MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

DEPARTMENT OF VETERINARY SERVICES

PAN- AFRICAN PROGRAMME FOR THE CONTROL OF EPIZOOTICS

KENYA NATIONAL PROJECT

(March 2001- October 2004)

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NATIONAL COMPONENT- PACE

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ABBREVIATIONS

ASAL	Arid and semi-arid lands
ASF	African swine fever
ASIP	Agricultural Sector Investment Program
CAHW	Community Animal Health worker
CBPP	Contagious bovine pleuropnemonia
CCPP	Contagious caprine pleuropnemonia
CVFO	Chief Veterinary Field Officer
CVIO	Chief Veterinary Investigation Officer
CVL	Central Veterinary Laboratory
DDSRO	District Disease Surveillance Reporting Officer
DVO	District Veterinary Officer
DVS	Director of Veterinary Services
ECF	East Coast Fever
EDF	European Development Fund
ELISA	Enzyme linked Immunosorbent assay
EPERK	Emergency Programme for Eradication of Rinderpest in Kenya
EPP	Emergency Preparedness Program
EU	European Union
FAO	Food and Agriculture Organisation
FMD	Foot and Mouth Disease
GoK	Government of Kenya
GPS	Geographical Position System
GREP	Global Rinderpest Eradication Programme
H/C	Head of Cattle
IBAR	Inter African Bureau of Animal Resources
KBC	Kenya Broadcasting Cooperation
KVA	Kenya Veterinary Board
KVAPS	Kenya Veterinary Association Privatisation Scheme
KVB	Kenya Veterinary Board
KWS	Kenya Wildlife Services
LSD	Lumpy Skin Disease
NEP	National Extension Program
NGO	Non-governmental Organisation
NVRC	National Veterinary Research Centre
OAU	Organisation of African Unity
OIE	Office International des epizooties
PACE	Pan African Control of epizootics
PANVAC	Pan African Veterinary Vaccine Centre
PARC	Pan African Rinderpest Campaign
PARC-VAC	Participatory Community Based Vaccination and Animal Health Project
PDVS	Provincial Director of Veterinary Services
PPR	Pest des petits ruminants
RVF	Rift Valley Fever
STABEX	Export Stabilization

TCP	Technical Cooperation Projects
UoN	University of Nairobi
VIL	Veterinary Investigation Laboratory
VSDF	Veterinary Services Development Fund
WTO	World Trade Organisation

A. PROJECT SUMMARY SHEET

PROJECT TITLE

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

PROJECT GOAL/OVERALL OBJECTIVE

The PACE programme has the overall objective of contributing to rural development and poverty alleviation. This will be reached through effective disease control and animal he care, which will secure the availability of livestock and animal products contributing to the welfare of livestock keeping communities.

PROJECT PURPOSE

The purpose of PACE-Kenya is to strengthen the capacity of the national animal health services to plan, implement, monitor, and evaluate the control of epizootic diseases with emphasis on private sector participation.

IMPLEMENTING AGENCY

The implementing agency is the Department of Veterinary Services, Ministry of Agricultu and Rural Development, Kenya.

KEY OUTPUTS

- Strengthened disease control capacity of the department of veterinary services.
- Greater privatization of veterinary services and public-private sector linkage in the field.
- The rinderpest eradication in Kenya following the OIE pathway.
- Coordinated control of other epizootic diseases with special reference to CBPP.

TARGET GROUPS

- The primary target group is the livestock owners in the whole country who will benefit fro improved and readily available veterinary services.
- Private sector veterinary professionals delivering animal health care and participating in disease control.
- The Government, whose role will be increasingly concentrated on government core func such as statutory and regulatory matters and in the formulation of disease control and disease surveillance policies among others.

AREA COVERAGE

The programme covers the whole country, but with emphasis on defined priority districts

TIME FRAME March 2001 to October 2004.

PROJECT COST

KSh. 274,192,072 the equivalent of EURO 3,973,798 from EDF
KSh 44,400,000 the equivalent of EURO 643,478 from GoK

B PROJECT PROPOSAL

PAN –AFRICAN PROGRAMME FOR THE CONTROL OF EPIZOOTICS KENYA NATIONAL PROJECT

I BACKGROUND

1.1 The livestock sub-sector in Kenya

Kenya has a livestock population estimated at 12 million heads of cattle, 13 million goats, 10 mil sheep, 850,000 camels, 230,000 pigs, 1.2 million donkeys, 25 million poultry, and 270,000 rabl Livestock is one of the major resources of the country, contributing to the level of 10 % of the Gr Domestic Product and 30 % of the farm gate value of agricultural commodities. A substantial par income arises from trade, consequently activities such as epidemiosurveillance networks that addr animal health issues with the objective of promoting trade within the region and between o regions, would enhance economic growth. Seventy percent (70%) of the livestock is kept in various grazing systems in the arid and semi arid lands (ASAL) which represent two thirds of country. The remaining 30 % are raised in the high and medium potential areas in the form of mi agriculture systems, ranches and intensive livestock production systems. The livestock resourc the country is therefore characterised by a wide variety of raising practices and conditions generally very low productivity levels in ASAL, while the market oriented livestock practices in the l potential areas allow for much better performances.

1.1.1. The main transboundary diseases

The main constraint to increasing animal production remains the frequent occurrence of disea particularly the list A diseases such as contagious bovine pleuro-pneumonia (CBPP), contagi caprine pleuro pneumonia (CCPP), foot and moth disease (FMD), lumpy skin disease (LSD), sh and goat pox, rift valley fever (RVF), blue tongue (BT), Newcastle disease, and trypanosomc Improvement in this situation to increase livestock production and thereby alleviate poverty improve human welfare is very much dependant on the sustainable availability of efficient effective animal health care delivery.

1.2 The Government policy

1.2.1 Policy on public and private sector

Agriculture is the mainstay of Kenya's economy. The livestock sector provides 30 % of the t agricultural income and employs 50 % of the labor force in the agricultural sector. The country is endowed with a large and diverse wildlife heritage that forms the backbone of the tourism indu Until recently, the government has been the major provider of animal health services to lives owners but this role has become less and less effective over the past twenty years becaus decreasing budgetary allocations and donor support. This has resulted in low maintenance infrastructure and equipment and insufficient operating funds, leading to low staff morale commitment. The government therefore adapted its livestock sector strategy to cope with the rap growing human population and the livestock owners' needs for veterinary services.

The main thrust of Government policy has consequently been to engage in a liberalization proc with the aim of concentrating government responsibilities on recognized core functions while gradu withdrawing from services which can be performed more efficiently by the private sector.

Agricultural Sector Investment Program (ASIP) aims at rationalizing Government activities to ma them more efficient. Progressive privatization steps have been taken in the last few years including withdrawal of Government services from artificial insemination, clinical services, drug distribution a dipping for tick control. Under the Pan African Rinderpest Campaign Project for Kenya (PARC-K) pilot approach on contract vaccination was carried out and the results are promising. Under the sar project, a self-sustaining private veterinary scheme has been successfully established and h become a model for the other PARC member countries. In the low potential areas, a study has sho the concept of private veterinarians (or public veterinarians where necessary) establishing a netw with community based animal health workers (CBAHWs) as a viable and appropriate strategy whi should therefore be promoted.

1.2.2 Restructuring of Ministry of Agriculture

The ministry is being restructured in order to provide an efficient service. Previously there were t technical departments, namely Agriculture and Livestock Production, and Veterinary Services. Lat Cooperatives, Fisheries, and Rural Development were added making them five. Currently, the staffi in the ministry is top-heavy. Rationalization and rightsizing are being carried out with the sole purpo of establishing and maintaining a lean and efficient management structure at the headquarte provinces, and districts with right cadre and rightly placed staff who will be able to deliver qua technical services, especially at the frontline. However, the chain of command remains centraliz (grassroots/ location to divisional to district to province to headquarter) and that policies and directiv can be applied uniformly countrywide.

1.3 The Pan African Rinderpest Campaign

The Pan-African Rinderpest Campaign (Kenya) project workplan was signed in 1996 and it becar part of the Emergency Program for Eradication of Rinderpest in Kenya (EPERK)) costing a total of 2 million ECU equivalents to K£ 6,720,000. This amount includes 750,000 ECU (K£ 2,100,000) whi had a separate work plan prepared by the Kenya Veterinary Association (KVA) covering a credit li and program for the private veterinarians. The remainder of the project was composed of components, namely: rinderpest control and surveillance; CBPP testing; acaricide testing; monitori and border harmonization; strengthening of FMD control; and technical assistance. Additio financing came from EPERK. The project was implemented because of rinderpest outbreaks wildlife. The ultimate goal was to eradicate rinderpest from Kenya as an integral part of a co-ordinat regional approach to eradicate the disease from Africa and globally, under the umbrella of Glo Rinderpest Eradication Program (GREP).

1.3.1 Rinderpest eradication

Mass vaccination started in October 1997 and officially ended in March 1999. El Nino advers affected the first round of vaccination. Nonetheless, 70% of the target cattle population w vaccinated resulting in an overall herd immunity level of 58%. A second round of the vaccinati campaign commenced in August 1998 during which a total of 3.7 million H/C (95%) were vaccinat in 25 districts at high risk resulting in 62% overall herd prevalence. Districts within the cent southern and northern parts of the country where access to cattle was good; the vaccination covera approached 100% and sero-conversion 80%. Districts in the northeastern and northwestern parts the country (at very high risk of rinderpest from southern Somalia and Sudan) that are predominar arid and are occupied by pastoralists had lower sero-conversion levels (<50%), necessitating anot round of mass vaccination in 1999/2000. In-spite of a near good vaccination coverage, se monitoring results still show that the immunity levels achieved are too low to serve as a buffer zo

(63 % in average).

Disease surveillance in cattle and small ruminants put in place since the 1996 outbreak have identified clinical disease or pockets of virus infection. However, serology carried out on wil samples has indicated the probable circulation of the rinderpest virus in recent years in Tana D Garissa and Tsavo East (zone II), but has not been supported by follow-up investigations in lives within the same geographical areas.

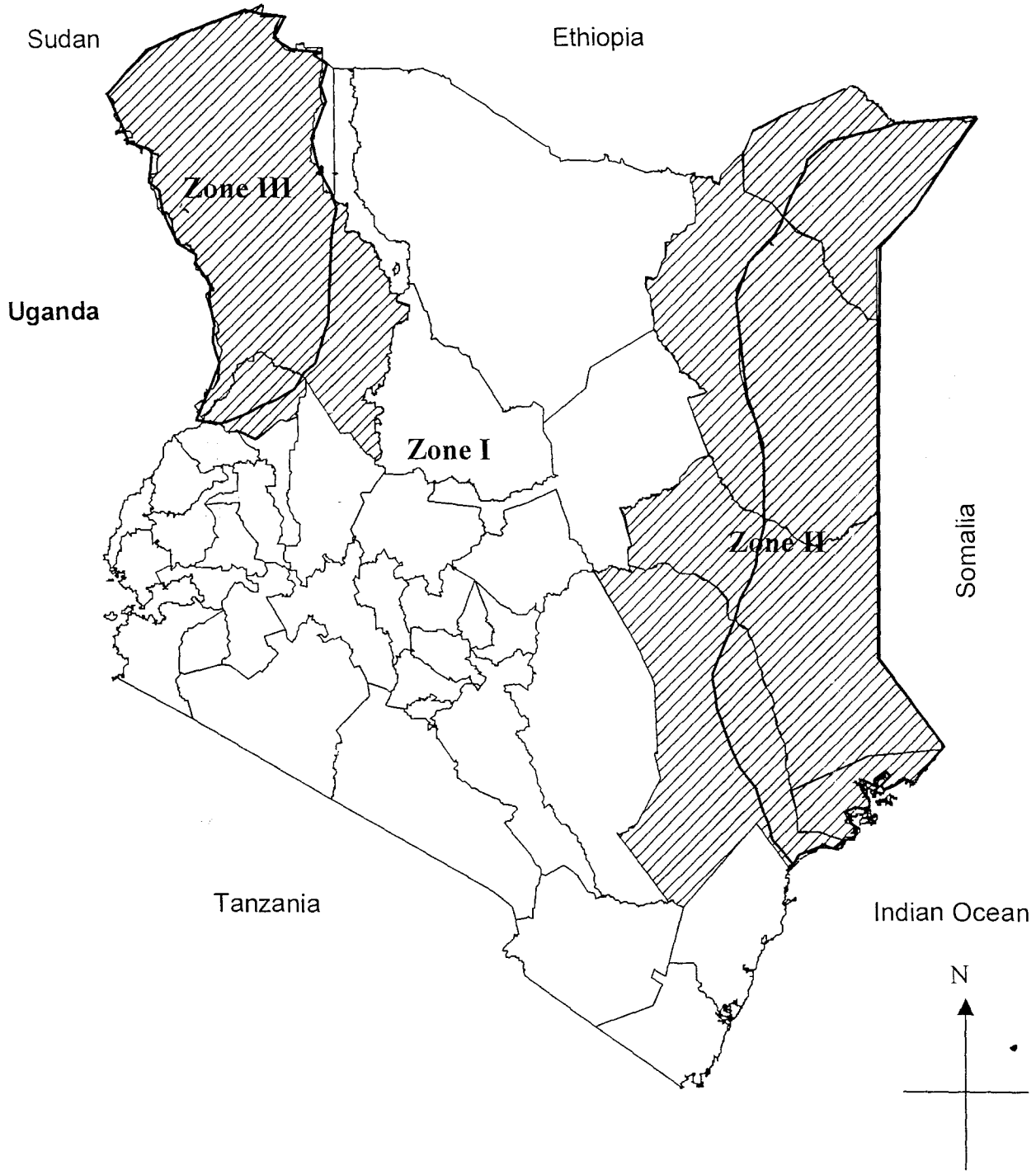
A rinderpest diagnostic laboratory at the Central Veterinary Laboratory, Kabete diligently carried serological analysis of serum samples and is in the network of laboratories for the diagnosi rinderpest; a collaboration between IAEA and OAU/IBAR.

1.3.2 Milestones of the OIE pathway for the final eradication of rinderpest at national Level

Kenya has entered the OIE pathway for the eradication of rinderpest through the delineation of tl zones (see Kenya Map on next page). Provisional freedom for Zone I was declared in January 1 after ceasing vaccination in December 1998. The OIE and all the neighboring countries v henceforth notified on January 1, 1999. Zone II and III are adjacent to rinderpest endemic area southern Somalia and southern Sudan respectively. Sudan declared zonal provisional freedor disease for the north in May 1996. Tanzania to the south declared country provisional freedom in 1998, while Uganda to the west declared zonal freedom for the central and southern parts of country in July 1999. Ethiopia declared zonal freedom for a vast portion of the country in May 1 Kenya has started implementing the steps needed to obtain OIE recognition that it is free of rinder disease and infection.

Figure 1:

KENYA: RINDERPEST ZONATION*



* The zonation is interim and will be reviewed in the course of year one of PACE-Kenya.

1.3.4 Privatization

The Kenya Veterinary Privatisation Scheme (KVAPS) started in 1996 and was succes implemented to the extent that it became a model as an efficient way to promote private vete practices on a sustainable basis. It assisted in the creation and financing of 50 new vete practices in high and medium potential areas. Ways and means of extending operations t potential / pastoral areas and incorporating the auxiliary animal health providers under PACE been addressed. Six (6) private veterinary practices financed by KVAPS benefited from co vaccinations awarded by the DVS between 1997 to date (a total of 8 contracts were awa Experience has shown that although contract vaccination is a promising alternative, there is ne economic cost/benefit analysis.

The implementation of cost recovery system

Cost-recovery is accepted within the National Policy and will be implemented under the PACE – Kenya program. All the beneficiaries are aware of the Government Policy on cost-recovery pertaining to all animal diseases with the exception of rinderpest and CBPP. There will be no c recovery for rinderpest where vaccination will be taking place. CBPP is ear-marked for eradica and therefore vaccination will be funded by the Government and will be free during the first thre years of the project, meanwhile, sensitization on the need to pay for services will go on paving for cost-recovery in the fourth year of the project (see 4.1.4.1.1). The cost-recovery for CBPP be concurrently implemented on a pilot basis by the Government Veterinary Services and Priva Practitioners who will be offered sanitary mandates.

