



**New Partnership for  
Africa's Development (NEPAD)  
Comprehensive Africa Agriculture  
Development Programme (CAADP)**



**Food and Agriculture Organization  
of the United Nations  
Investment Centre Division**

## **GOVERNMENT OF THE REPUBLIC OF ZIMBABWE**

### **SUPPORT TO NEPAD–CAADP IMPLEMENTATION**

**TCP/ZIM/2905 (I)  
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**Volume VI of VII**

### **BANKABLE INVESTMENT PROJECT PROFILE**

**Livestock Disease Control**

*November 2004*



## **ZIMBABWE: Support to NEPAD–CAADP Implementation**

**Volume I: National Medium–Term Investment Programme (NMTIP)**

*Bankable Investment Project Profiles (BIPPs)*

**Volume II: Agro–Dealer Network Development**

**Volume III: Smallholder Irrigation Development**

**Volume IV: Rehabilitation of Smallholder Irrigation Schemes**

**Volume V: Increased Crop Production and Diversification**

**Volume VI: Livestock Disease Control**

**Volume VII: Livestock Feeds Processing**



## NEPAD–CAADP BANKABLE INVESTMENT PROJECT PROFILE

**Country:** Zimbabwe

**Sector of Activities:** Livestock

**Proposed Project Name:** **Livestock Disease Control Project**

**Project Location:** National

**Duration of Project:** 5 years

**Estimated Cost:** Foreign Exchange ..... US\$31.3 million  
Local Cost..... US\$22.2 million  
**Total ..... US\$53.5 million**

**Suggested Financing:**

<i>Source</i>	<i>US\$ million</i>	<i>% of total</i>
<i>Government</i>	5.4	10
<i>Financing institution(s)</i>	32.1	60
<i>Beneficiaries</i>	5.4	10
<i>Private sector</i>	10.6	20
<i>Total</i>	<b>53.5</b>	<b>100</b>



**ZIMBABWE:**  
**NEPAD–CAADP Bankable Investment Project Profile**  
*“Livestock Disease Control”*

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### Abbreviations

BVI	Botswana Vaccine Institute
CAADP	Comprehensive Africa Agriculture Development Programme
CVL	Central Veterinary Laboratory
DVS	Department of Veterinary Services
DVTS	Department of Veterinary Technical Services
ELISA	Enzyme Linked Immuno-sorbent Assay
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GOZ	Government of Zimbabwe
MARD	Ministry of Agriculture and Rural Development
NEPAD	New Partnership for Africa’s Development
NGOs	Non-governmental Organizations
NMTIP	National Medium-Term Investment Programme
OIE	Office International des Epizooties
PSIP	Public Sector Investment programme
PY	Project Year
SADC	Southern African Development Community
TA	Technical Assistance
TTCB	Tsetse and Trypanosomiasis Control Branch
UZ	University of Zimbabwe
WHO	World Health Organization of the United Nations
ZAPF	Zimbabwe Agricultural Policy Framework



## I. PROJECT BACKGROUND

### A. Project Origin

I.1. This project originated from the *Department of Veterinary Services* (DVS) of the *Ministry of Agriculture and Rural Development* (MARD). It is a result of ongoing and concerted efforts by the Government of Zimbabwe (GOZ) to improve and increase livestock production and productivity as a means of increasing food security, rural incomes and export earnings. Animal disease is seen as one of the major impediments to the growth and development of the livestock subsector. The immediate origin of the project is the national stakeholders workshop held in Harare in March 2004 to validate the NEPAD–CAADP *National Medium–Term Investment Programme* (NMTIP) for the agriculture sector. The workshop identified animal disease as one of the priority areas for intervention and recommended it as one of the topics in which a bankable investment project should be formulated.

I.2. ***The Agricultural Sector.*** Agriculture is the backbone of the Zimbabwe’s economy. Although, on average, agriculture contributes only 18% of GDP, the sector is important because it provides food for the populace, is a source of livelihood to about 70% of the national population, provides about 60% of raw materials for industry and contributes about 45% to the country’s export earnings. Zimbabwe has a total land area of over 39 million ha, of which 33 million ha are used for agriculture purposes. The remaining 6 million ha have been reserved for national parks and wild life and for urban settlements. The major agricultural commodities produced are:

- food crops (maize, wheat, sorghum and millets);
- oilseed and industrial crops (soyabeans, groundnuts, sunflower)
- export crops (tobacco, cotton, sugarcane, tea, coffee paprika, floriculture, citrus, horticulture); and
- livestock products (beef cattle, dairy, poultry, goats, sheep and pigs).

