,14	Capture wildlife operation	0	2 258	0	0	0	2 258		
	Subtotal	69 512	84 006	62 634	67 750	2 675	286 577	45 000	46 000
	Totals for heading 1	233 394	132 551	91 945	67 750	2 675	528 315	45 000	46 000
	Contingencies @5 %	11 669	6 628	4 597	3 387	134	26 416	2 250	2 300
	Global annual budget for heading 1	245 063	139 179	96 542	71 137	2 809	554 731	47 250	48 300

96000

84550

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ANNEX II

Global budget for PACE Ghana 16 October 2000 to 31 October 2005

(in Euros)

Cost Item	Estimated annual expenditure					Total EDF	Total GoG Year 4	Years
	Year 1	Year 2	Year 3	Year 4	Year 5			
Improved veterinary services								
Personnel								
Local staff								
Director of Veterinary Services	2345	2579,5	2837,5	3121,195		0	10883,1	10883,1
National PACE Co-ordinator	2177	2394,7	2634,2	2897,587		0	10103,5	10103,5
Epidemiologist	6435	7078,5	7786,4	8564,985		0	29864,8	29864,8
Field technicians	120800	132880	146168,0	160784,8		0	560632,8	560632,8
Economist	1506	1656,6	1822,3	2004,486		0	6989,3	6989,3
Veterinary Investigation officer	31095	34204,5	37625,0	41387,445		0	144311,9	144311,9
Laboratory technicians	2416	2657,6	2923,4	3215,696		0	11212,7	11212,7
Data Entry Staff	1208	1328,8	1461,7	1607,848		0	5606,3	5606,3
Senior Storekeeper	531	584,1	642,5	706,761		0	2464,4	2464,4
Senior Accountant	943	1037,3	1141,0	1255,133		0	4376,5	4376,5
Drivers	2380	2618	2879,8	3167,78		0	11045,6	11045,6
Veterinary officers	296010	325611	358172,1	393989,31		0	1373782,4	1373782,4
Subtotal	467846	514630,6	566093,66	622703,026			2171273,3	2171273,3
Equipment								
Computers and accessories	0	0	0	0		0	0	
Office furniture & equipment	0	0	0	0		0	0	
Vehicles	0	0	0	0		0	0	
Field equipment	0	0	0	0		0	0	
Laboratory equipment	0	0	0	0		0	0	
Subtotal	0	0	0	0		0	0	
Running costs								
Travel	0	0	0	0		0	0	
International (air fares, DSA, visas)	4 000	4 000	2 000	2 000	0	12 000	0	

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National (DSA)	0	0	0	0		0	5 000	3 000
National meetings, workshops & training	0	0	0	0		0	3 000	3 000
Office running costs	0	0	0	0		0	4 000	5 000
Vehicle running costs	0	0	0	0		0	8 000	8 000
Laboratory running costs	0	0	0	0		0	4 000	3 000
Communications and public utilities	0	0	0	0	200	200	3 000	2 000
Maintenance of equipment	0	4 000	0	0		4000	1 000	1 000
Communications materials	0	5 000	0	0		5000	1 000	1 000
Commissioned studies and services	0	5 000				5000		
Subtotal	4 000	18 000	2 000	2 000	200	26 200	29000	26000
Totals for heading 2	4 000	18 000	2 000	2 000	200	26 200	2200273,3	2197273,3
Contingencies @ 5%	200	900	100	100	10	1310	110014,0	109864,0
Global annual budget for heading 2	4 200	18 900	2 100	2 100	210	27 300	2310287,3	2307137,3

550

2/9

Table 1.3		ANNEX II							
		Global budget for PACE Ghana - 16 October 2000 to 31 October 2005							
		(in Euros)							
Code	Cost item	Estimated annual costs					Total EDF	Total GoG	
		Year 1	Year 2	Year 3	Year 4	Year 5			
3	Fight against rinderpest								
3,1	Personnel	0	0	0	0		0	0	0
3,2	Equipment								
3.2.1	Computers and accessories	0	0	0	0		0	0	0
3.2.2	Office furniture & equipment	0	0	0	0		0	0	0
3.2.3	Vehicles	0	0	0	0		0	0	0
3.2.4	Field equipment	10 000	12 000	25 000	0		47 000	0	0
3.2.5	Laboratory equipment	10 000	0	0			10 000	0	0
	Subtotal	20 000	12000	25000	0		57 000	0	0
3,3	Running costs								
3.3.1	Travel	0	0	0	0	0	0	0	0
3.3.1.1	International (air fares, DSA, visas)	4 000	6 000	8 000	10 000	0	28 000	2 000	3 000
3.3.1.2	National (DSA)	0	0	0	0	0	0	3 000	2 000
3.3.2	National meetings, workshops & training	0	3 000	3 000	3 000	0	9000	2 000	2 000
3.3.3	Office running costs	0	0	0	0	0	0	7 000	6 000
3.3.4	Vehicle running costs	30 000	20 000	20 000	25 000	0	95 000	10 000	11 000
3.3.5	Laboratory running costs	5 040	10 000	5 000	3 750	3413.10	27 203	5 000	7 000
3.3.6	Communications and public utilities	0	3 000	0	0	0	3 000	4 000	8 000
3.3.7	Maintenance of equipment	0	0	0	0	0	0	0	0
3.3.8	Communications materials	3 031	2 000	2 000	1 000	0	8 031	1 000	3 000
3.3.9	Commissioned studies and services	0	0	0	0	0	0	0	0
3,3,10	Emergency funds		2 000	5000	5000		12 000	0	0
	Subtotal	42071	46 000	43000	47750	3413.10	182234	34000	42000
	Totals for heading 3	62 071	58 000	68 000	47 750	3413.10	239 234	34 000	42 000
3,4	Contingency @ 5%	3103,55	2900	3400	2387,5	170.66	11961,7	1700	2100
	Global annual budget for heading 3	65 175	60 900	71 400	50 138	3583.75	251 196	35 700	44 100