A Veterinary Service Development Fund (VSDF) was set up during the implementation of PAR as of now it has accrued KSh.183,358,398. The money has accrued from all veterinary se including Meat Inspection, Hides and Skins, Artificial Insemination, Laboratory Services, and Di Control. The Director of Veterinary Services is controlling this money. Over the 4 years, part of (Ksh.12 million) will be used under PACE to support the running costs of epidemio-surveil network, while the rest will be used to support other services within the department. Depending c running costs of the epidemio-surveillance network, additional funds may may need to be com from the GoK.

Table 1

Annual Revenue earned through cost-recovery (KSh.)

1996	1997	1998	1999
19,449,713	66,600,616	52,308,069	48,000,000

It is projected that annual collections will average KSh. 50,000 and above during and beyond t project period. This is based on the premise that departmental staff as well as the farmers will been well sensitized.

1.4 Contagious Bovine Pleuropneumonia Control

Despite the fact that the tools presently available for diagnosis of CBPP are not considere adequate, the disease is frequently diagnosed in the northern and northeastern pastoralist are the country. There are also recently infected districts in the eastern parts of the country and in M pastoral area. It is anticipated that research work going on elsewhere will improve the technical available and thereby facilitate the epidemiological and economic assessment of CBPP leading design of improved control strategies. Current control is by strategic vaccinations, and live movement control

PARC Kenya supported CBPP control through the purchase of 4 mobile laboratories, 4 su vehicles, laboratory equipment and consumables, and camping equipment. Under PARC, vacci against the disease in endemic areas was carried out alongside rinderpest, which substa reduced the number of outbreaks. Whenever the disease occurred outside the endemic zone, contained by ring vaccination and eventually stamped-out by test and slaughter method.

1.5 Beneficiaries and Main Actors

The primary beneficiaries of the project are the livestock owners in the whole country who will b from improved and readily available veterinary services. A second beneficiary will be vete professionals whose participation in disease control will be supported through the project. veterinary department will also benefit through capacity building in surveillance, epidemi diagnosis, emergency preparedness, and economics amongst others

The main actors will be DVS personnel, private veterinarians, CAHWs, NGOs involved in a health and productivity, and livestock owners. Within the DVS, there will be the PACE core u Coordination, Epidemiology, and Communication, with other support coming from laboratorie field services. Private veterinarians, CAHWs, NGOs, and livestock owners will be involved in di control, surveillance and reporting.

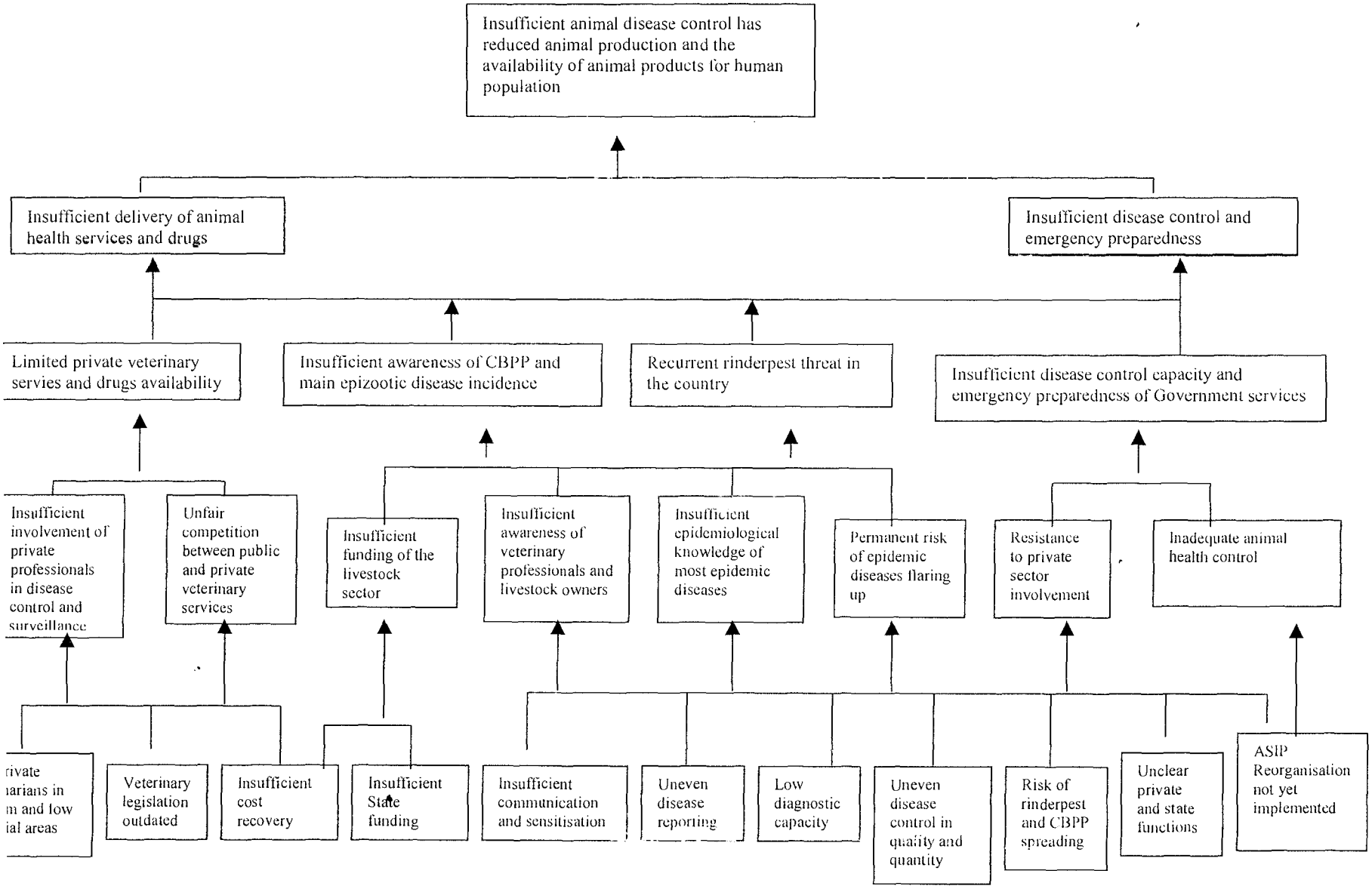
1.6 Other Interventions in the Livestock Sector

A proposal has been made for a project on Delivery of Animal Health in the ASAL areas and is expected to take off in January 2001. Other proposed national/ regional projects are Livestock Project of the Inter Governmental Authority on Development (IGAD) and Rift Valley Fever (RVF Surveillance in Kenya. The livestock support project that is ongoing is Farming in Tsetse Cont Areas (FITCA) and integrated projects by NGO's and are District based such as SNV – Netherlands in Turkana/WestPokot, VSF- Switzerland in Wajir/Mandera, VSF – Belgium in Tur of Turkana, Terra Nova in Garissa, and GTZ in various districts.

1.7 Diagram of problems

The problems to be solved through the proposed project are represented in the diagram of problems presented on the next page. They are mainly related to the insufficient availability of veterinary services and medicines to the livestock owners; the insufficient awareness of most a diseases situation; and the limited Government disease control capacity. These lead to limited delivery of animal health services and insufficient disease control and emergency preparednes are a major cause of the low level of livestock productivity, one of the main reasons for the low incomes and food insecurity of the livestock owners.

Figure 3. KENYADIAGRAM OF PROBLEMS



1.8 The transition between the PARC and the PACE programme

PACE Kenya program will build on the achievements of PARC and the lessons learnt the Specifically, rinderpest eradication process will be perpetuated during PACE, while at the same taking on board other major epizootic diseases. Specific achievements, challenges, and les learnt are elaborated below.

The major challenge during the vaccination phase against rinderpest was to attain 80% ant prevalence post-vaccination in order to keep the disease under control. This proved difficult to a The challenges under surveillance are many (see performance indicators) and may be harder to a without total commitment and all the necessary support.

The c ELISA test for rinderpest serology has low sensitivity resulting in false negatives. As a r virus neutralization test (VNT) has been recommended for antibody detection in disease surveil pending the development of more sensitive tests that can be used for mass screening. development and availability of a pen-side quick diagnostic kit for rinderpest would enh surveillance activities.

Similarly, due to the mildness of the clinical signs of lineage II virus infection, the disease is l likely to be missed out. Extension personnel, livestock owners, and other stakeholders continuously sensitized on how to recognize rinderpest, especially the mild form as a way of impr sensitivity for clinical diagnosis of the disease

Change of attitude by the establishment to accept Community Animal Health Workers (CAHWs) complementary provider of animal health services is considered a major achievement unde PARC project. Training of CAHWs was developed in the Northwest. It was realized that the tra of CAHWs is a long-term undertaking and that although it proved successful in vaccinating ag rinderpest using the thermostable vaccine, the system has a drawback with regards to the nee cold chain and the technique for CBPP vaccination. The DVS and other stakeholders country involved in the training of CAHWs have realized the need to harmonize the training and certificati CAHWs while at the same time creating an enabling legal environment for this cadre and c involved in the delivery of animal health services. The follow-up of this will be undertaken unde proposed project

The PARC project benefited from the services of a technical assistant (TA) for part of the p period. However, it was realized that the areas that needed technical assistance were very di and could therefore not be fulfilled by one individual. On this basis therefore, under PACE, va short-term consultations covering diverse fields have been planned for to complement the work TA.

Communication as a component within PARC proved very useful and PACE will build on this suc It will be used as a management tool for the mobilization, sensitization, and networking with na animal health and livestock stakeholders.

A PARC Epidemiology unit was established late in the project life and did not integrate with the Department's unit. As a result, data collection was not streamlined and the analysis inadequate. intended that under PACE, the operations of the project's Epidemiology Unit will be integrated wit Departments main Epidemiology Unit. The unit will collect, compile, and analyze data, and th develop appropriate indicators to demonstrate the need for commitment to the program to e sustainability.

The control of CBPP will become a priority under PACE. As research goes on elsewhere to deve
- suitable new diagnostic tests and vaccines, PACE Kenya will carry out epidemiological studies establish the incidence and spread of the disease which will be needed to undertake disease imp assessment and eventually lead to the development of disease control strategies.
- Although there was some training under PARC, additional training needs have been identified. new project has a sufficient training programme

1.9 Training needs and maintenance of diseases surveillance for PACE implementatio

A systematic training need assessment has been carried out based on the structures and experienc of PARC-Kenya *Vis a Vis* expected job performance under PACE in order to facilitate planning and budgeting for the latter. Training needs are presented in Table 2 and Meetings and Workshops in Table 3.

Table 2

Training Needs for PACE Implementation

CATEGORY	TRAINING NEEDS	PROPOSED TYPES OF TRAINING
1. Project management staff	1.1 Computer databases	Short term training (1 month) in MS Excel and Access for at least 2, one each in years 2 and 3.
	1.2. Project management, Monitoring and Evaluation and Proposal writing.	1.2 Up to 2 are trained one each in years 2 and 3.
2. Laboratory personnel	1.1 Modern techniques in serological diagnoses for the most important epizootic diseases	Up to 4 vets are trained in modern serological techniques by technical consultant in years 2 and 3 for 2 months each year.
	2.2 Adoption and standardization of diagnostic tests based at regional reference laboratories	Two short-term on site training by Regional Reference Lab. Scientists: CFT antigen standardization for CBPP diagnosis for 2 weeks in year 1. Adoption of differential diagnostic tests for RP for 2 weeks in year 1
	2.3 CBPP field testing	In-service training for mobile teams on CBPP testing for up to 7 per year in years 2&3.

3. Epidemiologists	3.1 PRA Techniques	Up to 5 epidemiogists and surveillance officers are trained by a technical consultant in PRA techniques for 5 days in each of years 1 and 3
	3.2 Information and data management	At least 2 are trained in information processing and data management by a consultant for 2 months in year 2.
	3.3 GIS techniques	At least 2 are trained in GIS techniques by a consultant and geo-references of TADinfor verified in year1.
	3.4 Spatial analysis of data	At least 2 are trained on spatial analysis of data for 2 weeks by a technical consultant in year 3.
	3.5 Methods, Approaches and application of risk analysis.	At least 2 are trained on Methods, Approaches, and applications of Risk Analysis for 2 weeks by a technical consultant in year 3.
4 Animal Health Economist	4.1 Animal Health Economics training	At least 2 are trained in Animal Health Economics by a consultant for 1 month in year 2.
	4.2 Disease Modeling Techniques	At least 2 are trained by a technical consultant on disease modeling for 1 month in year 2.
5 Wildlife	5.1 Wildlife disease monitoring training	Up to 2 DVS and KWS staff attend short course in wildlife disease monitoring in years 1, 2 & 3.

6 Emergency preparedness	6.1 Emergency preparedness	Up to 50 staff are trained on emergency preparedness annually in years 2 and 3 for seven days
7 Field staff	7.1 Disease reporting	Ups to 150 field staff are trained on disease reporting annually for 3 days in years 1 –3.
	7.2 Disease surveillance	Ups to 50 field and VIL staff are trained on disease surveillance annually for 5 days in years 1-3.
	7.3 Abattoir, market, and stock-route disease surveillance.	Up to 50 meat inspectors and market and stock-route surveillance officers in priority areas are trained annually for 7 days in years 2-3.
	7.4 Training of field epidemiologists.	Up to 5 field and VIL vets undergo short term training (3 months) in Epidemiology at University of Nairobi in each of years 2 & 3.
8 Communication	8.1 Participatory rural communication appraisal (PRCA) techniques.	Up to 2 are trained in PRCA procedures for 2 months in year 2.
	8.2 Communication skills.	Up to 2 are trained in communication skills for 1 month in year 1.
	8.3 Training of trainers.	Up to 4 field staff are trained on training of trainers for 3 weeks in year 1.
	8.4 Communication tools	Ups to 100 field staff are trained on communication tools for 3 days.

Table 3. Meetings and Workshops

1. Project Management Staff	1.1 Annual work planning workshop	Up to 15 attend annual work planning workshops for 3 days
	1.2 Border harmonization meetings	Up to 5 management, epidemiology and field staff attend border harmonization meetings for 3 days, 4 times annually
	1.3 Annual Regional OAU/IBAR PACE Meetings	At least one attends Regional OAU/IBAR PACE meetings for 7 days annually
2. Epidemiologists	2.1 Bi-annual regional Epidemiology workshops	At least 2 attend bi-annual regional Epidemiology workshops for 14 days annually
	2.2 Annual Regional OAU/IBAR PACE Meetings	At least one attends annual regional OAU/IBAR PACE meetings for 7 days
3. Animal Health Economist	3.1 Annual Economics workshops	Up to 7 attend annual animal health economics workshops for 5 days in years 2 and 3.
	3.2 Annual Regional Animal Health Economics workshops	At least 1 attends annual regional economics workshops for 7 days.
Wildlife	4.1 Wildlife disease monitoring workshop	Up to 6 DVS and KWS staff attend wildlife disease monitoring workshops for 5 days
Communication	5.1 Annual regional communication workshop	At least one attends annual regional communications workshop

II. PREPARATION AND DESIGN OF THE PROJECT

2.1 Rationale

2.1.1 The concept

The conceptual basis for the project design is in line with the overall PACE strategy whose prim objective is the sustainable strengthening of the capacity to effectively control and/or eradicate major livestock diseases that are constraints to development in Africa. This concept highlights particular the following points:

- Considering that the new international trade regulations focus on risk analysis, there is a neec establish national and regional surveillance systems of major epizootics, in order to promote regional and international trade and exchange of animal products;

- Eradication of rinderpest should remain a priority objective of the future program;

- The program shall assist countries in entering the OIE extended pathway to strictly implement OIE requirements up to final freedom of rinderpest infection.

Moreover, because of the important roles of livestock in rural development, poverty alleviation a food security, the project shall:

- Promote the involvement of livestock farmers and their associations, private veterinarians a community animal health workers in disease control and in general animal health care;

- Establish and implement continuous assessment of the incidence and social and economic imp of epizootics (e.g. CBPP) and other major animal diseases. It shall also appraise the feasibility programs for their control, articulating the activities necessary at continental, regional and natic levels;

- Establish emergency preparedness plans including the setting up of emergency funds and vacc banks;

- Continue its support for reference laboratories at the regional level, which should liaise closely w the world reference laboratories, including PANVAC;

- Provide a resource for relevant research and training; and

- Continue promoting the reorganization of veterinary services, operating in both the public and private sector, in order to improve their function, accessibility, viability and sustainability.

The project concept takes into account the resolutions of the 5th conference of Ministers helc Mbabane, Swaziland on 4 - 8th August 1997 which clearly stress the need to:

- "Consider the comparative advantage of harmonizing and coordinating the national policies un a regional policy framework";

- Ensure "continued supply of services to the sector taking into account the compara advantages of the private sector to complement government services", progressively put in pl

cost recovery "to guarantee the sustainability of the provision of services to the livest producer", "promote the role of livestock owners' organisations and community animal he workers in the delivery of animal health services", to explore "ways and means of intensify and co-ordinating vaccination campaigns against trans-boundary diseases including contracting of private veterinarians and where appropriate, community based animal he workers", and to enhance "the epidemio-surveillance of the relevant diseases in wildlife";

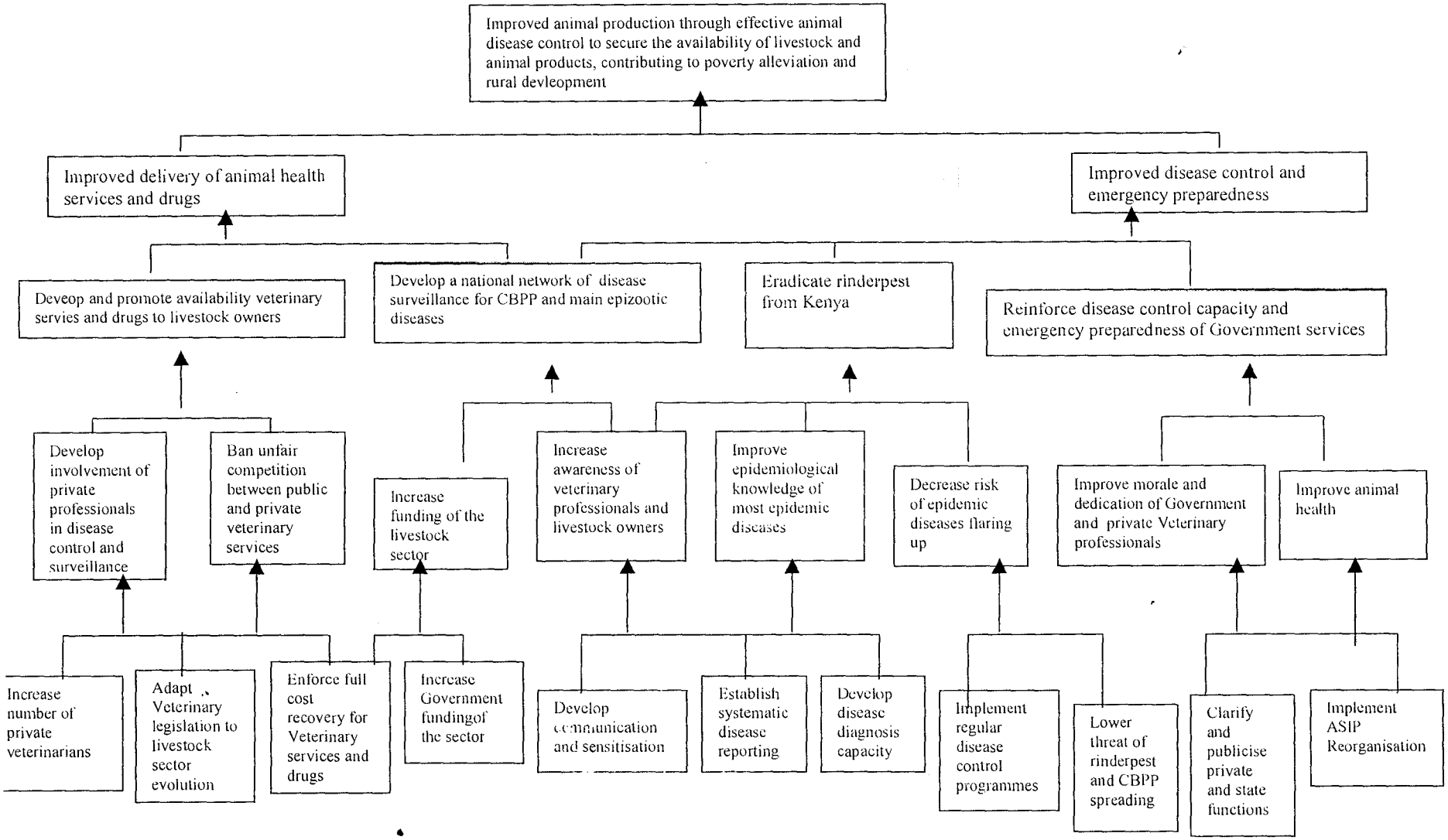
- Establish partnership "between public and private sectors in information and data collect dissemination and utilization"; and

- Encourage donors to "better co-ordinate their support and standardise their approaches livestock development policies".

2.1.2 Objectives of national PACE project

The PACE programme has the overall objective of contributing to rural development and poverty alleviation. This will be reached through effective disease control and through improved animal health care for livestock keepers. This will secure the availability of livestock and animal products contributing to the welfare of livestock keeping communities. See diagram of objectives on next page.

Figure 4. KENYA - DIAGRAM OF OBJECTIVES



The purpose of PACE- Kenya is to strengthen the capacity of the national animal health services to plan, implement, monitor and evaluate the control of epizootic diseases with private sector participation.

Expected results

1. Enhanced disease control capacity of the department of veterinary services.
2. Greater privatization of veterinary services and public/private sector linkage in the field activities.
3. Verification of rinderpest eradication in Kenya.
4. Coordinated control of other epizootic diseases, with main emphasis on CBPP.

The main activities of the National PACE project will include:

Enhance national capacities

This will entail institutional strengthening based on the development of the public capacities in the fields of epidemiology, diagnosis, animal health economics, communication, and project management. Others include the development of national surveillance and epidemiological systems, strategy development/formulation, and other institutional strengthening.

Promote privatization and improve private-public linkage

The activities will focus on increased involvement of the private sector in disease control. The private sector will be supported in the delivery of animal health care services and medicines through review of legal matters.

Eradicate rinderpest

The main target is to clean the country of rinderpest and uphold measures to keep it out from re-introduction. This includes active disease search, establishment of a surveillance network, and improvement of diagnostic capacities and standards, and surveillance system. Others include adherence to OIE pathway and establishment of emergency preparedness plan.

Co-ordinate the control of other epizootic diseases

Improved surveillance for other epizootic diseases will be made operational starting with CBPP and FMD through efficient collection and processing of epidemiological and economical data. The specific activities will be abattoir surveillance and general survey of priority diseases. It will also include mapping of disease distribution, and livestock movement. Information collected will be analyzed for control strategy development.

III ASSUMPTIONS, RISKS AND FLEXIBILITY

3.1 Assumptions

At the purpose level, the assumption is that Government funding is increased sufficiently in real terms, to maintain effective levels of animal disease surveillance and veterinary services.

3.1.1. Enhanced of Disease Control Capacity

The majority of trained staff continues to work for the department of veterinary services and will support the execution of PACE.

Communities are receptive to communication messages and are willing to cooperate.

National epidemiological and surveillance network is kept functional and its running costs are met.

3.1.2. Greater privatization and private-public linkage

Laws and regulations regarding animal diseases and the veterinary profession continue to be reviewed and amended to reflect the needed changes in policy regarding animal health and the veterinary profession.

3.1.3. Eradication of Rinderpest

Effective co-ordinated surveillance and livestock movement control is maintained with neighboring countries.

DVS staff are sufficiently motivated to maintain adequate vigilance.

3.1.4. Coordinated control of other epizootic diseases

Complementary funding is available through VSDF to support surveillance activities.

3.2. Risks and Flexibility

Re-incursion of rinderpest from neighboring countries namely Sudan and Somalia will remain a risk, if the political situation does not allow effective control and if effective protective measures are not in place in Kenya.

Pockets of rinderpest infection, particularly of the lineage II virus, may remain unnoticed if disease surveillance is not implemented with the utmost vigor.

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

Institutional and political developments may have an adverse impact on project organization and implementation.

Development of disease surveillance for rinderpest and CBPP may identify more urgent disease priorities that may have to be taken into account under the project immediately.

IV PROJECT IMPLEMENTATION

4.1 Detailed features of the programme

4.1.1 Strengthened national disease control capacities

The project will mainly support Government animal health services through the development of its epidemiological, diagnostic, reporting and communication capacities, formal training, and the implementation of disease emergency preparedness program. Provisions will be made for short-term consultations, and equipping and operating of Epidemiology/Economics and Communication Units.

4.1.1.1 Training

Training is proposed as per the training needs assessment and workshops/meetings presented in **Tables 2 & 3** respectively. Fields identified for training in year one are considered immediate and important, thereby calling for implementation in the first year of the project. This not withstanding and in line with PACE Advisory Committee recommendation, an independent *training needs assessment* is intended and budgeted for, early in the first year of the project. The consultant mission will be expected to objectively articulate training needs required for optimum sustainability of institutions and operations established and implemented by the project.

4.1.1.2 Reporting and epidemiological services

The Epidemiology and Economics unit (EEU) will compile, analyze, and disseminate animal health data including economic assessment of animal health interventions. The present PARC 'K" Epidemiology Unit will integrate with the Epidemiology and Economics Unit within the establishment to meet the additional human resources needed in Epidemiology and Economics and concurrently ensure sustainability. Laboratory diagnostics will be an integral part of the EEU. The current rinderpest diagnostic network will be expanded to include CBPP, FMD, and other epizootic diseases and become part of the National Surveillance and Epidemiological System. The human resource requirements for the EEU are project epidemiologist (1), assistant epidemiologist (1), economist (1), and data entry clerk / technicians (2). Laboratory diagnostics will require RP serologist/differential diagnostician (1), CBPP serologist (1), serum banking officer (1), and laboratory technicians (6). The project will employ a computer maintenance technician, driver (1), and office messenger. The unit will rely on field staff for disease reporting and continuous surveillance, veterinary investigation laboratory staff for outbreak investigation and random surveillance in livestock, and on KWS staff for wildlife surveillance. The key activities therefore will be:

- Design and implementation of general disease reporting system with feedback;
- Design and implementation of disease surveillance and laboratory diagnostic activities;
- Training of staff on disease reporting and surveillance:
- Data entry, management, analysis and mapping of diseases;

- Interpretation and dissemination of data results;
- Creation, implementation, and maintenance of a national surveillance and epidemiological system (NSES) for priority diseases; and
- In consultation with relevant authorities, carry out technical feasibility studies/ analyses based on the understanding of disease epidemiology and relevant technological and scientific advancement
- Regular reporting to OAU/IBAR and other countries in the region via PACE network.

4.1.1.3 Economic assessment of diseases and disease control

Economic impact assessment will make use of the epidemiological data gathered above. Where need be, special surveys will be designed to gather extra data related to disease problems, production, livestock trade, prices and export, micro and macro-economic statistics, and contribution of agriculture/ livestock to GDP. The assessment will focus on three areas, namely:

- Work out economically feasible disease control startegies,
- Organize, classify and present the information on disease problems ;
- Quantify losses in monetary terms ; and
- Identify and attempt to quantify the indirect losses attributable to the disease.

Once all the necessary parameters have been collected and quantified, economic models will be used to analyze the data.

4.1.1.4 Strategy development/formulation

Early in the program, a project steering committee will examine and define structures for decision making process and thereafter it will continuously review the quality and quantity of information made available from the Epidemiology and Economics Unit. The DVS will formulate disease control strategies based on technical and economic assessment reports, taking into account advice from members of the steering committee and other relevant organization/ agencies. The DVS and steering committee will oversee the Epidemiology and Economics Unit in testing the strategies.

4.1.1.5 Other institutional strengthening

The project will assist the DVS in facilitating legislation through the Kenya Veterinary Board. It will also facilitate holding of open field days for the public and seminars/meetings with law enforcement officers, county councils, and livestock traders on matters pertaining to disease control.

4.1.1.6 Communication Unit

The Communication component was put in place during the PARC program and will be in place to carry out all the sensitisation for the PACE project. At the start of PACE, all appropriate means to sensitise the PACE stakeholders (Livestock owners, Public and Private Veterinary staff, NGO's, Pastoralists, formal and informal leaders,

Policy makers, donors etc.) on the new and expanded mandate of the programme will be used.

The Communication Unit will produce and disseminate communication material that will sensitise the stakeholders in advance of implementation of any activity. There will be concentration of community sensitisation work in Somali areas and in the northwest (Turkana, West Pokot). Annual communication activities will include pre-launch work that include selection of target audiences, identification of the message, selection of the communication media and production of the communication material. The launching of the communication material will include, airing of radio messages, distribution of posters, brochures, booklets, press releases, launch meetings, sensitisation and dialogue workshops. Post communication activities will include assessment of effectiveness of the communication campaign. Where cultural and language problems were encountered in PARC, new communication strategies will be developed using drama and cultural activities.

The human resource requirements for the communication Unit will include the Communication Officer and a Deputy Communication Officer. Personnel in the former Extension Division, now part of Animal Health and Disease Control Division (see organogramme) will assist in message creation and the Network of Veterinary Extension put in place by the National Extension Programme (NEP) II will be used to pass messages from the Communication Unit to the grass roots. Thirty veterinary extension workers will be trained on communication skills by the trained Departmental staff in collaboration with the regional communication services unit for two weeks in year one. Up to 100 frontline extension workers will be trained on communication tools in year one to three. The Agricultural Information Centre (AIC) members of staff will assist in production of radio messages with guidance from the communication Unit and facilitate the airing of the programs with the Kenya Broadcasting Co-operation (KBC). The design of the graphic material will be carried out by the Regional PACE Communication Unit or by contracted graphic designers with guidance from the Communication Unit. Printing of Posters will be carried out by contracted commercial printing firms in accordance with the EDF tendering system. The use of a copy printer will assist in printing of booklets and brochures in the communication Unit.

4.1.1.7 Management and Co-ordination Unit

The National Coordination Unit will be made fully operational in its own role to ensure proper project implementation. It will build on the material resources and experience achieved under PARC. The project will provide for a Technical Assistant for 3 years. Meanwhile, technical assistance in the form of short-term consultancies will be offered throughout the project period. On the average, 2 such missions each lasting 2 to 4 weeks will be carried out per year. Some of the areas that will need short-term consultancies related to project management include financial analysis, management and organizational development.

The National Co-ordination Unit will implement the project under the direction of the DVS. The unit will oversee the administration and finance of the program, and monitor all the program activities (see Organogram).

The Co-ordination Unit will consist of a National Co-ordinator, accountant, store-man/bookkeeper, secretary and, driver. The project will employ a mechanic and driver. Equipment needed are a vehicle and telephone/fax, while operating costs will include office supplies, staff allowances, TA's salary, and technical consultation fees.

4.1.2 Greater privatization and private-public linkage

The development of private veterinary practices has mainly been in the high and medium potential areas of the country where livestock owners can better offer to pay for veterinary services because of better productivity and more regular marketing of their produce. The PARC (K) project has been very successful in these areas but failed to assist development of private practices in the low potential areas of the country (the arid and semi-arid lands (ASAL)) where much of the national herd is kept under pastoral livestock raising conditions.