56000

3800

Table 1.4	ANNEX II								
	Global budget for PACE Ghana - 16 October 2000 to 31 Ocotber 2005								
	(in Euros)								
Code	Cost item	Estimated annual costs					Total EDF	Total GoG	
		Year 1	Year 2	Year 3	Year 4	Year 5		Year 4	Year 5
4	Control of other epizootics								
4,1	Personnel	0	0	0	0		0	0	0
	Sub-total								0
4,2	Equipment								0
4.2.1	Computers and accessories	0	0	0	0		0	0	0
4.2.2	Office furniture & equipment	0	0	0	0		0	0	0
4.2.3	Vehicles	0	0	0	0		0	0	0
4.2.4	Field equipment	5 000	10 000	5 000	0		20 000	0	0
4.2.5	Laboratory equipment	0	0	0	0		0	0	0
	Sub-total	5 000	10000	5000	0		20 000	0	0
4,3	Running costs								
4.3.1	Travel	0							
4.3.1.1	International (air fares, DSA, visas)	2 000	4 000	4 000	5 000		15 000	2 000	2 000
4.3.1.2	National (DSA)	10 005	10 000	10 000	9 000		39 005	2 000	3 000
4.3.2	National meetings, workshops & training	0	2 000	2 000	2 000		6 000	2 000	2 000
4,3,3	Office running costs	0	0	0	0		0	4 000	3 000
4,3,4	Vehicle running costs	4 995	8 000	11 000	10 000		33 995	8 000	7 000
4,3,5	Laboratory running costs	5 000	3 636	5 092	3 842		17 570	3 000	6 000
4,3,6	Communications and public utilities	0	0	0	0		0	3 000	4 000
4,3,7	Maintenance of equipment	0	0	0	0		0	2 000	3 000
4,3,8	Communications materials	0	3 000	3 000	3 000		9000	2 000	3 000
4,3,9	Commissioned studies and services	0	5 000	5 000	5 000	100	15 100	0	0
	Sub-total	22 000	35 636	40 092	37 842	100	135 670	28 000	33 000
	Totals for heading 4	27 000	45 636	45 092	37 842	100	155 670	28 000	33 000
	Contingencies @ 5 %	1350	2281,8	2 255	1892,1	5	7783,5	1400	1650
	Global annual budget for heading 4	28 350	47 918	47 347	39 734	105	163 454	29 400	34 650

1. Epidemiology services (information and diagnostics) and capacity of veterinary services department to formulate and implement strategic, cost-effective diseases control developed and reinforced.

Activities		Years				
		1	2	3	4	5
1.1	Develop and apply PACE administrative procedures	X	X	X	X	X
1.2	Procure equipment through tenders and local purchases	X	X	(X)		
1.3	Install computerised systems at VSD headquarters	X				
1.4	Complete the training needs assessment	X		X	X	
1.5	Provide appropriate local, regional and international training courses	X	X	X	X	X
1.6	Develop communications materials and methods for control of epizootic diseases	X	X	X	X	X
1.7	Participate in PACE regional and specialist workshops	X	X	X	X	X
1.8	Make study tours to support PACE-funded activities	X	X			
1.9	Convene regular meetings of the VSD staff	X	X	X	X	X
1.10	Conduct field studies, socio-economic surveys and surveillance	X	X	X	X	X
1.11	Develop and apply data management system (including GIS)		X	X	X	
1.12	Revise and update emergency preparedness plan	X	X	X	X	
1.13	Apply performance criteria	X	X	X	X	X
1.14	Investigate all reports of outbreaks of scheduled diseases	X	X	X	X	X
1.15	Develop and apply monitoring and reporting system	X	X	X	X	X

1.2 National animal disease surveillance capacities strengthened and epidemiological knowledge of major diseases is improved

1.3. Skills and efficiency of public veterinary staff are enhanced

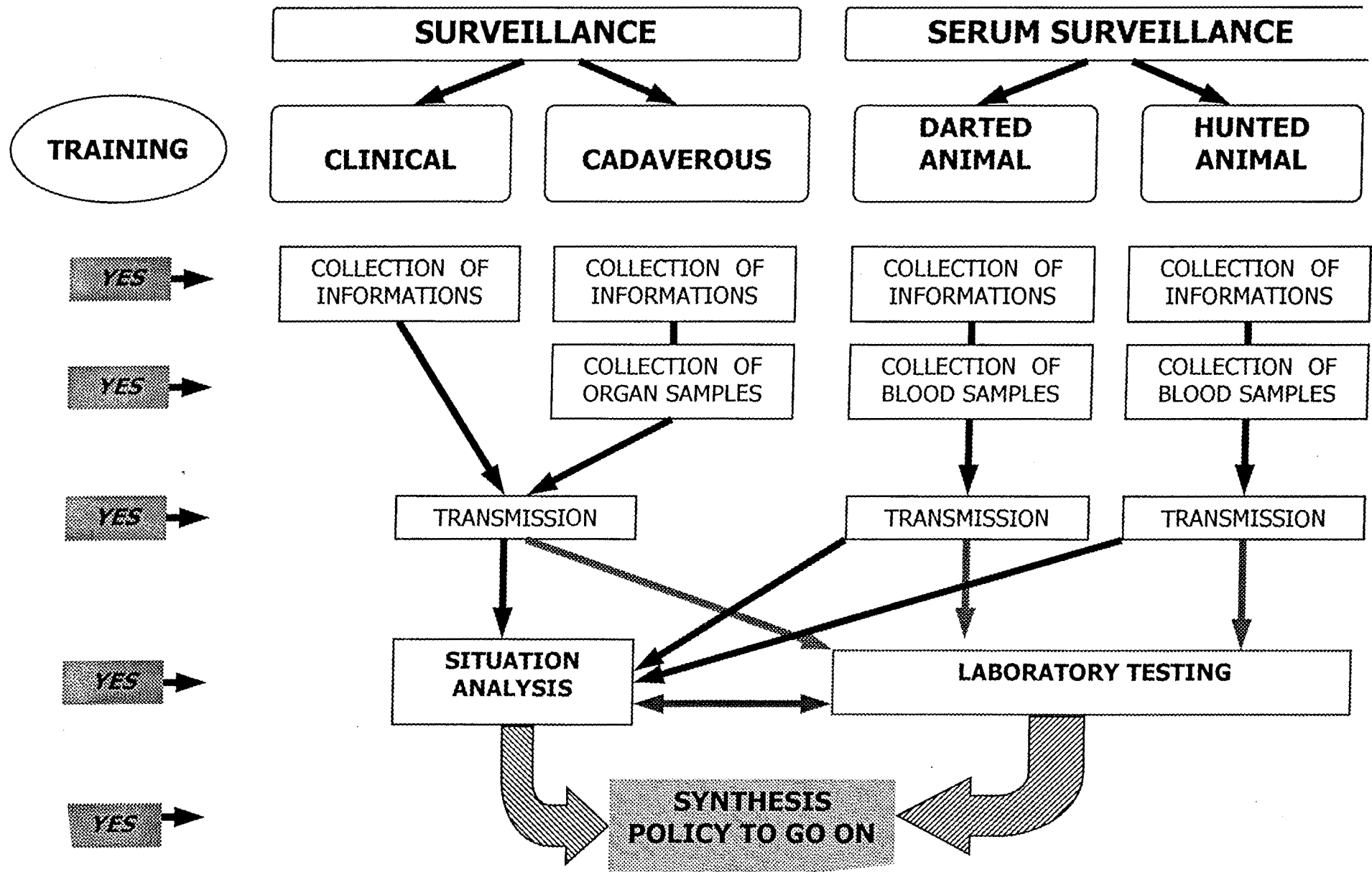
	1	2	3	4	5
2.1 Inform Veterinary Council of PACE support of privatisation scheme	X	X	X	X	
2.2 Make study tour of countries that have implemented privatization schemes	X				
2.3 Draft appropriate regulations for control of distribution of veterinary medicines		X			
2.4 Obtain approval for new regulations and assist publication in the gazette		X			
2.5 Promote employment of veterinarians in distribution points/outlets		X	X	X	
2.6 Conduct market survey of veterinary medicines distribution		X	X	X	
2.7 Support investigative field visits by Veterinary Council members		X	X	X	
2.8 Monitor availability of veterinary inputs to small-holder farmers		X	X	X	
2.9 Prepare reports for Veterinary Council and Ministry of Food and Agriculture	X	X	X	X	

3. Ghana certified free from rinderpest and possible rinderpest infection thus contributing to animal health improvement

	1	2	3	4	5
3.1 Monitor stock movements in strategic border areas and at stock route posts to reduce risk of reintroduction of rinderpest by illicit trade in cattle	X	X	X	X	X
3.2 Maintain and develop liaison with veterinary services of neighbouring states	X	X	X	X	X
3.3 Co-ordinate cross-border activities	X	X	X	X	X
3.4 Launch publicity campaign on stomatitis-enteritis syndrome	X	X			
3.5 Develop and apply epidemiological approaches for data collection, analysis, storage, retrieval and back-up	X	X	X	X	X
3.6 Conduct rinderpest sero-surveillance (passive; active – random and purposive)			X	X	X
3.6 Extend active clinical and serological disease search countrywide to comply with OIE pathway requirements C	X	X	X	X	X
3.7 Obtain equipment and reagents and monitor laboratory diagnostics performance	X	X	X	X	X
3.8 Participate in PACE regional workshops on epidemiology, economics, lab diagnostics network, wildlife epidemiology etc.	X	X	X	X	X
3.9 Establish and maintain rapid response capability	X	X	X	X	X
3.10 Submit reports to OIE and IBAR	X	X	X	X	X
3.11 Organise and assist with OIE evaluation of Ghana's rinderpest status			X	X	X
3.12 Despatch specimens to world reference laboratories, as necessary, for definitive diagnosis	X	X	X	X	X

Activities		Years				
		1	2	3	4	5
4.1	Produce and disseminate communications material to increase public awareness of CBPP	X	X	X	X	X
4.2	Monitor stock movements in strategic border areas and at stock route posts to reduce risk of reintroduction of rinderpest by illicit trade in cattle	X	X	X	X	X
4.3	Establish and maintain liaison with veterinary services in neighbouring countries	X	X	X	X	X
4.4	Establish and maintain standard diagnostic capability for CBPP	X	X	X	X	X
4.5	Implement clinical, serological and pathological search for CBPP countrywide, including abattoir surveillance		X	X	X	X
4.6	Equip and support national and regional laboratories in CBPP diagnosis	X	X	X	X	X
4.7	Collect and analyse specimens as an integral part of the national CBPP surveillance system	X	X	X	X	X
4.8	Create epidemiological database for CBPP and present mapped information (GIS etc)	X	X	X	X	X
4.9	Participate in PACE CBPP initiatives, meetings and workshops	X	X	X	X	X
4.8	Commission socio-economic studies in selected priority areas		X	X	X	X
4.10	Determine strategy options for CBPP control (feasibility, cost-effectiveness, etc)	X	X	X	X	X
4.11	Promote strategic vaccination campaigns (at cost) with, where possible, sub-contracting to private veterinarians		X	X	X	X
4.12	Secure Government funding for a national CBPP control and eradication programme		X	X	X	X
4.13	Monitor activities and disseminate reports	X	X	X	X	X