4.1.2.1 Promotion of stakeholder consultation/dialogue

Stakeholders at various levels will be consulted during the formulation of policies and legal review of laws and regulations pertaining to the animal health care. The sub-activities will include:

- An awareness campaign conducted on the need to change or modernize policies, laws and regulations, especially those which are not supportive of the private sector participation.
- establish a forum to enable a wide spectrum of stakeholders to participate in the process to review policies, laws, and regulations. This will facilitate discussions and the making of recommendations needed for these changes.
- Publicize the process and outcomes of review exercise in public media;
- Review and make recommendations on the role and capacity of the inspectorate to be established for veterinary pharmaceuticals;
- Define the role of all cadres of animal health technicians and community based animal health workers (CAHWs) and lobby for legal recognition of that role /status;
- Lobby for timely reviews of policies, laws and regulations by relevant authorities; and
- Engage professional teams on *ad hoc* basis to update and refine laws. Specifically, the veterinary legal framework will be refined and policies, laws and regulations adapted and enforced for both the needs of an expanded private veterinary services in both the high /medium potential areas and the ASALs. The Kenya Veterinary Board (KVB) together with the DVS will play the lead role in this regard. PACE common services will be consulted for harmonization of policies within the sub-region and region.

4.1.2.2 Engage private veterinarians, CAHWs and others in disease surveillance and control

Private veterinarians will be sensitized on disease surveillance and reporting through communication materials, articles in KVA meetings, and other professional gatherings. This will mainly apply to high potential areas. In the marginal areas, PACE Kenya will promote active participation of private veterinarians/NGOs in surveillance, sample collection, and disease reporting and control campaigns through sanitary mandating. Here, CAHWs will be linked to private veterinarians/NGOs who

will in turn report to the local DVO. Thus, the private veterinarians/NGOs and veterinary supervised CAHWs will be the baseline for information and rumor generation. In critical high-risk areas (border areas), an active link will be ensured through organized meetings every second month. The meetings will serve to provide information exchange on treatments, rumors, and disease outbreaks. The DVO will collect information and discuss with the CAHWs any relevant subject related to current disease situation in the area including the condition of range. Finally, coaching will be given to CAHWs in selected topics (with handouts).

4.1.2.3.Support initiatives to obtain participation of livestock owners in disease surveillance

Livestock owners will be sensitized through radio, print, participatory workshops and seminars, field days and agricultural shows. In the Northwest, community dialogue workshops will be held. Modalities for remunerating livestock stakeholders who excel in genuine disease reporting will be worked out during the first year of the programme.

4.1.2.4 Promote and encourage development and strengthening of appropriate mechanisms for the distribution of veterinary medicines.

PACE Kenya will promote further the privatization of drug importation and distribution and at the same time support the establishment and development of a Veterinary Drugs Inspectorate through the KVB.

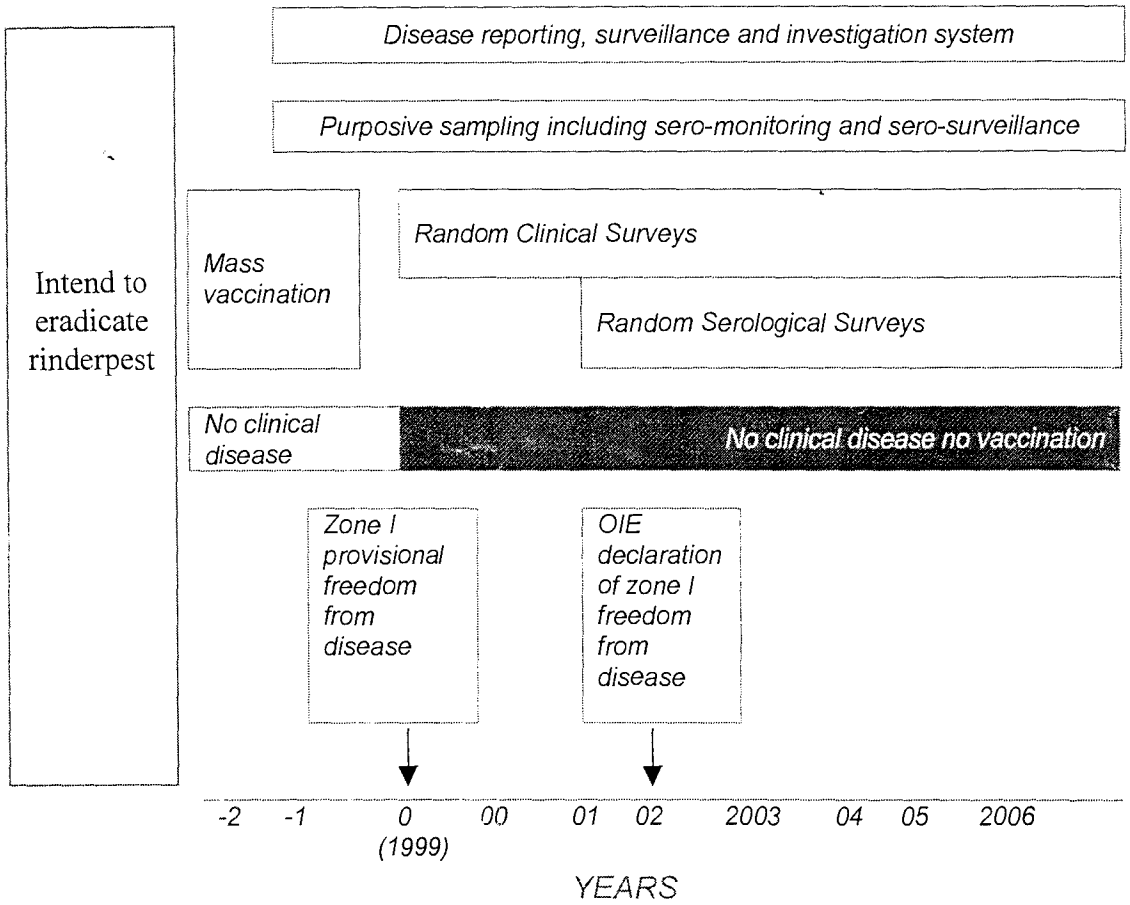
4.1.3 Eradication of Rinderpest

Strategy for Zone I (Declared Provisionally Free)

The main activities carried out in 1999 and 2000 were clinical surveillance and disease reporting both of which will continue throughout the project period. Kenya will seek to have joint co-ordinated surveillance missions with Tanzania and Ethiopia because of the Maasai and Borana pastoral ecosystems that traverse the respective common boundaries. The surveillance system will also be used for other transboundary diseases such as CBPP, LSD and FMD. In addition, wildlife populations will be sero-surveyed for antibodies to rinderpest both as proof of eradication and for verification to OIE. Rinderpest Emergency preparedness Plans will be prepared and put in place to deal with any disease outbreaks. Kenya intends to apply OIE for freedom from disease for Zone in February 2001. From the year 2001 onwards, clinical and serological surveillance will be carried out concurrently in this zone.

Figure 2

Implementation of OIE Pathway in Kenya (Zone I)



Strategy options for Zone II and III

Zone II comprises the 5 northeastern districts of the country, namely: Mandera, Wajir, Garissa, Tana River, and Lamu. Zone III comprises the northwestern districts of Turkana and West Pokot. The two zones are at high risk of infection from Somalia and Sudan, because of pastoral cattle movement and trade stock movement to Kenya. The problem is further compounded by the fact that southern Somalia and northeastern Kenya belong to the same Somali pastoral ecosystem, which poses a security risk in certain places. In northwestern Kenya, again cattle raids and poor access to livestock are problems. Although these zones are meant to serve as a sanitary cordon against risk of infection from southern Somalia and southern Sudan, sero-monitoring results show that the immunity levels achieved so far are too low to guarantee a protection. It is suggested that low herd seroconversion results are attributed primarily to livestock movement just after vaccination and to delayed sero-monitoring among other reasons.

Kenya has to contain two types of rinderpest viruses demanding a specific approach. The gained experience shows that the approach should be regional across the national borders related to geographical, ecological, ethnic and factors connected with livestock

production systems, which all have to be taken into account while controlling transboundary diseases.

The fight against lineage II virus will concentrate on an extensive cluster stretching from Ethiopian Ogaden along the Somali ecosystem south on both sides of the international border to Garissa district. It continues across Tana River to Tsavo and Taita Taveta and thereby becomes confluent with the Maasai pastoral area and the Serengeti. Operations will consist of search for possible foci of virus circulation, which will be controlled by immuno-sterilisation. Continuous surveillance will be in place to detect any possible epidemic movement of the virus in the ecosystem. Additionally, concerted efforts with the neighbors are aimed at defining the last endemic areas for joint eradication efforts.

The work in this area will be carried out in close co-operation with PACE national programs of the neighboring countries. Cross-border working groups will be established, as it will not be possible to reach the set goals without coordinated action within the ecosystem cluster.

In a similar manner, the lineage I rinderpest virus cluster includes parts of Ethiopia (South of Gambela, west of Omo river). Of great significance to Kenya is the rinderpest surveillance and control in Jonglei and Eastern Eqatoria in Sudan, as well as PACE operations in Karamoja district, Eastern Uganda. The center for the lineage I rinderpest virus high-risk area will be Likichogio, Turkana district, which will be regarded as a coordination center for lineage I virus eradication.

With the foregoing in mind, the main thrust of PACE Kenya will be intensified surveillance and reporting with trace-back to source and stamping out in the event of disease/infection, or serve as verification for OIE pathway for the absence of disease/infection. The DVS field staff in collaboration with NGOs involved in livestock development and CAHWs will carry out information gathering on the actual disease situation. Relevant disease formats have been developed for use by these groups of personnel. All disease reports will be thoroughly investigated and appropriate samples for laboratory diagnosis taken. The linkage between DVS field staff and private veterinarians/NGOs and CAHWs is elaborated under section **4.1.2.2**. Annual random disease surveys will be carried out to further compliment the active disease search activities. Due to the mildness of clinical signs associated with lineage II rinderpest virus, all stakeholders will be sensitised on how to recognise the disease and report. For lineage I, community dialogue will be used to improve on disease reporting since recognition of the disease is easy. In addition, wildlife populations will be sero-surveyed for antibodies to rinderpest both as proof of eradication and for verification to OIE. Rinderpest Emergency preparedness Plans will be prepared and put in place to deal with any disease outbreaks

To prevent entry of disease from Somalia or Sudan, surveillance activities between Kenya and Somalia and between Kenya, Sudan, Uganda, and Ethiopia will be harmonised and held jointly whenever possible. There will continuous exchange of information on rinderpest and other transboundary diseases among countries and also OAU/IBAR. Border surveillance/ checkpoints are already operational and will be supported by the project for more intensified surveillance activities all along the common borders and livestock trade regulation.

The DVS, supported by PCU at OAU/IBAR will continue to explore appropriate strategies for zones II and III. Provisions for tactical vaccination are included in the financial plan.

Performance indicators (PI) for rinderpest eradication as well as other epizootics

The performance indicators for the eradication of rinderpest are described under section 4.1.3.2 and could be used for any epizootic in Kenya. The indicators will assess the progress made towards implementation of the rinderpest surveillance systems required by the OIE Pathway.

The rinderpest eradication component will build on achievements gained under the PARC Kenya project and the emergency program for eradication of rinderpest from Kenya (EPERK) in order to assist the country to move along the OIE pathway. This will specifically entail compliance with disease monitoring and surveillance requirements. Four vehicles will be bought for rinderpest eradication and CBPP surveillance.

4.1.3.1 Vaccination

Tactical vaccination will be carried out in 2001 based on appropriateness of the situation and is therefore budgeted for. The GoK will provide the vaccine.

4.1.3.2 Surveillance: performance indicators and network.

4.1.3.2.1 General rinderpest surveillance

There will be on-going RP surveillance as part of routine disease monitoring by the DVS field staff. The DVS will seek cooperation from private practitioners and NGOs working in disease reporting. Currently, DVOs submit monthly reports to the DVS in narrative form. Under PACE, there will be standardization of the reporting format such that it is compatible with the needs of Geographical Information Systems (GIS). Field staff will be trained annually on disease reporting. District Disease Surveillance Officers (DDSOs) will on the behalf of DVOs compile and forward the standardized disease reporting formats to DVS. As a measure of output, 80% of the districts will be expected to report within 30 days of end of month 10 months in a year.

4.1.3.2.2 Active Disease Surveillance and Reporting

The Epidemiology Unit will conduct active disease surveillance using veterinary field and VIL staff. The Unit will train them to conduct active search for stomatitis-enteritis (SE) cases in relation to rinderpest in Kenya. Others including private practitioners and NGOs will be trained. The Epidemiology Unit has already designed formats to report stomatitis-enteritis (SE) cases and put them into use. The trained staff will maintain active contact with the livestock owners in the course of their day-to-day work and take special note of reports of stomatitis-enteritis. All susceptible species including wildlife will be targeted. Report registers will be kept to record all reports of stomatitis-enteritis whether from DVS field staff, survey teams, NGOs, private practitioner, NGOs, livestock owners/traders or the public in general. The recorded information will be

acted upon and reported to the Epidemiology Unit within the shortest time possible. Radio-calls and other quick means of communication will be used.

Special training will be given to sensitize field staff at all levels for the rinderpest lineage II virus, which might give inapparent clinical picture or might affect only wild cloven-hoofed ungulates.

Disease surveillance officers manning the six key entry points (Elwak, Wajir Bor, Dif, Liboi, and Hulgo for Zone II and Lokichogio for zone III) will carry out disease search on cattle entering Kenya and on transhumance cattle. In addition, trained field teams will carry out purposive disease search in the sanitary cordon districts once a year. A bonus system is intended for individuals (both Government and private) who excel in active disease reporting, especially in the sanitary cordon. The performance indicators will be:

The number of districts in the country using active disease search techniques (clinical, participatory, and questionnaire) with results reported within 60 days per total number of districts per year.

The number of reports of stomatitis-enteritis received, recorded, and forwarded within 30 days per 1,000,000 heads of susceptible species annually.

4.1.3.2.3 Stomatitis-Enteritis Outbreak Investigation

All the reported stomatitis-enteritis outbreaks and indicators from wildlife surveillance will be thoroughly investigated by field and laboratory methods to confirm or refute the diagnosis of rinderpest. Appropriate samples will be collected and transported to the laboratory by the quickest means possible. Once in the laboratory at Kabete, the samples will be divided and distributed to Kabete and Reference Laboratory.

Lodwar satellite laboratory will be used as a surveillance base for Zone III, and Garissa satellite laboratory will serve Zone II when it becomes functional. Currently the GoK has set aside 4 million Kenya shillings for its completion. The performance indicator will be:

The number of stomatitis-enteritis investigated within 7 days of first report per million heads of susceptible species annually.

The number of clinical stomatitis-enteritis (3Ds) cases sampled within 7 days of detection per million heads of susceptible species annually.

4.1.3.2.4 Random Sample Surveys for Clinical and Serological Evidence of Rinderpest

Random sampling of herds will be carried out to give 95% probability each year of detecting clinical disease and antibodies to RP if clinical disease and antibodies respectively were present in 1% of herds in any given stratum/ zone of the cattle population. Initially, this will entail the preparation of a sampling frame duly geo-referenced. Staff will be trained on how to perform random surveys in the first year

of PACE. By the end of the first year of PACE onwards, 300 primary sampling units (herds/villages) will be examined for clinical rinderpest in Zone I. From the year 2002 onwards, clinical and serological surveillance will be run concurrently on the same herds/villages in Zone I. Appropriate sampling strategies for Zones II and II will be explored in the course of project implementation.