Wildlife network: epidemics surveillance



Annex V: STAFF DISTRIBUTION BY REGION AND DISTRICT

REGION/DISTRICT	VETERINARY SURGEON	ANIMAL HEALTH DIPLOMATE GRADE	TECHNICAL OFFICER GRADE	TECHNICAL ASSISTANT GRADE	TOTAL
ASHANTI					
Adansi East/New Edubiase		1		1	2
Adansi West/Obuasi	1		3		4
Agona/Afigya-Sekyere		1	1		2
Ahafo Ano North/Tepa		1	1		3
Ahafo Ano South / Mankranso		1	1	1	2
Amansie East / Bekwai		1	1		2
Amansie West/Manso Nkwanta		1		1	2
Asante Akim North / Konongo	1		2	1	4
Asante Akim South / Juaso			1		1
Atwima/Nkawie			1	1	2
Juaben / Ejisu			1	3	4
Kumasi Met. Assembly	6	2	20		28
Kwabre / Mampong		1	1		2
Kwamoma-Bosomtwi/Kuntanase		1	1		2
Offinso		1	1	2	4
Sekyere Dumasi / Ejura	1		2	1	4
Sekyere East / Effiduasi		1	1		2
Sekyere West / Mampong	1	2	1	1	5
BRONG AHAFO					
Asonafo/Goaso	1		1	2	4
Asutifi/Kenyase	1	1	1		3
Atebubu	1	1	2	3	7
Berekum	1	2		1	4
Dormaa	1	1	2	1	5
Jaman/Drobo	1		3	2	6
Kintampo	1	1	3	1	6
Nkoranza		2	1		3
Sene/Kwame-Danso	1		2	1	4
Sunyani	3	1	12	2	18
Tano/Bechem	1		3		4
Techiman	3	1	10	1	15
Wenchi	1		6		7
CENTRAL					
Abura/Aseibu-Kwamankese		1	1	1	3
Agona/ Swedru	1	1	2		4
Ajumako/Enyan Essiam			1		1
Asikuma-Odoben Brakwa			2		2
Assin/Fosu	1		3		4
Awutu/Efutu Senya/Winneba	2	1	3	4	10
Cape Coast	2		7	6	15
Gomoa/Apam		1	2		3
Komenda/Edina/Eguafo/Abirem	1		2	1	4
Lower Denkyira/Twifu Praso			2	1	3

Mfantsiman/Saltpond		1	1	1	3
Upper Denkyira/Dunkwa-On-Offin	1		2	1	4
REGION/DISTRICT	VETERINARY SURGEON	ANIMAL HEALTH DIPLOMATE GRADE	TECHNICAL OFFICER GRADE	TECHNICAL ASSISTANT GRADE	TOTAL
EASTERN					
Afram Plains/North Kwahu	1		6		7
Akwapim North/Akropong		1	2		3
Akwapim South/Nsawam	1		4		5
Asuogyaman/Akosombo	1	1	4		6
Birim North/New Abirem		1			1
Birim South/Akim Oda	1		5		6
East Akim/Kibi	1	1	1	2	5
Fanteakwa/Begoro			2	1	3
Kwaebibiren/Kade		1			1
Kwahu South/Nkawkaw	1		6		6
Manyo Krobo/Akuse	1		4		4
New Juaben/Koforidua	4	1	9	1	15
Suhum Kraboa Coaltar	1		1	1	3
West Akim/Asamankese		1	6		7
Yilo Krobo/Somanya	1	1	3	2	7
GREATER ACCRA					
Accra Met.Assembly	8	3	23	1	35
Accra Laboratory	4		7		11
Dangbe East/Ada	2	4	1	1	8
Dangbe West/Dodowa	1		6	1	8
Ga/Amasaman	2		5		7
Tema Met.Assembly Mbly	4	2	13		19
Headquarters, Accra	8	2			10
NORTHERN					
Central Gonja/Damongo	1		8	5	14
East Gonja/Salaga	1		7	2	10
East Mamprusi/Gambaga	1	1	9	3	14
Gushiegu/Karaga	1		3	4	8
Livestock Plan.Info.Unit	2	2			4
Nanumba/Bimbilla	1		5	4	10
Pong Tamale Laboratory	5	2	12	2	20
Saboba/Chereponi	1		4	3	8
Savelugu/Nanton	8	2	14	10	34
Tamale	2	1	18	3	24
Tolon/Kumbungu	1	1	4	4	10
West Gonja/Bole	1	2	6	6	15
West Mamprusi/Walewale	1	1	5	1	8
Yendi	1		6	2	9
Zabzugu/Tatali	1		3	2	6
UPPER EAST					
Bawku East/Bawku	3	5	13	2	23
Bawku West/Zebilla	1	1	7		9

Bongo	1		6	1	8
Builsa/Sandema	1	1	4	7	13
Frafra/Bolgatanga					24
Kasena/Nankana/Navrongo					24
REGION/DISTRICT	VETERINARY SURGEON	ANIMAL HEALTH DIPLOMATE GRADE	TECHNICAL OFFICER GRADE	TECHNICAL ASSISTANT GRADE	TOTAL
UPPER WEST					
Jirapa/Lambussie	2	1	5	5	13
Lawra	3	1	4	3	11
Nadowli	1	3	5	2	11
Sissala/Tumu	1	1	6	4	12
Wa	3	4	15	8	30
VOLTA					
Akatsi	1		3		4
Anlo			1		1
Denu/Ketu	1		4	2	7
Ho	2	1	13		16
Hohoe			4		4
Jasikan	1		4	1	5
Kadjebi			4	1	5
Kete Krachi	1	1	5	1	8
Kpando		1	3	1	5
Nkwanta	1	1	2		4
North Tongu/Adidome, Juapong	2	1	5	1	9
South Tongu/Sogakope	1		7		8
WESTERN					
Ahanta East/Shama Hama/Sekondi	4	1	12	1	18
Ahanta West/Agona Nkwanta		1	1	1	3
Aowin Suaman/Enchi			2	1	3
Bibiani/Anhwaso/Bekwai	1		2	1	4
Jomoro/Half-Assini	1		4	2	7
Juabeso Bia	1		3		4
Mpohor Wassa East/Daboase			2		2
Nzema East/Axim	1	1	1	1	4
Sefwi Wiawso	1		3		4
Wassa Amenfi/Asankragwa	1		3		4
Wassa West/Tarkwa	1		6		7

Annex VI:- PARC Equipment

The underlisted equipment were purchased and used during the PARC.