The clinical disease search will entail the examination of all the randomly chosen herds for symptoms compatible with RP, filling in of questionnaire survey forms for the herd and participatory epidemiology. The latter two will in addition to detecting RP provide data on risk factors. Stomatitis-enteritis compatible clinical syndromes will be recorded, reported, and investigated as detailed under Active Disease Reporting and Stomatitis-Enteritis Outbreak Investigation.

A total of 4500 sera will be collected in Zone I annually. Serological analysis will be carried out by the CVL Kabete with the objective of searching for evidence for sero-conversion following natural infection. If sero-positive eligible animals are found, follow-up investigations will be undertaken that will include the following:

- Re-testing of sero-positives to eliminate possibility of false reaction ;
- Interviewing the owner regarding vaccination history, newly introduced animals and therefore trace-back investigation ;
- Intensive clinical surveillance to search for clinical signs of disease ; and
- Intensive and sequential serological sampling in the area, making sure animals are marked and tested 2 weeks apart for evidence of rising titers.

The performance indicator for clinical disease will be the number of primary sampling units sampled and results reported within 42 days from commencement.

The performance indicator for serological surveillance will be the number of serum samples collected and tested with the results reported within 90 days of collection per million heads of susceptible animals annually.

4.1.3.2.5. Wildlife Surveillance

Like in domestic animals, sero-surveillance, active disease search, and disease reporting will be carried out in wild animal populations. Thus, wildlife populations will be used as sentinels in RP eradication and verification of the OIE pathway. The main species of interest will be buffalo, lesser and greater kudu, eland, oryx, giraffe and warthog.

The African Wildlife Veterinary Project (AWVP) of OAU/IBAR has done similar work in key areas. These activities ended in mid 2000. It is intended that the Kenya Wildlife Service (KWS) Veterinary Unit whose members of staff have received training take over. They (KWS staff) have competence to carry out ground darting of buffalo and other species. The KWS veterinary unit is also well equipped to carry out this work supported by PACE with operational funds and consumables. The field activities of KWS in this regard will be integrated with those of the DVS, and as a team will consult with the Wildlife Epidemiolgy Component at OAU/IBAR on an on-going basis.

The first priority area will be Tana River district wildlife populations where mainly buffalo will be used as a sentinel line in the south for Northeastern province. In the North (Wajir, Mandera and Garissa) the warthog will be used having been confirmed that this species is useful for monitoring Lineage II virus. The second priority will be Tsavo and Meru ecosystems. Third will be Moyale, Marsabit, Sibiloi and Northern Turkana for Lineage I virus.

Six field trips will be executed every year, each mission covering 2 weeks. At each c the sampling sites, a representative number of serum samples will be collected. The samples collected will be divided and distributed to Kabete, Regional Reference Laboratory, Muguga, the World Reference Laboratories Pirbright and CIRAD-EMVIT (the latter because of PPR). The protocol used for testing will be that agreed upon during the Expert Consultative Meeting held in Nairobi 11th-13th December 2000. A Wildlife Rinderpest Surveillance Steering Committee has already been formed that will respectively plan and discuss activities and results.

The performance indicator will be the number of serum samples collected and testec with results reported within 90 days of collection per 10,000 heads of susceptible species

4.1.3.2.6 Rinderpest surveillance network

All the fore-going surveillance activities will be linked up to form a rinderpest surveillance network that will hence serve as an early warning system. Headquarter will communicate with all the districts as need be. Already all the districts and provinces in the remote parts of the country which coincidentally are also at a high risk for rinderpest are connected to Headquarter via VHF radios and are open daily. The same radio-calls will be used for inter-district, inter-province, and intra-province communication. At the same time, field staff in districts at international borders will be encouraged and supported to establish and maintain communication with their counterparts in the neighboring countries. For districts and provinces not on VHF radio, the quickest means of communication including electronic mail will be used. A the same time, the CVL Kabete will establish and maintain communication linkages with all the 5 VILs in the country.

4.1.3.3 Laboratory Diagnostics: diagnostic capacity and standards

A key aspect in the laboratory diagnosis of rinderpest under PACE will be that all rinderpest compatible field events are identified. Already the CVL Kabete receives and tests samples for rinderpest using ELISA and AGID and dispatches others to the Regional Reference Laboratory, Muguga and the World Reference Laboratory, Pirbright. In addition to ELISA and AGID, Muguga Laboratory carries out virus neutralization test (VNT), PCR and virus isolation. The efficiency of work will be greatly enhanced if CVL Kabete is facilitated to adopt virus neutralization test in view of the limited test sensitivity for both AGID (for antigen) and ELISA (for antibody). In this context therefore, it is proposed that the Regional Reference Laboratory be providing training to CVL staff could on the use of these tests and the differential diagnoses of rinderpest to facilitate adoption. The latter include virus neutralization test for PPR, agent identification for bovine viral diarrhea (BVD), virus neutralization,

and immunofluorescent antibody (IFA) tests for malignant catarrhal fever (MCF) and AGID, ELISA and VNT for blue tongue.

The rinderpest diagnostic laboratory at CVL Kabete is already in the network of laboratories (a collaboration of IAEA and OAU/IBAR) that aims at validation and standardisation of diagnostic procedures. Under PACE, laboratory network will expand into a broader based epidemiosuirveillance network that includes clinical surveillance.

The performance indicator for rinderpest diagnosis will be the number of cases examined by rinderpest antigen and serological detection techniques with preliminary results reported within 7 days of receipt of samples per 1,000,000 heads of susceptible species annually.

Similarly, the performance indicator for definitive diagnosis will be the number of stomatitis-enteritis cases diagnosed definitively by laboratory methods at CVL Kabete and/ or Reference Laboratories within 30 days of receipt of samples per 1,000,000 susceptible species.

4.1.3.4 National surveillance and epidemiological system (NSES)

PACE Kenya will build a broader (laboratory and clinical) NSES based on the structures of PARC that will incorporate the Rinderpest Surveillance Network discussed above (4.1.3.2.6) and other epizootic diseases discussed under 4.1.4 PACE- Kenya will establish and maintain close links with the regional and neighboring National Programs through connection to electronic mail. Exchange of information will be encouraged between all PACE components and the common services available at OAU/IBAR (Epidemiology, Communication, Wildlife, and Economics). In particular, surveillance data on major transboundary diseases will be availed to the Regional PACE office and OIE through monthly reports. The country will be well represented and will fully participate.

4.1.3.5 OIE Pathway

Kenya has started implementing the steps needed to obtain OIE recognition that it is free of rinderpest disease and infection. On this basis therefore, we intend to request for zonal freedom from disease for Zone I at the end of 2001 and zonal freedom from infection at the end of 2004 (see Figure 1). The DVS, supported by PCU at OAU/IBAR will continue to explore appropriate strategies for zones II and III. Performance indicators as tools to assess the implementation of the pathway are in-built in the PACE Kenya program.

OIE Pathway working groups across common borders that will focus on rinderpest lineage 2 (Kenya, Somalia, and Ethiopia) and lineage 1 (Kenya, Uganda, Sudan, and Ethiopia) are in the process of formation and will meet 4 times a year under the umbrella of border harmonization meetings. The working groups will seek to harmonize approaches with a view of moving along the OIE Pathway as a block.

4.1.3.6 Emergency preparedness plan

The essence of the strategy to be adopted is to enhance the national capacity for early warning and early reaction in case of renewed incursion of the rinderpest virus into Kenya or flaring up of an unnoticed endemic focus. The RP, CBPP and other diseases emergency preparedness plan will be established using the FAO/EMPRES guidelines.

The establishment and maintenance of an emergency preparedness program and its enforcement will involve:

- Training workshop on emergency preparedness for district and VIL staff. This will as far as possible, given the prevailing disease situation, combine RP, CBPP and other major disease topics;
- Maintaining of sanitary cordons of intensive surveillance and vaccinated cattle;
- Immediate access to the available OAU/IBAR based emergency fund;
- Establishment of border surveillance and movement control activities; and
- Establishment of funds to investigate wildlife disease epidemics.

The emergency preparedness program will rely on vehicles purchased and rehabilitated for rinderpest eradication and CBPP surveillance.

4.1.4 Coordinated control of epizootic diseases

4.1.4.1 Disease surveys including abattoir surveillance

Initially the project will focus on CBPP, then gradually FMD and the other epidemics and emerging diseases. In this regard therefore, disease surveillance activities of ongoing or proposed projects such as the Livestock Project of the Inter Governmental Authority on Development (IGAD), Farming in Tsetse Control Areas (FITCA), and Rift Valley Fever (RVF) Surveillance in Kenya will be integrated and co-ordinated.

4.1.4.1.1 CBPP

The CBPP control will be based on the same ecosystem principle as the fight against rinderpest. The Government will pay for vaccination (purchase of vaccine and operational costs), none of which will be charged to EDF. The annual target for vaccination is 2,000,000 H/C mainly in North Eastern, South Eastern parts of Kenya including Maasai land and the North west. Mass vaccination will take place for at least 3 years. Here cross-border operations in the north-east and in south with Tanzania in Maasai pastoral area will be considered. The same applies to West Pokot district at the Ugandan border.

It is intended to carry out clinical and serological CBPP search to cover endemic and recently infected parts of the country. The approach will be based on confluent ecosystems across national borders as with rinderpest. The search will be combined whenever possible with the statistically based surveillance activities required for rinderpest. Clinical disease search and questionnaire-based inquiries will be conducted by the same Epidemiology teams and sera collected from cattle for rinderpest will be as needed also tested for CBPP and the results included in an

epidemiological data base. The number of affected herds (animals) out of all herds (animals) tested in any single screening survey will yield prevalence estimates from which indirect estimates of incidence will be calculated.

Specific investigations and sera collection will be conducted in slaughterhouses and at a few selected cattle markets and stock routes. It is expected that about 5,000 sera will be collected from strategic slaughterhouses annually. Pathological description of lesions will be standardized for meaningful interpretation of the data. To standardize the procedures and the manner of lesion descriptions by meat inspectors, training workshops jointly organized with NVRC-Muguga, the Regional Reference Laboratory for CBPP will be held in the first year. A new reporting format that includes identification of animals for trace-back will be introduced. In this regard therefore, training will be necessary and will be directed towards disease reporting for meat inspectors and market and stock route inspectors. It is anticipated that at the very least, animals will be traced to districts of origin. Meat Hygiene staff at all levels starting with headquarters will be sensitized. These officers will continuously be impressed upon of their cardinal role as disease surveillance officers apart from ensuring the wholesomeness of food for human consumption.

The c-ELISA test is being validated at CVL Kabete for serological testing of samples. The laboratory will be provided with c-ELISA kits for CBPP testing by the IAEA. It is intended that NVRC-Muguga will over the years, in collaboration with World Reference Laboratory CIRAD-EMVIT, France and other laboratories avail and train on alternative methods such as PCR for confirmation of the disease. Meanwhile, the Huddart's field complement fixation test (CFT) and the laboratory based CFT will continue to be used for field screening and confirmation and/or comparative purposes respectively. Consultants will be recruited to carry out short-term training on test reagent preparation and standardization and on-site training on complement fixation testing in the first and second year respectively. The ViLs will be equipped where needed and training carried out to the extent necessary to perform diagnosis in a reliable manner. The existing Laboratory Network for CBPP will integrate into the broader based epidemiosurveillance network.

4.1.4.1.2 Surveillance to support other diseases

A serum bank will be created to provide a source for retrospective monitoring of the occurrence of sero-reaction to disease agents, which subsequent to the time of sampling will become of interest. A portion of serum samples being analyzed for rinderpest and CBPP will be banked for future use. It will be necessary to train at least one officer, veterinarian, or technologist on serum banking. Such an officer will be in charge of the serum bank and will train others.

As with rinderpest, wildlife surveillance will be carried out for diseases that have a known wildlife association such as PPR, RVF, and ASF. This will be done specifically to enhance the understanding of disease epidemiology and to know the status of the disease in the local wildlife population. Serum samples from potential rinderpest areas described under 'Wildlife Surveillance' will also be analyzed for other diseases. In addition, other key operations will target FMD serotypes in wildlife in important livestock areas with a premium on FMD status. Areas earmarked for

disease free status and buffer zones will be selected, and would thus include parts of central Rift Valley, Laikipia and some districts around mount Kenya.

4.1.4.2 Surveillance of specific priority diseases

The general surveillance system described for rinderpest will evolve and involve other diseases to form a broader based disease reporting system. The monthly reporting format will be re-designed and standardized such that it is compatible with the needs of Geographical Information System (GIS). Key in the new reporting format will be:

- The basic reporting unit will be the administrative location;
- Public-private veterinary services interface will be increased and maintained as a basis for disease monitoring and surveillance system. Thus, the private veterinarians and veterinary supervised CAHWs delivery system will be the baseline for information and rumor generation, especially in the ASAL;
- There will be regular refresher training on disease reporting and surveillance;
- There will be continuous feedback to the field;
- The use of Geographical Positioning Systems (GPSs) will enhance the efficiency and quality of work; and
- The reporting will be action oriented.

The occurrence of disease events for clinically overt diseases such as RP, FMD, LSD and sheep and goat pox will be reported immediately by field extension staff, livestock owners, private veterinarians, and NGOs working in the livestock sector. Once a report has been made upon suspicion of an outbreak, full investigations will be conducted including laboratory diagnosis to ensure specific diagnosis and tracing of contact and /or source herds. Underreporting will be overcome through regular training workshops on disease reporting, surveillance, and sensitization workshops.

As a minimal criteria, the data will enumerate the occurrence of specific diseases, specify the time, location and host characteristics of the affected animals and the population at risk. Since these are events being reported over time in specified populations, disease incidence will be calculated.

4.1.4.3 Disease distribution mapping (GIS and Livestock movements)

The Epidemiology Unit will map disease occurrence in space and time as determined through surveillance and reporting activities. It is anticipated that TADinfo, or an alternative system to be introduced by PACE, will be used. To enhance the efficiency and accuracy of the Mapping System, Geographical Positioning Systems (GPS) will be needed for geo-referencing of the villages across the country. All stock-routes in the country that includes trade, grazing patterns, transhumance and migratory will be mapped.

4.1.4.4 Strategy development

The control and eventual eradication of CBPP and other transboundary diseases is best tackled at regional level. In this regard therefore, joint regional epidemiological planning workshops that aim to harmonize and synchronize transboundary disease control and surveillance will be held biannually. This will specifically aim at developing common surveillance and intervention strategies for certain diseases and synchronizing the approaches among countries sharing common boundaries. The approach will be of particular importance with respect to transhumance. Regular country to country or whole regions harmonization meetings will be held as need be and joint disease investigations carried out whenever possible. The OAU/IBAR and its various technical, and/or expert committees in collaboration with the relevant organizations/ agencies will be consulted in formulating disease control strategies based on technical feasibility and economic assessment reports. The same committees will oversee the Epidemiology and Economics Units in member countries test and analyze the strategies.

Pending the design of improved control strategies, the current control methods for CBPP which include strategic vaccinations, test, and slaughter of reactors, trace-back and livestock movement control will be used. CBPP vaccination will be done from GoK funds. It is planned that vaccination will be free during the first two years of the project, meanwhile, sensitisation on the need to pay for services will go on paving way for cost-recovery in the third year of the project. The cost-recovery for CBPP will be concurrently implemented on a pilot basis by the Government Veterinary Services and Private Practitioners who will have been offered sanitary mandates.

Regarding FMD, the immediate objective will be to determine disease distribution, strains involved, and trends in disease spread. It is proposed that this will be accomplished within the first two years of the project, thereafter control strategies will start being formulated.

4.2 The Kenya Government Recurrent Cost of Disease Surveillance

The Government financing on Recurrent Costs will include Votes on Disease and Pest Control, Foot and Mouth Disease, Veterinary Investigation Laboratories, Central Veterinary Laboratory, Provincial veterinary services, District Veterinary Services, Rabies Control and Veterinary Services in Pastoral Areas. The specific activities to be undertaken will be livestock movement control; disease surveillance; import control of livestock and livestock products; vaccination programs; and quarantines. The GoK will further spend Ksh. 16.5 million per year from the VSDF for operational cost of the above listed activities.

Table 4: Indirect Government Financing to the Project (KSh)

Head and Title	Year 1 (2000/1)	Year 2 (2001/2)	Year (2002/3)	Year 4 (2003/4)*	TOTAI
431. Provincial Veterinary Services	21,641,720	23,249,454	24,279,234		69,17(
432. District Veterinary Services	189,726,580	196,910,206	202,901,583		589,5:
448. Disease and Pest Control	211,533,477	230,204,642	240,105,606		581,3
551. Foot and Mouth Disease	14,485,700	15,817	17,256,589		47,55
552. Pastoral areas Veterinary Services	14,181,160	15,524,885	16,681,316		46,38
553. Rabies Control	6,898,540	7,529,397	7,934,300		22,36
481. Veterinary Investigation Laboratories	30,960,340	31,250,135	33,977,142		96,18
549 Central Veterinary Laboratory, Kabete	23,094,160	25,881,895	27,268,628		76,24
TOTAL	512,521,677	531,153,424	570,404,398		1,614,

*Medium Term Expenditure Framework (MTEF) covers 3 years.

Under MTEF budget provision, it is hard to increase or create new budget provisions. The total Gok contribution in cash will be Ksh.44,400.000 (Ksh. 3 million every year from VSDF towards running costs and 8,100,000 every year for staff salaries). Table 5 below shows the direct Government financing to the project.

Table 5: Government Financing for Recurrent Cost to PACE Kenya (KSh)

	Year 1	Year 2	Year 3	Year 4	Total
Enhanced national capacity	8,100,000	8,100,000	8,100,000	8,100,000	32,400,(
Control of other epizootics	3,000,000	3,000,000	3,000,000	3,000,000	12,000,(
Sub-total	11,100,00	11,100,000	11,100,000	11,100,000	44,400,(

4.3 Organisation and implementation procedures

The implementation procedures are described in detail in the PACE Manual of Procedures. A Technical and a Steering Committee to oversee the project's activities at the National level will be in place. It will meet four times a year. The steering committee will be composed of the following:

- The Director of veterinary services (chairman)
- EU representative
- National authorizing office
- Director, OAU/IBAR
- Regional epidemiologist/ sub-regional co-ordinator
- Chief veterinary field officer
- Chief veterinary investigation officer
- Deputy director, project management unit
- National co-ordinator, Kenya
- Technical Assistant
- Epidemiologist, Kenya.
- KWS, KARI and others will be co-opted as need be.

4.4 Programming, work plans and budgets procedures

The national PACE co-ordination will be responsible for implementation of the project. It will be supported as needed by the Nairobi based PACE co-ordination unit through its sub-regional co-ordinator. The official financial year extending from July to June will be followed. An annual work plan, budgets and cost estimate will be prepared before the end of February each year.

4.5 Reporting

Disease surveillance officers who will be based in the district veterinary offices will submit the newly designed monthly reports to the Director of Veterinary Services for the attention of the PACE Kenya Epidemiologist. A copy of the report will be given to the Provincial Directors of Veterinary Services and respective heads of VILs. Specific information concerning rumours or confirmed rinderpest outbreaks will have to be received within 24 hours. The National Co-ordinator/ Epidemiologist will in turn advise the DVS, CVFO/CVIO on urgent matters that need immediate attention. Otherwise, the National Co-ordinator will submit quarterly reports to the DVS and OAU/IBAR Co-ordination Unit. The DVS will continue with the production of National annual reports to be issued by March 31 each year at the latest. A standardized system of information will be implemented such that it will be compatible with the needs of GIS and the PACE UC systems. The data collected will be analyzed and discussed on an on-going basis.

4.6 Implementation Time Schedule

The project will be implemented over a period of 4 years from March 2001 to February 2005. Such a time period is sufficient to ensure that the main project assumptions are met (establishment and maintenance of an epidemiology network, review and

amendment of the veterinary legislation, eradication of rinderpest), the OIE pathway activities are implemented, and major epidemic diseases are assessed

4.7 Tentative Costs and Financing Plan

Tentative cost estimates for the project cover a 4-year period. The project's cost estimate is presented in Table 6. The estimated cost for PACE Kenya donor contributions is 3,980,154 EURO and GK contributions are 643,478 EURO., giving a total budget of 4,623,632 EURO. Annex III shows the Global 4 year budget. Bonuses for project staff are included in the budget. The payment of these bonuses will be pegged on performance criteria to be approved by Treasury and EU.

Table 6: EDF Financing of PACE-KENYA (KSH)

	Year 1	Year 2	Year 3	Year 4	Total
Enhanced national capacity	44,085,580	29,416,480	28.882,880	17,865,580	120,25(
Improved veterinary services	5,150,000	8,050,000	3,450,000	1,200,000	17,850,
Fight against rinderpest	40,587,500	20,592,500	19,192,500	19,192,500	99,565,
Control of other epizootics	2,900,000	2,900,000	2,900,000	2,900,000	11,600,
Sub-total	92,723,080	60,958,980	54,425,380	41,158,080	249,26
Contingencies 10%	9,272,308	6,095,898	5,442,538	4,115,808	24,926,
Total estimated expenditure	101,995,388	67,054,878	59,867,918	45,273,880	274,19

4.8 Special Conditions and Government Accompanying Measures

4.8.1 Special conditions

Necessary conditions for the successful implementation of the project should be fulfilled before project start up. They refer particularly to:

Privatization

The necessary legislation shall be undergoing review and amendments to secure a proper legal environment for the development of private veterinary services in the whole country.

Eradication of Rinderpest

The emergency campaign for eradication of rinderpest in Kenya will have been completed satisfactorily. Provided that the disease will not have been detected in the country, the Department of Veterinary Services will have declared zone I provisionally free from rinderpest and committed itself to follow the recommended OIE Pathway procedures until completion.

Coordinated Disease Control

Official decision will have been made regarding the implementation of cost-recovery along a schedule allowing for full cost-recovery for various diseases.

4.8.2 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 privatization process.
- Institution of a contingency plan for emergency preparedness to control epizootics.
- Preparation and approval of guidelines for instituting epidemio-surveillance programme.
- Utilization of only PANVAC certified RP thermostable vaccine in controlling the disease, while vaccines for other diseases (CBPP, FMD, CCPP) will be quality assured by the DVS and samples submitted to PANVAC occasionally for cross-checking.
- 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 Kenya.

V VIABILITY

5.1. Support Policies

Disease surveillance is funded under core functions in the Ministry of Agriculture and Rural Development. It is therefore argued that subject to the availability of funds over the years, disease surveillance activities will continue to be funded by the GK. Currently, arrangements are underway to create an independent Vote Head on Disease Surveillance. On this premise therefore, epidemiological and disease surveillance capacities and activities established under PACE will be sustained

Cost-recovery is accepted within the National Policy and will be implemented under the PACE – Kenya project. All the beneficiaries are aware of the Government Policy on cost-recovery pertaining to treatment of all animal diseases with the exception of rinderpest and CBPP. There will be no cost-recovery for rinderpest where vaccination will be taking place. Regarding CBPP, it is planned that vaccination will be free during the first three years of the project, meanwhile, sensitisation on the need to pay for services will go on paving way for cost-recovery in the fourth year of the project.

The Government is committed to reviewing and amending the veterinary legislation to create an enabling legal environment for improvement in the delivery of veterinary services.

5.2. Border Interaction and Activities to Harmonize Surveillance

PACE disease control in the region is based on confluent ecosystems across the national borders demanding continuous interaction between the countries at strategy planning, tactical and field operations' level.

Joint regional epidemiological planning workshops that aim to harmonize and synchronize transboundary and other major epidemics surveillance and control will be held biannually. This will specifically aim at developing common surveillance and intervention strategies for transbounary diseases and synchronizing the approaches among countries sharing common boundaries. The approach will be of particular importance among the nomadic pastoralists. In addition, regular country to country or whole regions harmonization meetings will be held as need be and joint disease investigations carried out whenever possible. Field officers at international borders will be encouraged and supported to establish and maintain communication with their counterparts in the neighboring countries. Quick and prompt communication through the PACE network and Regional Office for East Africa will be in place to provide information on the occurrence of diseases in time and space within the country.

5.3. Appropriate Technologies

The existing tools for the diagnosis and control of rinderpest are generally very efficient. The vaccine gives lifelong protection and the thermo-stable vaccine is of

reliable efficiency even when cold chain storage does not exist. Despite the non-availability of a validated easy field test, there is a range of reliable laboratory techniques to measure the level of antibodies, detect antigen, and isolate the virus. These technologies can be performed in Kenya. However cELISA and AGID cannot be entirely relied on with regard to lineage II virus.

Existing tools for CBPP diagnosis and control are on the other hand less efficient. The vaccine protects cattle for only up to 1 year. The antigen used for the Complement Fixation Test (CFT) diagnosis has a short validity period that makes it difficult to use in remote areas. The c- Elisa test for CBPP that would allow for multiple testing in a short period of time is not yet officially validated. Research is however going on elsewhere to improve these tools, notably under the auspices of OAU/IBAR, and a new vaccine with a longer immunization capability (up to 16 months) will soon be tested in the field, giving future hope for more efficient control.

5.4 The Laboratory Capacity to Provide Diagnostic Support in PACE

The department of veterinary services has two National Reference Laboratories (Kabete and Embakasi) and five Regional Veterinary Investigation Laboratories. There is also the National Veterinary Research Centre Muguga under KARI (it is also the Regional Reference Laboratory for rinderpest). Muguga and Kabete laboratories are equipped to carry out the most important diagnostic activities. Under PACE, it is intended that Kabete adopts the virus neutralization test in view of the limited sensitivity of both AGID and H-protein c ELISA for rinderpest field virus. Similarly, Kabete will adopt some differential diagnostic capacity for rinderpest. The latter may include virus neutralization test for PPR, agent identification for bovine viral diarrhea (BVD), virus neutralization, and immunofluorescent antibody (IFA) tests for malignant catarrhal fever (MCF) and AGID, ELISA and VNT for blue tongue
Lodwar satellite laboratory will be used as a surveillance base for Zone III, while Garissa laboratory will serve as base for Zone II. The project will provide them with some equipment and training to involve them in the epidemiological framework to be established.

5.5 Environment

Livestock rearing patterns in Kenya can roughly be described as twofold: commercially oriented in the high potential and settlement areas of central and western Kenya, and extensive under traditional production system in the pastoral areas to the North, East and South of the country. In both cases, project hypotheses are based on a stable herd size and maximal off take. Kenya has very active cattle market circuits often originating from its neighbors (Sudan, Ethiopia and Somalia mainly, but also to a more limited extent, Uganda and Tanzania) and is globally a net importer of live cattle. Prevention against the main epidemic diseases would not result in overstocking, but rather would allow for increased productivity to satisfy the internal demand. This would be in the form of increased herd off-take in the pastoral areas and increased performances of the individual animals in the mixed farming high potential and settlement areas.

In the settled areas, livestock is a factor of agriculture intensification. Animals provide manure and recycle agriculture waste and, through additional cash income, allow

investments for crop production and diversification. Livestock thus contribute to the long-term preservation of the productive potential of natural resources. A more rational use of drugs will prevent pollution of livestock products and slow down the development of drug-resistant microbial agents. By providing better security to livestock in terms of reduced microbial pressure, 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 health hazards to human beings. The control of epizootic diseases would also improve export potential, further guarding against over-stocking in pastoral areas.

5.6 Socio-Cultural Aspects: Women and Development

Accessible veterinary services are of frequent demand from the livestock owners, particularly in the low potential areas where competent veterinary professionals are scarcely available and where drugs can often be found only through informal circuits. Livestock is a community and family asset that provides security through cash income. The latter is used for family purposes (food, household goods, clothes, health, and education). An increase in productivity due to lesser disease pressure will result in an increase of the family revenue and will contribute to the improvement of living standards and offer financial security.

Women will benefit from the project activities because they are more receptive to family risks like health or death and to other family issues (marriage, children's education, day to day food preparation, etc.). In settled areas, where women often handle money accruing from milk and small stock sales, benefits will directly come from the project outputs. Increased income in the rural area will also give them access to other services (water sanitation, health) and household equipment, which may decrease the domestic workload.

5.7 Institutional and Management Capacity

The project will be implemented by the National PACE Co-ordinatior on behalf of the Director of Veterinary Services (DVS). In implementing the project, the Co-ordinatior will work very closely with the Epidemiology/ Economics Unit and the Communication Officer. The present PARC 'K" Epidemiology Unit will integrate with the Epidemiology and Economics Unit within the establishment to meet the additional human resources needed in Epidemiology and Economics. Personnel in the Extension Division at the headquarters will assist the Communication Officer and the Network of Veterinary Extension put in place during NEP II will be used to pass messages from the central ordination to the grass roots. Agricultural Information Center (AIC) will assist in production of radio messages. Provincial Directors of Veterinary Services (PDVS) in the 8 provinces will co-ordinate field activities alongside routine duties. There will be district disease surveillance and reporting officers (DDSROs) in high-risk districts who will implement and co-ordinate disease surveillance, including cross-border on behalf of the DVOs. High-risk districts are all the 8 districts in zone II and III namely, Mandera, Wajir, Garissa, Ijara, Tana River, Lamu, West Pokot, and Turkana. These districts are at high risk for rinderpest and are also incidentally endemic for CBPP and are, therefore, high priority districts for the PACE programme. Like in high-risk districts, there will be district disease surveillance officers in medium-risk districts. Medium-risk

districts are in zone I and border with high-risk districts and/or were previously at high risk for rinderpest and some are considered recently infected with CBPP. These districts are Kwale, Kilifi, Taita Taveta, Moyale, Marsabit, Isiolo, Mwingi, Kitui, Myambene, Tharaka Nthi, Makueni, Samburu, Trans-Mara, Narok, kajiado, Laikipia, Trans-Nzoia, Keiyo, Koibatek, Baringo, Kuria, and Migori. Border point disease surveillance officers will man all key international entry points (Elwak, Wajir Bor, Dif, Liboi, and Hulgo for Zone II and Lokichogio for zone III). The rest of the 32 districts in zone I are classified as low risk areas with respect to rinderpest and CBPP (except Narok, Kajiado and Transmara in Maasai area), and respective DVOs will therefore carry out disease surveillance alongside their other duties. Each of the VILs including CVL`Kabete and FMD laboratory Embakasi will have a disease surveillance and investigation officer, while key stock routes will be manned by stock-route surveillance officers. The DVS and KVB will manage the allocation of areas of operation for private practices. KWS will play the key role in wildlife diseases surveillance.

5.8 The Capacity of the Country to Implement the PACE Program

The country has a total of 8084 Veterinary Technical Personnel (VTP) equally distributed between public (employed by the department of veterinary services) and private sectors. Five hundred and seventy six (576) of the VTPs in public sector are veterinarians (at least hold a degree in veterinary medicine), 1202 are livestock officers (holders of diploma in animal health), 2173 are animal health assistants (holders of animal health certificate), and another 67 are laboratory technicians and technologists. The public service personnel are distributed across the country in the various divisions, a majority of whom are in the field and carry out disease control and surveillance activities. The pastoral low-lying areas (ASAL) are disadvantaged in terms of numbers; nonetheless, the department is well represented in all the districts in the country. Among the public service veterinarians, about 15% have undergone specialised training beyond the first degree. The private sector personnel are composed of 414 veterinarians and 3652 animal health assistants. They are distributed among pharmaceutical industry, private practice, NGOs, and the non- employed. A majority of the private practices are in the highlands and medium lying areas, with virtually none in the low-lying areas. More recently, Community Animal Health Workers (CAHWs) have complemented the work of public veterinary services, especially in the low-lying areas.