1.	Generators (Standby for electricity	-	4
2.	Cold Chain Equipment		
i.	Deep freezers	-	10
ii.	Ice making machines	-	5
iii.	Portable vaccine carriers	-	50
iv.	Ice cups	-	50
v.	Ice containers	-	16
vi.	Vaccine Refrigerators	-	6
vii.	Dismountable coldrooms	-	2
3.	Veterinary Equipment		
i.	Vaccination sets	-	270
ii.	Sterilization sets	-	150
iii.	Sampling sets	-	10,000 tubes 10,000 bottles
iv.	Centrifuges	-	2
4.	Camping Equipment		
a.	<u>Camping sets</u>		
i.	Tents	-	8
ii.	Camp beds	-	48
iii.	Valise	-	43
iv.	Chains	-	48
v.	Shower buckets	-	8
vi.	Washbasin stand + bowls	-	16
vii.	Holdalls	-	47
viii.	Meat Saafe/Larder	-	8
ix.	Wooden Tables	-	16
x.	Tilly Lamps	-	16
5.	Kitchen Set		
i.	Enamel mug	-	48
ii.	Cutlery set	-	42
iii.	Frying pan	-	8
iv.	Sauce pan set	-	16
v.	Metal bucket	-	8
vi.	Washing bowl	-	8
vii.	Kerosene stove	-	8
viii.	Flat plate	-	48
ix.	Soup plate	-	48
x.	Kettle	-	8
6.	Pairs Wellington boots	-	397
7.	Jerry Cans	-	20
8.	Ear notchers	-	40
9.	Marking pencils	-	500
10.	Rinderpest vaccine	-	2.5 million doses

ANNEX VI
Vehicles
Motorcycles

Make	Registration No.	Engine No.	Chasis No.	Distribution		Present Condition
				Region	Distribution	
Cagiva 125cc	GVD 1249	9200083	002047	Upper East	Bawku West	Unserviceable
Cagiva 125cc	GVD 1250	9200024	002013	Upper East	Bawku Central	Unserviceable
Cagiva 125cc	GVD 1251	920014	002004	Upper East	Bolgatanga	Unserviceable
Cagiva 125cc	GVD 1252	9200072	002037	Upper East	Kasena-Nankana	Unserviceable
Cagiva 125cc	GVD 1253	9200064	002030	Upper East	Bolgatanga	Unserviceable
Cagiva 125cc	GVD 1254	9200069	002039	Upper East	Bawku West	Unserviceable
Cagiva 125cc	GVD 1255	9200062	002031	Upper West	Lawra	Unserviceable
Cagiva 125cc	GVD 1256	9200004	001998	Upper West	Nadowli	Unserviceable
Cagiva 125cc	GVD 1257	9200086	002045	Upper West	Wa	Unserviceable
Cagiva 125cc	GVD 1258	9200034	002015	Upper West	Wa	Unserviceable
Cagiva 125cc	GVD 1259	9200065	002027	Upper East	Tumu	Unserviceable
Cagiva 125cc	GVD 1260	9200003	002095	Upper East	Jirapa	Unserviceable
Cagiva 125cc	GVD 1261	9200022	002020	Northern	Damongo	Unserviceable
Cagiva 125cc	GVD 1262	9200082	002049	Northern	Pong Tamale	Unserviceable
Cagiva 125cc	GVD 1263	9200080	002048	Northern	Walewale	Unserviceable
Cagiva 125cc	GVD 1264	9200023	002025	Northern	Gushiegu	Unserviceable
Cagiva 125cc	GVD 1265	9200077	002025	Northern	Bole	Unserviceable
Cagiva 125cc	GVD 1266	9200019	002023	Northern	Yendi	Unserviceable
Cagiva 125cc	GVD 1267	9200074	002033	Northern	Bimbilla	Unserviceable
Cagiva 125cc	GVD 1268	9200038	002011	Northern	Zabzugu	Unserviceable
Cagiva 125cc	GVD 1269	9200007	002088	Northern	Mamprusi East	Unserviceable
Cagiva 125cc	GVD 1270	9200021	002024	Brong Ahafo	Wenchi	Unserviceable
Cagiva 125cc	GVD 1271	9200016	002005	Brong Ahafo	Sunyani	Unserviceable
Cagiva 125cc	GVD 1272	9200070	002038	Western	Takoradi	Unserviceable
Cagiva 125cc	GVD 1273	9200066	002029	Western	Agona Nkwanta	Unserviceable
Cagiva 125cc	GVD 1274	9200035	002021	Eastern	Suhum	Unserviceable
Cagiva 125cc	GVD 1275	9200020	002022	Eastern	Koforidua	Unserviceable
Cagiva 125cc	GVD 1276	9200001	001994	Eastern	Koforidua	Unserviceable
Cagiva 125cc	GVD 1277	9200087	002046	Ashanti	Kumasi	Unserviceable
Cagiva 125cc	GVD 1278	9200030	002019	Ashanti	Kumasi	Unserviceable
Cagiva 125cc	GVD 1279	9200037	002026	Central	Cape Coast	Unserviceable
Cagiva 125cc	GVD 1280	9200032	002036	Central	Cape Coast	Unserviceable
Cagiva 125cc	GVD 1281	9200037	002043	Greater Accra	Accra	Unserviceable
Cagiva 125cc	GVD 1282	9200032	002018	Greater Accra	Accra	Unserviceable
Cagiva 125cc	GVD 1283	9200012	002001	Volta	Ho	Unserviceable
Cagiva 125cc	GVD 1284	9200075	002040	Volta	Adidome	Unserviceable
Cagiva 125cc	GVD 1285	9200068	002028	Volta	Jasikan	Unserviceable
Cagiva 125cc	GVD 1286	9200079	002050	Volta	Ho	Unserviceable
Cagiva 125cc	GVD 1287	9200031	002016	Central Vet.Lab	Pong Tamale	Unserviceable
Cagiva 125cc	GVD 1288	9200029	002017	Veterinary Lab.	Accra	Unserviceable

ANNEX VI: PARC VEHICLES
YEAR OF PURCHASE-----1992

Vehicle	Registration No.	Engine No.	Chassis No.	Region	Distribution	Present Condition
Nissan 7 tonner truck	GVD 1109	B660AB758W	VSKM1246GNB352589	Headquarters	Accra	Serviceable
Nissan 7 tonner truck	GVD 1110	B660AB670BV	VSKM12460M13350816	Northern	Pong Tamale	Unserviceable
Nissan Patrol (spanish)	GVD 1111	BP2838364V	VSKAYG260V0552675	Eastern	Koforidua	Unserviceable
Nissan Patrol (spanish)	GVD 1112	B02838080V	VSKAYG260V0555306	Upper East	Bolgatanga	Unserviceable
Nissan Patrol (spanish)	GVD 1113	RD3568V	VSKAYG260V05553388	Upper West	Wa	Unserviceable
Nissan Patrol (spanish)	GVD 1114	RD2838507V	VSKAYG260V0553392	Headquarters	Accra	Unserviceable
Nissan Patrol (spanish)	GVD 1115	RD2838606V	VSKAYG260V0552398	Northern	Pong Tamale	Unserviceable
Nissan Patrol (spanish)	GVD 1116	RD2838078V	VSKAYG260V0552678	Accra Lab.	Accra	Unserviceable
Nissan Patrol (spanish)	GVD 1117	RD2838352V	VSKAY260V055903	Central Vet. Lab.	Pong Tamale	Unserviceable
Peugeot 504 Pick-up	GVD 1146	P134CE117337	VY3504V4806058901	Upper East	Bawku-West: Zimbilla	Unserviceable
Peugeot 504 Pick-up	GVD 1147	P134CE117519	VF3504V4806058860	Upper East	Frafra: Bolgatanga	Unserviceable
Peugeot 504 Pick-up	GVD 1148	P134CE117343	VF3504V4806058875	Upper East	Kassena/Nankana Navrongo	Unserviceable
Peugeot 504 Pick-up	GVD 1149	P134CE117334	VF3504V4806058924	Upper West	Tumu	Unserviceable
Peugeot 504 Pick-up	GVD 1150	P134CE117340	VY3504V4806058894	Upper West	Wa	Unserviceable
Peugeot 504 Pick-up	GVD 1151	P134CE116520	VF3504V4806058843	Upper West	Lawra	Unserviceable
Peugeot 504 Pick-up	GVD 1152	P134CE117332	VF3504V48068897	Northern	Zabzugu	Unserviceable
Peugeot 504 Pick-up	GVD 1153	P134CE117341	VF3504V48065896	Northern	Tamale (Livestock Farmers Asso.)	Unserviceable
Peugeot 504 Pick-up	GVD 1154	P134CE117354	VF3504V480658921	Northern	Bimbilla	Unserviceable
Peugeot 504 Pick-up	GVD 1155	P134CE117354	VY3504V48066058916	Northern	Savelugu/Nanton	Unserviceable
Peugeot 504 Pick-up	GVD 1156	P134CE117300	VF3504V4806058912	Northern	Bole	Unserviceable
Peugeot 504 Pick-up	GVD 1157	P134CE117339	VF3504V48068868	Headquarters	Accra	Unserviceable
Peugeot 504 Pick-up	GVD 1158	P134CE117338	VF3504V4806058895	Ashanti	Kumasi	Unserviceable
Peugeot 504 Pick-up	GVD 1159	P134CE116344	VY3504V4806058871	Eastern	Sunyani	Unserviceable
Peugeot 504 Pick-up	GVD 1160	P134CE117349	VF3504V4806058923	Greater Accra	Accra	Unserviceable
Peugeot 504 Pick-up	GVD 1161	P134CE115528	VF3504V4806058816	BrongAhafo	Kwame Danso	Unserviceable
Peugeot 504 Pick-up	GVD 1162	P134CE117357	VF3504V4806058914	Volta	Akatsi	Unserviceable
Peugeot 504 Pick-up	GVD 1163	P134CE116523	VY3504V4806058851	Volta	Denu	Unserviceable
Peugeot 504 Pick-up	GVD 1164	P134CE117335	VF3504V4806058872	Central	Cape Coast	Unserviceable
Peugeot 504 Pick-up	GVD 1165	P134CE117353	VF3504V4806058922	Western	Takoradi	Unserviceable

COMMENT ON THE PRESENT CONDITION OF THE PARC EQUIPMENT

The PARC vehicles were CAGIVA motorcycles, NISSAN 7 tonner trucks, NISSAN Patrol (Spanish) and PEUGEOT 504 Pick-up (Diesel).

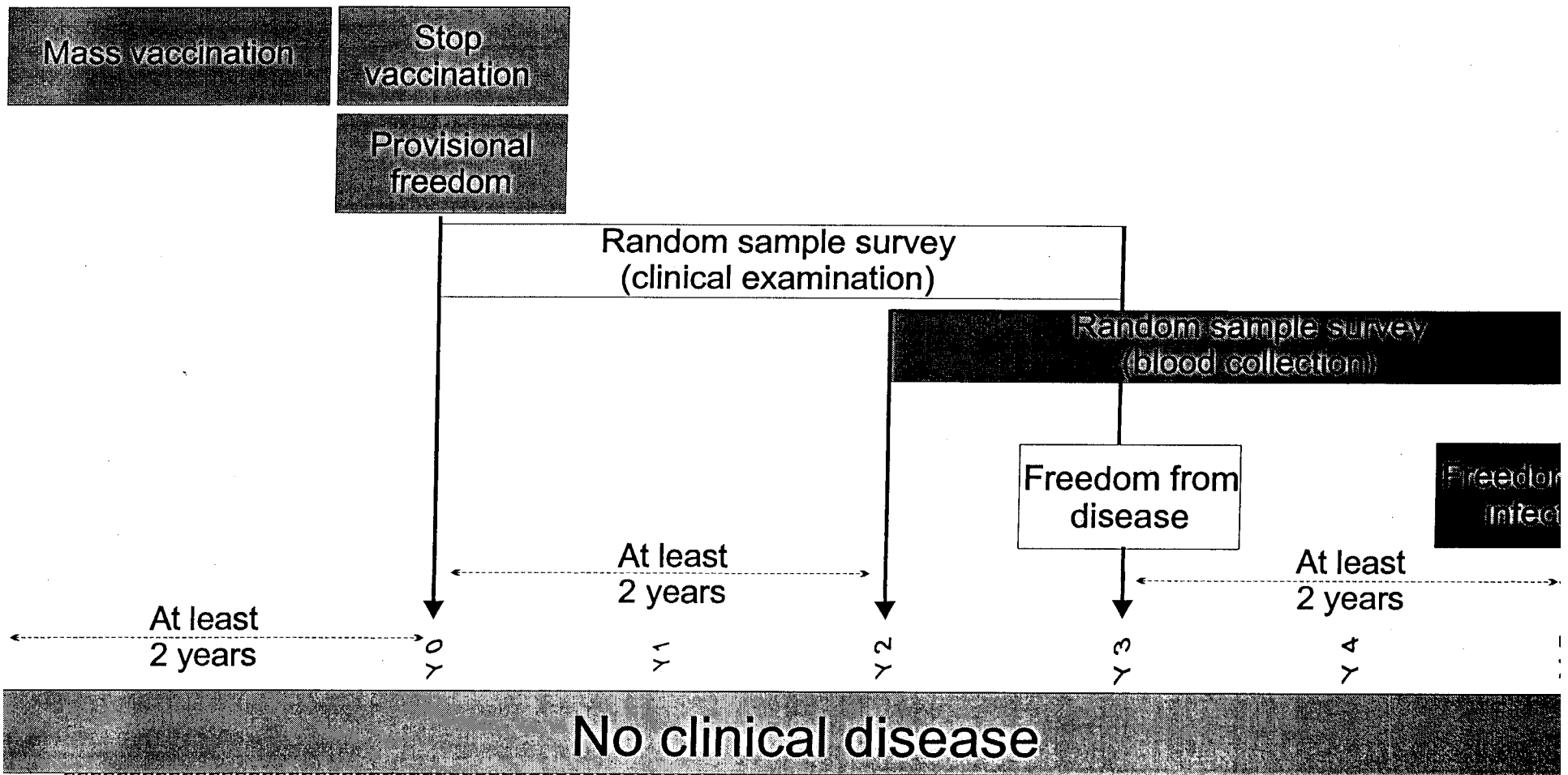
The vehicles were used extensively during the PARC II campaign from 1992 until early 1998 when serious engine and other problems led to the virtual grounding of these vehicles.