The Department of Veterinary Services has two National Reference Laboratories (Kabete and Embakasi), five regional veterinary investigation laboratories, and four satellite laboratories. There is also the National Veterinary Research Centre at Muguga under KARI (it is also the Regional Reference Laboratory for Rinderpest and *Mycoplasma mucoides* species). Muguga and Kabete laboratories are equipped to carry out the most important diagnostic activities, while Embakasi specialises in FMD. The regional investigation and satellite laboratories perform routine diagnoses. All the districts are headed by a District Veterinary Officer (DVO), while the provinces are headed by a Provincial Director of Veterinary Services (PDVS).

Most of the materials required to implement the PACE project are available from previous GoK development programs, Animal Health Rehabilitation Program, and PARC/EPERK. The list of materials and equipment to be carried forward from PARC/EPERK is given in PARC/EPERK final report. The DVS has a total of 388 vehicles distributed among the various divisions and sections countrywide. However,

most of these vehicles are more than 6 years old, making the cost of servicing and maintenance rather high. Field stations and laboratories are equipped with refrigerators, cool boxes, and deep freezers for preservation of specimens, sera/vaccines, and reagents. Some of the equipment are worn down and need replacement and/or servicing. In total, the DVS has 1118 cool boxes and 316 refrigerators /freezers. Laboratory glassware and consumables will be supplied according to need.

The project finance will be from donor funds (EDF) and GoK contribution as detailed elsewhere in this proposal document.

5.9 Financial and Economic Analysis

The PACE program approach is necessarily regional, particularly with regards to rinderpest and trans-boundary diseases whose control and eradication can only be envisaged through regional, continental or multinational strategies. The economic and financial justification for the activities that are needed for the implementation of these strategies thus can only be assessed through a regional approach.

The development of animal health delivery by private sector finds its justification through improvement of livestock productivity.
Trade in livestock and livestock products will be promoted within the region and between regions and thereby increase income. This will be made possible through epidemiosurveillance networks that will address animal health issues that constraint the development of livestock trade.

Sound decisions based on epidemiological and economic considerations will be made in the management of the national animal health programs in the face of diminishing GoK budgetary allocations.

Under the integrated disease control component there will be cost-recovery for all diseases by the time the project comes to an end. At the same time, the VSDF contribution towards disease surveillance will increase steadily and gradually over the years.

VI MONITORING AND EVALUATION

6.1 Monitoring indicators

The National Coordination office and the Project Management Division of the Department of Veterinary Services will monitor project activities. The performance indicators are detailed under section 4.1.3.

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 program'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. Consultants recruited by the Regional Authorizing Officer and the European Commission will carry out a mid-term independent technical evaluation.
- Members of the OAU/IBAR co-ordination unit will do regular evaluations, together with the National co-ordination.

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 the Logical Framework.

Annex I. LOGICAL FRAMEWORK OF KENYA PACE PROJECT

Intervention logic	Objectively verifiable Indicators	Means of Verification	Assumptions
'all objective ɔved animal production through :tive animal health care to ıre the availability of livestock animal products contributing to ɜrty alleviation and rural ɜlopment	By 2003, livestock mortalities are reduced significantly from the baseline levels of 2000/01 in selected priority epidemiological clusters. 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. 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 2000/01.	Veterinary Services Department census and statistical records. Socio-economic survey reports of the PACE Kenya economist. Market survey report.	
rpose engthened national capacity to n, implement, monitor and ıluate the control of epizootic eases with emphasis on private ɔtor participation.	By the end of Year 4, the DVS strategic plan is based upon up to date cost:benefit (C:B) studies of the control of epizootics, completed in relevant regions of Kenya, conducted between 2001 and 2003. By the end of Year 3 (2003), up to 25% of all government veterinary officers have each attended up to three	DVS strategic plan and C:B study reports. DVS statistics based on registration forms completed at each meeting.	Government funding is increased sufficiently in real terms, to maintain effective levels of animal disease surveillance and veterinary services. [Government budget]

	technical meetings to review the national emergency plan for the control of epizootic diseases.		
	Audited disbursement rates for EDF funds provided for annual work programmes are at least 80% of the provision, annually between 2001 and 2004.	Audit reports.	
	At least one representative of the DVS Kenya attends each meeting of the regional diagnostic network and submits reports to IBAR on schedule, throughout PACE.	IBAR reports	

Intervention logic	Objectively verifiable Indicators	Means of Verification	Assumptions
Results 1. Enhanced capacity of veterinary services to formulate cost-effective disease control strategies and to implement them	Epidemiology and economics units database analyses are reported regularly to district level staff. DVS 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. DVS reports Analysis of PACE programme records.	The majority of trained staff continue to work for the DVS and will support the execution of PACE. Communities are receptive of communication messages and are willing to cooperate. National epidemiological and surveillance network is kept functional and its running costs are met.
2. Private veterinary sector involvement in the delivery of animal health care promoted.	By the end of 2003, updated regulations related to the establishment of veterinary distributors[1] in outlying areas have been approved by the	Regulations.	Laws and regulations regarding animal diseases and the veterinary profession continue to be reviewed and amended to reflect the needed changes in

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

	Minister of Agriculture. By the end of 2003, Veterinary Board investigations reveal that government-employed veterinarians are not offering private veterinary services that compete with established veterinary practices in Kenya.	Veterinary Board annual report.	policy regarding animal health and the veterinary profession.

Intervention logic	Objectively verifiable Indicators	Means of Verification	Assumptions
3. Rinderpest verifiably eradicated from Kenya	OIE certifies that Kenya 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] DVS staff are sufficiently motivated to maintain adequate vigilance. [DVS reports]
4. Improved control of other epizootics, notably CPBB	Between 2000 and 2004, DVS representatives from each of Kenya's 8 provinces 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 DVS	DVS reports. DVS Scheduled diseases report file/register.	Complementary funding is available through VSDF to support surveillance activities.

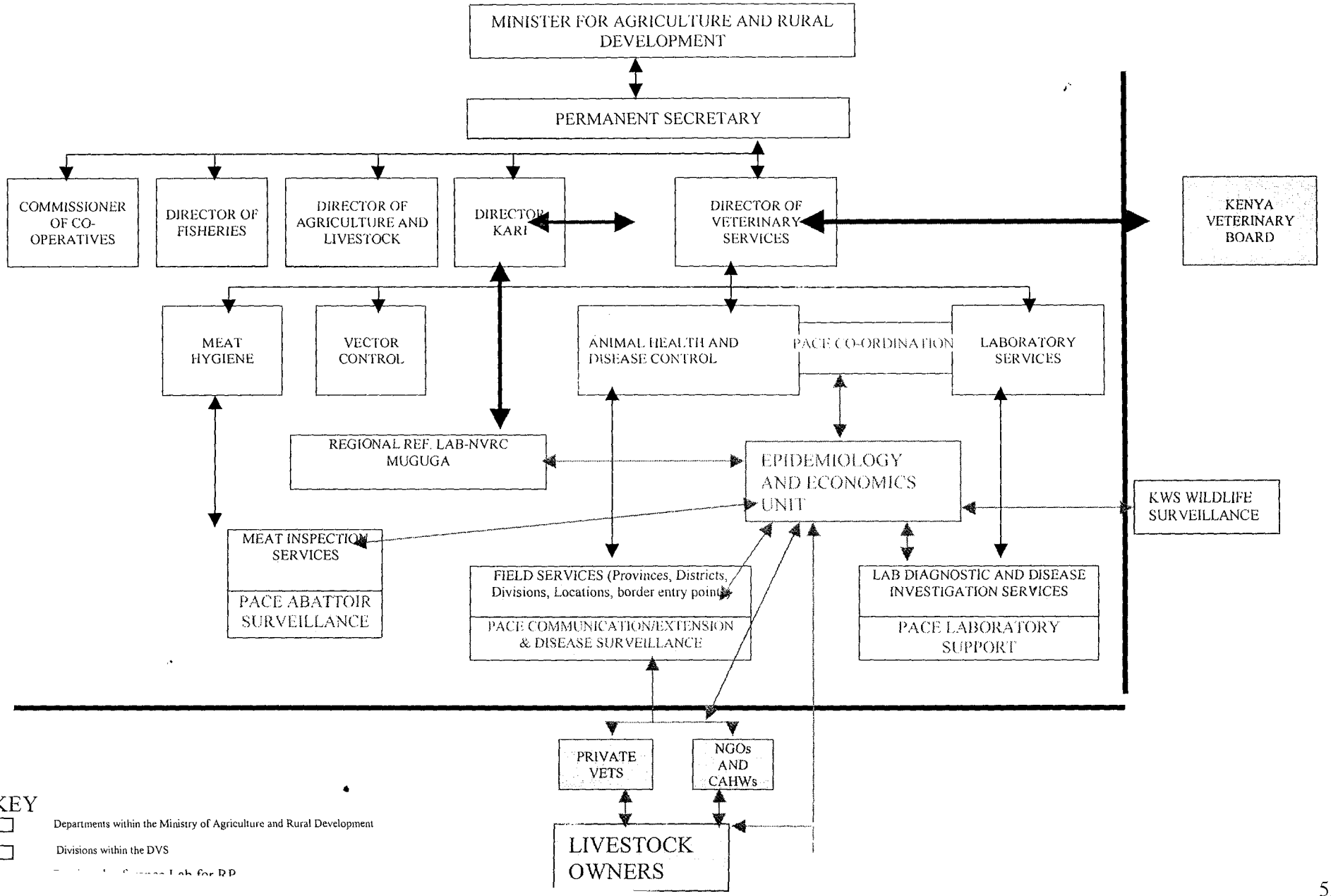
	headquarters within 7 days of the initial report.		
			Preconditions Timely availability of funds.

Annex II: Project Implementation Schedule

Activity	Project Year			
	1	2	3	4
Develop the Epidemiological Surveillance Unit	X	X	X	X
Provide local training	X	X	X	X
Develop national Emergency preparedness plan	X	X	X	X
Distribute Disease reports	X	X	X	X
Continue Disease surveillance	X	X	X	X
Establish diagnostic laboratory techniques for CBPP	X	X	X	X
Provide training	X	X	X	
Develop GIS and data management systems	X	X		
Conduct study tours related to OIE pathways for rinderpest eradication				
Participate in Epidemiology annual workshop	X	X	X	X
Develop and apply procedures for data collection, analysis and reporting	X	X	X	X
Maintain abattoir surveillance for CBPP	X	X	X	X
Procure equipment through tenders and local purchases	X	X	X	X
Establish computerized systems at DVS headquarters	X	X		
Participate in meetings and workshops to prepare protocols for socio-economic studies	X	X	X	X
Commission socio-economic studies and complete analyses	X	X	X	
Develop cost effective CBPP control programmes		X	X	X

Participate in regional workshops and meetings on such subjects as epidemiology, diagnostics, wildlife, economics, communications and regional co-ordination.	X	X	X	X
Involve private veterinarians in disease surveillance			X	X
Conduct field investigations of rinderpest and CBPP: Routine passive surveillance; Purposive surveillance; Random surveillance;	X	X	X	X
Maintain local laboratory diagnostic facilities	X	X	X	X
Dispatch specimens to World Reference Laboratory for analysis	X	X	X	X
Train CAHWs	X	X	X	X
Review legal framework	X			
Develop curriculum for CAHWs and TOT w/shops	X			
Release incremental guaranty fund		X		
Engage curriculum review consultant	X			
Engage part-time lecturer	X	X	X	X

ORGANOGRAM FOR THE MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT



DRAFT TERMS OF REFERENCE (TOR) FOR A TECHNICAL ASSISTANT

Job Title

Animal Disease Control Specialist

Qualifications and Experience

The ideal candidate must have a University degree in veterinary Medicine from a recognized university. Postgraduate training in veterinary epidemiology or epizootic disease control and project management would be an advantage. A minimum of 10 years experience in the control of epizootic diseases in Africa is a must, while having worked in East Africa would be an advantage. The successful candidate must have experience in design and management of projects related to animal health and production in Africa. Experience in design and implementation of disease surveillance and epidemiological database is highly desirable. Proficiency in English is essential, while working knowledge of Kiswahili and good interpersonal and communication skills would be advantageous. Conversance with E.C procurement procedures would be an added advantage.

Location

The successful candidate will be based in the PACE Kenya National Coordination Office, within the Department of Veterinary Services, Veterinary Research Laboratories Kabete, of the Ministry of Agriculture and Rural Development, Nairobi, Kenya.

Description

The Disease Control Specialist will be directly answerable to PACE (K) National Coordinator but may consult with the DVS, CVFO or CVIO at times. He/she will assist the PACE Kenya National Coordinator in the overall management, direction and consolidation of PACE activities. He/she will assist in the project implementation as scheduled and will routinely monitor and evaluate through regular selected missions, the activities being carried out in the field. The Animal Disease Specialist will play a pivotal role in the establishment and making operational active disease surveillance and emergency preparedness capacities. The specialist will assist the project epidemiologist in the overall management and outputs of the epidemiology and economics unit including diagnosis. He/she will assist the project epidemiologist in disease situation assessment and planning for priority disease among them RP, CBPP and FMD.

Specific duties and responsibilities are:

1. Assist the PACE National Coordinator in the implementation of all aspects of the project including management, field investigations, report preparation and management of the databases.

2. Assist in the eradication of RP in accordance with OIE pathway

3. Assist in the development and make operationalisation emergency preparedness for RP and other epizootics.

4. Assist in the development of disease surveillance formats and establishment of databases and in the provision of training thereof.

5. Assist in reviewing performance indicators for RP and other disease eradication, while at the same time ensuring that the set standards are met.

6. Assist in the establishment and implementation of the National surveillance and epidemiological system

7. Assist in carrying out training needs assessment and actively participates in the project's training activities.

8. Assist in the development and institutionalization of the capacity to perform economic impact assessment of animal diseases and their control programmes.

9. Assist to develop links with epidemiological and related animal health components in other projects and with regional and international bodies.

10. Assist in developing mechanisms to incorporate herders, CAHWs, NGOs and private veterinarians into the national passive and active animal disease reporting system.