The CAGIVA motorcycles are not available in this country and likewise the spare parts. Attempts to rehabilitate some of the vehicles proved uneconomical as large sums of money were spent with no fruitful results. It would be preferred to have the vehicles auctioned rather than spend large sums of money on them.

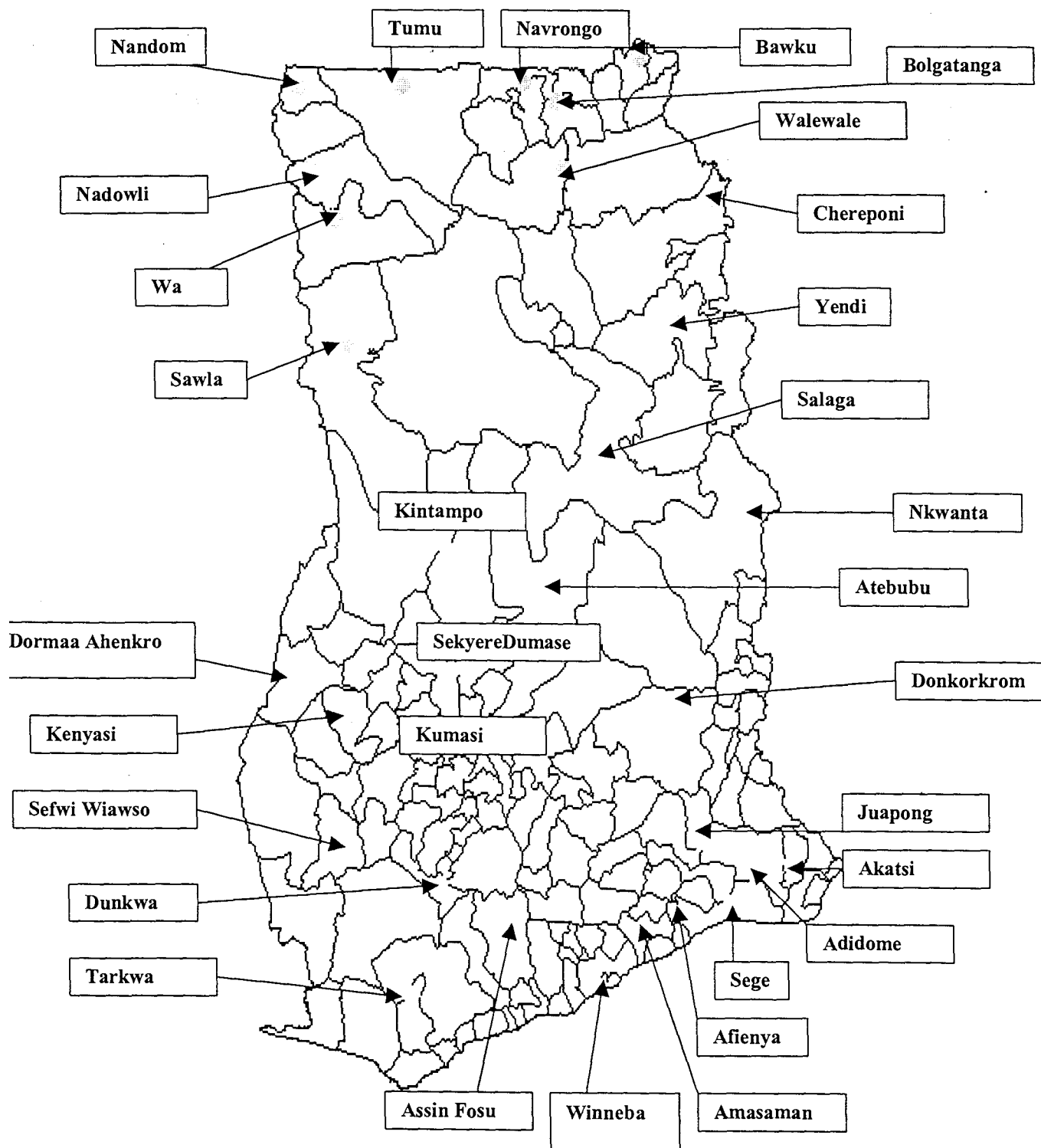
The laboratory equipment including cold chain items such as deep freezers are still being used and can be used in the PACE Programme. This is an indication of the integration between PARC and PACE.