11. Assist in drafting national, economically sound control strategies for priority disease starting with CBPP and FMD.

12. Prepare reports on a quarterly basis and a terminal one and any progress review reports as may be required.

13. Assist in liaising with EC office in Nairobi and in procurement for the project.

14. Perform any other duties as may be found necessary in the course of the project implementation.

15. Assist in project monitoring and evaluation.

16. Be a member of PACE Kenya steering committee.

1.1.1	Personnel													
	11101 – Technical assistant	M/Yr	3	8,400,000	25,200,000		8,400,000		8,400,000		8,400,000			
	11102 – Messenger	M/Yr	4	72,000	288,000		72,000		72,000		72,000		72,000	
	11103 - Mechanic	M/Yr	4	144,000	576,000		144,000		144,000		144,000		144,000	
	11104 – Staff bonus	Year	4	2,218,880	8,875,520		2,218,880		2,218,880		2,218,880		2,218,880	
	11105 – Salaries	Year	4	1,080,000		4,320,000		1,080,000		1,080,000		1,080,000		1
					34,939,520	**4,320,000**	**10,834,880**	**1,080,000**	**10,834,880**	**1,080,000**	**10,834,880**	**1,080,000**	**2,434,880**	**1**
1.1.2	Equipment													
	11201 – UPS	Unit	3	13,000	39,000		39,000							
	11202 – Fax Machine	Unit	1	12,000	12,000		12,000							
	11203 – Telephone	Unit	1	5,000	5,000		5,000							
	11204 – Chair	Unit	3	12,000	36,000		36,000							
	11205 – Desk	Unit	3	15,000	45,000		45,000							
	11206 – Software for Acc. & M & E	Unit	1	350,000	350,000		350,000							
	11207 – Purchase of Vehicles	Unit	1	2,500,000	2,500,000		2,500,000							
					2,987,000		**2,987,000**							
1.1.3	Running Costs													
	11301 – In country travel	Year	4	600,000	2,400,000		600,000		480,000		660,000		660,000	
	11302- Fuel operating costs	Year	4	330,000	1,320,000		330,000		264,000		363,000		363,000	
	- Repairs and maintenance	Year	4	237,125	948,500		150,000		120,000		229,000		449,500	
	11303 – Committee meetings	Year	4	12,000	48,000		12,000		9,600		13,200		13,200	
	11304 – Office costs	Year	4	240,000	960,000		240,000		192,000		264,000		264,000	
	11305 – Telephone	Year	4	240,000	960,000		240,000		192,000		264,000		264,000	
	11306 – Border harmonisation meetings	Year	4	664,500	2,650,800		663,000		530,000		728,800		729,000	
	11307 – OAU/IBAR Regional meetings	Year	4	406,000	1,624,000		280,000		224,000		560,000		560,000	
	11308 – Annual workplan workshop	Year	4	112,500	450,000		112,500		90,000		123,750		123,750	
	11309 – Training needs assessment	Year	1	750,000	750,000		750,000							
	11310 – Other training	Year	4	50,000	200,000		50,000		40,000		55,000		55,000	
	11311 – Renovation of offices	Year	1	200,000	200,000		200,000							
	11312 – Insurance for project equipment	Year	4	250,000	1,000,000		250,000		250,000		250,000		250,000	
					13,511,300		**3,877,500**		**2,391,600**		**3,510,750**		**3,731,450**	
	Subtotal National Co-ordination Unit				**51,437,820**	**4,320,000**	**17,699,380**	**1,080,000**	**13,226,480**	**1,080,000**	**14,345,630**	**1,080,000**	**6,166,330**	**1**
1.2	**Communication Unit**													
1.2.1	Personnel													
	12102 – Salaries	Year	4	540,000		2,160,000		540,000		540,000		540,000		
						2,160,000		**540,000**		**540,000**		**540,000**		
1.2.2	Equipment													
	12201 – Copy printer	Unit	1	500,000	500,000		500,000							
	12202 – Colour drum	Unit	2	80,000	160,000		160,000							
	12203 – Guillotine	Unit	1	30,700	30,700		30,700							
	12204 – Spiral binder	Unit	1	45,800	45,800		45,800							
	12205 – Public address system	Unit	1	20,000	20,000		20,000							
	12206 – Desk	Unit	1	15,000	15,000		15,000							
	12207 – Chair	Unit	1	12,000	12,000		12,000							
	12208 – Vehicle	Unit	1	2,500,000	2,500,000		2,500,000							
	12209 – Computer (Laptop)	Unit	1	200,000	200,000		200,000							

	12301 – In country travel	Year	4	102,000	408,000		102,000		102,000		102,000		102,000
	12302 – Comm (Tel, e-mail)	Year	4	120,000	480,000		120,000		120,000		120,000		120,000
	12303 – Office supplies	Year	4	120,000	480,000		120,000		120,000		120,000		120,000
	12304 – Vehicle - Fuels	Year	4	435,000	1,740,000		435,000		435,000		435,000		435,000
	- Repairs and maintenance	Year	4	150,000	600,000		150,000		150,000		150,000		150,000
	12305 - Produce radio messages	Year	4	680,000	2,720,000		680,000		680,000		680,000		680,000
	- Air radio messages	Year	4	1,500,000	6,000,000		1,500,000		1,500,000		1,500,000		1,500,000
	12306 – Print - Prod./ print meses	Year	2	2,022,000	4,044,000		2,022,000		2,022,000				
	- Release press items	Year	4	200,000	800,000		200,000		200,000		200,000		200,000
	12307 – Training of trainers	Year	1	136,000	136,000		136,000						
	12308 – Training in Communication skills	Year	1	66,000	66,000		66,000						
	12309 – Community sensitisation	Year	4	750,000	3,000,000		750,000		750,000		750,000		750,000
	12310 – Comm. tools for frontline staff	Year	4	220,500	882,000		220,500		220,500		220,500		220,500
	12311 – M & evaluation of ext. training	Year	4	150,000	600,000		150,000		150,000		150,000		150,000
	12312 – Annual regional comm w/shop	Year	4	280,000	1,120,000		280,000		280,000		280,000		280,000
	12313 - Training extension workers	Year	1	300,000	300,000		300,000						
	12314 - Drama and cultural activities	Year	2	100,000	200,000		100,000		100,000				
					23,778,000		**7,382,000**		**6,880,000**		**4,758,000**		**4,758,000**
	Subtotal Communication Unit				**27,261,500**	**2,160,000**	**10,865,500**	**540,000**	**6,880,000**	**540,000**	**4,758,000**	**540,000**	**4,758,000**
1.3	**Epidemiology and Economics**												
1.3.1	Personnel												
	13101 – Staff salaries	Year	4	1,080,000		4,320,000		1,080,000		1,080,000		1,080,000	
	13104 – Computer technician	M/Yr	4	300,000	1,200,000		300,000		300,000		300,000		300,000
	13105 – Driver	M/Yr	4	144,000	576,000		144,000		144,000		144,000		144,000
	13106 – Messenger	M/Yr	4	72,000	288,000		72,000		72,000		72,000		72,000
					2,064,000	**4,320,000**	**516,000**	**1,080,000**	**516,000**	**1,080,000**	**516,000**	**1,080,000**	**516,000**
1.3.2	Equipment												
	13201 – Vehicle	Unit	1	2,500,000	2,500,000		2,500,000						
	13202 – Desk Top Computer	Unit	3	200,000	600,000		400,000				200,000		
	13203 – Lap Top Computer	Unit	1	200,000	200,000		200,000						
	13204 – Computer project and screen	Unit	1	750,000	750,000		750,000						
	13205 – GPS	Unit	20	15,000	300,000		300,000						
	13206 – GIS software	Unit	1	525,200	525,200		525,200						
	13207 – E-mail installation/ Inter-netting	Unit	1	50,000	50,000		50,000						
	13208 – Tel Instal & accessories	Unit	1	25,000	25,000		25,000						
	13209 – Software and databases	Unit	12	25,000	300,000		100,000		100,000		100,000		
	132010 – Chair	Unit	3	12,000	36,000		36,000						
	13211 – Desk	Unit	3	15,000	45,000		45,000						
	13212 – Office Renovation	Year	1	200,000	200,000		200,000						
					5,531,200		**5,131,200**		**100,000**		**300,000**		
1.3.3	Running costs												
	13301 – In country travel	Year	4	1,080,000		4,320,000		1,080,000		1,080,000		1,080,000	
	13302 – Transport fuels	Year	4	920,000		3,680,000		920,000		920,000		920,000	
	- Vehicle repairs	Year	4	470,000	1,880,000		470,000		470,000		470,000		470,000
	13303 – Office stationery	Year	4	700,000		2,800,000		700,000		700,000		700,000	
	13304 – Comm (Tel & E-mail)	Year	4	300,000		1,200,000		300,000		300,000		300,000	
	13305 – Servicing of equipment	Year	4	100,000	400,000		100,000		80,000		110,000		110,000

	13306 – Committee running	Year	4	150,000	600,000		150,000		120,000		165,000		165,000
	13307 – Bi-annual epid. Workshop	Year	4	280,000	1,372,000		280,000		224,000		308,000		560,000
	13308 – PRA techniques	Year	1	250,000	250,000		250,000						
	13309 – GIS techniques & Consul.	Year	1	750,000	750,000		750,000						
	13310 – Regional economic w/shops	Year	4	280,000	1,120,000		280,000		224,000		308,000		308,000
	13311 – Wildlife dse mon. w/shop	Year	4	87,500	350,000		87,500		70,000		96,250		96,250
	13312 - International Wildlife meetings	Year	4	250,000	1,000,000		250,000		250,000		250,000		250,000
	13313 – Disease reporting w/shops	Year	3	1,845,000	5,535,000		1,845,000		1,845,000		1,845,000		
	13314- Disease surveillance w/shops	Year	3	945,000	2,835,000		945,000		945,000		945,000		
					16,092,000	**12,000,000**	**5,407,500**	**3,000,000**	**4,228,000**	**3,000,000**	**4,497,250**	**3,000,000**	**1,959,250**
	Sub total Epidemiology Unit				**23,687,200**	**16,320,000**	**11,054,700**	**4,080,000**	**4,844,000**	**4,080,000**	**5,313,250**	**4,080,000**	**2,475,250**
1.4	**Support to Field Offices**												
1.4.1	Personnel												
	14101 – Staff salaries	Year	4	5,400,000		21,600,000		5,400,000		5,400,000		5,400,000	
						21,600,000		**5,400,000**		**5,400,000**		**5,400,000**	
1.4.2	Equipment												
	Nil												
1.4.3	Running costs												
	14301 – In country travel	Year	4	1,250,000	5,000,000		1,250,000		1,250,000		1,250,000		1,250,000
	14302 – Transport fuels	Year	4	940,000	3,760,000		940,000		940,000		940,000		940,000
	- Transport repairs	Year	4	250,000	1,000,000		250,000		250,000		250,000		250,000
	14303 – Office costs	Year	4	936,000	3,744,000		936,000		936,000		936,000		936,000
	14304 – Comm. (Tel, Fax)(+-30 districts0	Year	4	1,090,000	4,360,000		1,090,000		1,090,000		1,090,000		1,090,000
					17,864,000		**4,466,000**		**4,466,000**		**4,466,000**		**4,466,000**
	Sub-total Support to Field Offices				**17,864,000**	**21,600,000**	**4,466,000**	**5,400,000**	**4,466,000**	**5,400,000**	**4,466,000**	**5,400,000**	**4,466,000**
	Total for Support to Gov. Services				**120,250,520**	**44,400,000**	**44,085,580**	**11,100,000**	**29,416,480**	**11,100,000**	**28,882,880**	**11,100,000**	**17,865,580**
2	**Privatization & Pub/Private Linkage**												
2.1	S/holder consul. W/shops & legal review												
2.1.1	Personnel												
	Nil												
2.1.2	Equipment												
	Nil												
2.1.3	Running costs												
	21301 – Legal review & subsidiary leg.	Year	2	1,500,000	3,000,000		1,500,000		1,500,000				
	21302 – Policy review	Year	2	600,000	1,200,000		600,000		600,000				
	21303 – Create awareness	Year	3	750,000	2,250,000		750,000		750,000		750,000		
					6,450,000		**2,850,000**		**2,850,000**		**750,000**		
	S/total S/holder Consult. & legal review				**6,450,000**		**2,850,000**		**2,850,000**		**750,000**		
2.2	Private Vets & others in Dse Surv.												
2.2.1	Personnel												
	22101 – Bonuses for Dse reporting	Year	4	200,000	1,000,000		200,000		200,000		200,000		200,000
					1,000,000		**200,000**		**200,000**		**200,000**		**200,000**

	22301 – Farmer/S/holder participation	Year	3	1,500,000	4,500,000		1,500,000		1,500,000		1,500,000		
	22302 – Supervise Private Sector	Year		600,000	2,400,000		600,000		600,000		600,000		600,000
					6,900,000		**2,100,000**		**2,100,000**		**2,100,000**		**600,000**
	S/total Private Vets & others D'se Surv.				**7,900,000**		**2,300,000**		**2,300,000**		**2,300,000**		**800,000**
2.3	Distribution of Vet. Medicines												
2.3.1	Personnel												
	Nil												
2.3.2	Equipment												
	23201 – Vehicle for KVB Drugs insp.	Unit	1	2,500,000	2,500,000				2,500,000				
					2,500,000				**2,500,000**				
2.3.3	Running costs												
	23301 – In country trav/ drugs insp.	Year	3	150,000	450,000				150,000		150,000		150,000
	23302 – Transport fuels	Year	3	150,000	450,000				150,000		150,000		150,000
	- Transport repairs	Year	3	100,000	300,000				100,000		100,000		100,000
					1,200,000				**400,000**		**400,000**		**400,000**
	S/total Dev. & strength. vet. Med.				**3,700,000**				**2,900,000**		**400,000**		**400,000**
	Total Priv and Public/Private Sector				**17,850,000**		**5,150,000**		**8,050,000**		**3,450,000**		**1,200,000**
3	**Rinderpest Eradication**												
3.1	Personnel												
	3101 – Staff salaries (See 14101)												
3.2	Equipment												
	3201 – Refrigeration	Year	1	1,525,000	1,525,000		1,525,000						
	3202 – Sampling equipment	Year	4	750,000	3,000,000		750,000		750,000		750,000		750,000
	3203 – Laboratory equipment	Year	2	500,000	1,000,000		500,000		500,000				
	3204 – D/ freezers for serum bank	Unit	2	160,000	320,000		320,000						
	3205 – Purchase vehicles	Unit	4	2,500,000	10,000,000		10,000,000						
	3206 – Rehabilitation of Vehicles	Unit	13	300,000	3,900,000		3,000,000		900,000				
	3207- Equip Garissa lab	unit	1	0	0		3,000,000						
	3208 - Purchase of motorb,(14 distr.)	Unit	14	300,000	4,200,000		2,700,000						
					23,945,000		**21,795,000**		**2,150,000**		**750,000**		**750,000**
3.3	Running costs												
	3301 – In country travel	Year	4	6,572,500	26,290,000		6,572,500		6,572,500		6,572,500		6,572,500
	3302 – Transport fuels	Year	4	3,035,000	12,140,000		3,035,000		3,035,000		3,035,000		3,035,000
	- Transport repairs	Year	4	2,000,000	8,000,000		2,000,000		2,000,000		2,000,000		2,000,000
	3304 – Consumables	Year	4	2,000,000	8,000,000		2,000,000		2,000,000		2,000,000		2,000,000
	3305 – Committee running costs	Year	4	250,000	1,000,000		250,000		250,000		250,000		250,000
	3306 – Adpt Diff. R/pest techniques	Year	1	350,000	350,000		350,000						
	3307 – Comm. (Tel &Fax)	Year	4	100,000	400,000		100,000		100,000		100,000		100,000
	3308 - Random Dse Survey												
	Per diem	Year	4	2,000,000	8,000,000		2,000,000		2,000,000		2,000,000		2,000,000
	Transport Fuels	Year	4	785,000	3,140,000		785,000		785,000		785,000		785,000
	Transport repairs	Year	4	400,000	1,600,000		400,000		400,000		400,000		400,000
	3309 – Other training	Year	4	100,000	400,000		100,000		100,000		100,000		100,000
	3310 - Wildlife disease surveillance	Year	4	2,700,000	2,700,000		1,200,000		1,200,000		1,200,000		1,200,000

					72,020,000		18,792,500		18,442,500		18,442,500		18,442,500	
	Sub-total Rinderpest				99,565,000		40,587,500		20,592,500		19,192,500		19,192,500	
4	CBPP & other Epizootics asse & cont													
4.1	Personnel													
	4101 – Staff salaries (See 14101)													
4.2	Running costs													
	4301 – In country travel	Year	4	700,000	2,800,000		700,000		700,000		700,000		700,000	
	4302 – Transport fuels	Year	4	600,000	2.400,000		600,000		600,000		600,000		600,000	
	- Transport repairs	Year	4	400,000	1,600,000		400,000		400,000		400,000		400,000	
	4303 – Abattoir surveillance	Year	4	500,000	2,000,000		500,000		500,000		500,000		500,000	
	4304 – Lab. consumables	Year	4	500,000	2,000,000		500,000		500,000		500,000		500,000	
	4305 – Antigen Std training	Year	1	200,000	800,000		200,000		200,000		200,000		200,000	
					11,600,000		2,900,000		2,900,000		2,900,000		2,900,000	
	Sub-total CBPP & Other Epizootic				11,600,000		2,900,000		2,900,000		2,900,000		2,900,000	
	TOTAL				249,265,520	44,400,000	92,723,080	11,100,000	60,958,980	11,100,000	54,425,380	11,100,000	41,158,080	
	10% CONTINGENCY				24,926,552		9,272,308		6,095,898		5,442,538		4,115,808	
	GRAND TOTAL				274,192,072	44,400,000	101,995,388	11,100,000	67,054,878	11,100,000	59,867,918	11,100,00	45,273,888	