OIE pathway

Efficient reporting, surveillance and investigation system

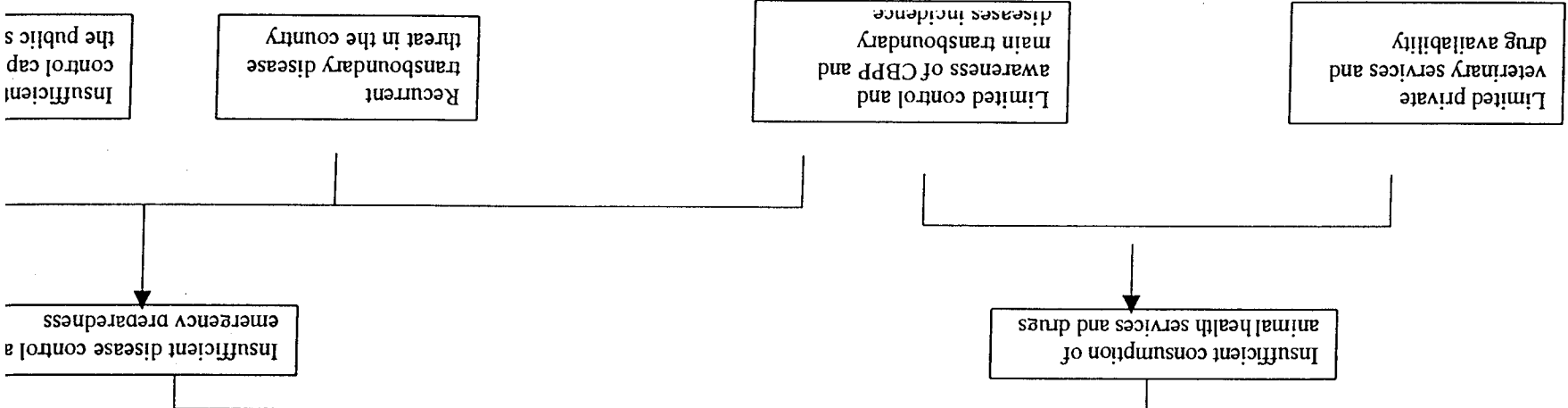


MAP OF GHANA SHOWING THE 33 EPIDEMIOLOGICAL CLUSTERS



										CONTRIBUTION Of GOG		
ANNEX IX: Wildlife Budget										Invest.	Other Exp.	TO
Codes	Items	Q.	Unit Cost	EDF CONTRIBUTION Euros								
				Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL			Eu
1.1	Staff								Euros			
1.1.9	Per diem Veterinarian			2 487	2 267	1 540			6 294		2 640	
1.1.10	Per diem wildlife officer			2 487	2 267	1 540			6 294		2 640	
1.1.11	Per diem intermediate agents			577	197	577			1 351		395	
1.1.12	Per diem field agents			395	289	395			1 079		395	
1.1.13	Per diem drivers			360	360	360			1 080		720	
1.2	Equipment											
1.2.11	Equipment network			1 524	0				1 524			
1.2.12	Equipment training			1 052	153	899			2 104			
1.2.13	Capture operation				6 012				6 012			
1.3	Running costs											
1.3.23	Network			2 757	2 757	2 757			8 271		5 514	
1.3.24	Network training			877	0	877			1 754			
1.3.25	Regional workshop training			1 754	1 754				3 508			
1.3.26	Capture operation training				237				237			
1.3.27	Capture operation				2 258				2 258			
	TOTAL			14 270	18 551	8 945			41 766		12 304	
	Contingency 5%			714	928	447			2 088		615	
	Grand TOTAL Euros			14 984	19 479	9 392			43 854		12 919	

Insufficient animal health control
reduces animal production and
availability of local animal protein for
human population



	ITEM	Specification	Quantity	Remark
1	ELISA KIT	For Brucellosis, Cat No. PA 0705; BRUCELISA 800 (800 samples- from Central Vet. Lab, Weybridge	3	
2	ELISA KIT	For Brucellosis BDSL (Biloogical Diagnostic Supplies Limited, Ayshire, U.K.	3	
3.	Contagious Bovine Pleuropneumonia (CBPP) diagnostic reagents	Complement Fixation Test (CTF) Antigen	20	
4.	Contagious Bovine Pleuropneumonia (CBPP) diagnostic reagents	Complement Fixation Test (CTF) Complement	20	
5	Contagious Bovine Pleuropneumonia (CBPP) diagnostic reagents	Complement Fixation Test (CTF) Haemolysin	20	
6.	ELISA KIT	For CBPP	10	
7.	NUNC, ELISA PLANTES	Maxisorp Immunoplate 60/case	100	
8.	Vacutainer tubes	With traditional top, 10ml, Plain, red 16mm X,100mm, 100/pk	200	
9.	Vacutainer tubes	With anticoagulant, 10ml 16 mm X 100 mm, 100/pk	100	
10.	Vacutainer needles	BD brand, 20G X 1.5" single sample (vet) with needle holder 1,000/pk	4	
11.	Elisa kit	Precoated plates for Newcastle Disease	200	
12.	ELISA KIT	Precoated plates for Gumboro Disease	200	
13.	ELISA KIT	Precoated plates for Infectious Bronchitis	200	
14.	Rabies conjugate	Lyophilised, 3 ml, 4/pk	30	
15.	Acetone	2.5 litre pk	100	
16.	Sulphuric Acid	2.5 litre	100	
17.	Formalin solution	5 litre pk	100	
18.	Xylene	2.5 litre	100	
19.	Lacto-Phenol cotton blue	250 ml pk	100	
20.	Ether	500 ml pk	50	
21.	Potassium Iodine	XXXg pk	50	
22.	Iodine	Resublimed 600m	50	
23.	Hydrogen peroxide	1 litre pk	50	
24.	Salmonella Agar	500 g pk	10	
25.	Sabouraud Agar	500 g pk	10	
26.	ALSEVER'S SOLUTION	Glucose 5kg Sodium Citrate 500g Citric Acid 250g Sodium Chloride 1 kg/pk	100 100 100 100	
27.	Phosphate Buffer Saline	Tablets 500/pk	20	
28.	Zinc Sulphate	250 g/pk	20	
29.	Timers		12	
30.	Vacuum pump		4	
31.	Anaerobic Incubator		4	
32.	Rubber stoppers	For 100 ml bottle	5,000pcs	
33.	Labelling paper	For vaccine bottles (computer type)	5 rolls	
34.	Aluminum foil	Heavy duty type	3 rolls	
35.	Premium microscope slides	76 x 26 x 1.0-1.2 mm thick	1000pks	