I.3. ***The Livestock Subsector.*** Like in the rest of Southern Africa, livestock plays an important part in the life of many Zimbabweans. Livestock products contribute about 25% of value of agricultural output in all farming sectors. The subsector contributes about 4% of the country’s GDP. Beef accounts for over 70% of domestic consumption of marketed meat followed by poultry products, pig meat and small ruminant meat. Livestock, particularly cattle, are an integral part of the smallholder farming system in which production of beef is of lower priority to the provision of draught power and milk for subsistence consumption. Small ruminants (sheep and goats) and non-ruminants (pigs and poultry) are far less important than cattle in the lives of people in smallholder areas and are reared primarily to provide a source of meat and cash. On the other hand, the commercial sector is the major source of meat and dairy products sold through formal marketing channels.

I.4. The national herd is currently composed of about 5.3 million cattle, 3.3 million goats, 515,000 sheep, 419,000 pigs, 40 million chickens and 800 ostriches. Smallholder farmers own over 70% of the cattle, 99% of goats, 85% of sheep, 60% of pigs and almost all donkeys in the country. The bulk of the poultry population is in the smallholder sector in which over 96% of households own poultry, with average flock sizes of 15–20 birds. Trends in livestock populations since 1980 are shown in Table 1 (note that no data for 1996 are available).

**Table 1: Livestock Population Estimates (1980–2003)**

Year	Livestock type ('000 head)			
	Cattle	Goats	Sheep	Pigs
1980	5,279	982	387	132
1981	5,286	1,243	469	193
1982	5,692	904	401	184
1983	5,546	1,071	399	180
1984	5,465	1,508	430	178
1985	5,499	1,624	569	171
1986	5,783	1,986	–	–
1987	5,918	2,162	567	216
1988	5,805	2,317	671	238
1989	5,850	2,368	569	304
1990	6,218	2,564	592	289
1991	6,374	2,539	584	305
1992	5,914	2,545	485	278
1993	5,020	2,297	416	240
1994	5,140	4,471	436	232
1995	4,992	5,001	435	264
1996	–	–	–	–
1997	4,890	2,883	510	229
1998	5,668	2,953	603	287
1999	6,069	2,910	640	279
2000	6,186	3,804	691	340
2001	6,432	3,779	635	314
2002	5,241	3,380	643	184
2003	5,297	3,276	515	419

Source: Dept. of Veterinary Services, *CSO Statistical Yearbook*, 1997.

I.5. More than 70% of Zimbabwe is pastoral land, well suited to the raising of livestock. Commercial livestock farming has been on the decline during the recent years because it was mainly concentrated in the hands of White commercial farmers who have left their farm holdings as part of the ongoing land reform programme. However, DVS believes that this has not significantly affected the size of the national herd as most of the livestock on former commercial farms have been purchased by farmers in communal lands or by new settlers.

I.6. The main cattle breeds are the indigenous Mashona, Nguni and Tuli and the exotic Brahman, Simmental, Hereford, Sussex, Aberdeen Angus, Beefmaster, Limousin, Charolais, Holstein–Friesian and the Jersey. For goats, the main breeds are the indigenous Matabele and Mashona types as well as the South African Boer. For sheep, the indigenous strains are by far the most common in the smallholder sector, while the Dorper is the most common exotic breed in commercial farms followed by the Mutton Merino and other breeds. The major pig breeds in the commercial sector are the exotic Landrace, the Large White, the Duroc and the recently introduced Dalland. The indigenous Mukota pig is the dominant breed in the smallholder communal sector. The indigenous birds constitute over 90% of the poultry population in the country but commercial poultry production in both the large and smallholder sectors is based on exotic hybrids.

## **B. Animal Diseases**

I.7. Foot-and-mouth disease (FMD) is the most important livestock disease in Zimbabwe. Currently about 4 million cattle are considered to be at high risk and in need of vaccination. The disease affects the production and productivity of cattle and is the major cause of reduced export markets for both live animals and cattle products. The control of FMD is based on dividing the country into different FMD status zones, erection of fences as barriers to prevent contact of cattle with buffalo, use of the permit system to control livestock movement, quarantine of animals in affected or suspected areas and preventive vaccination.

I.8. FMD control has always been top priority in Zimbabwe because of the need to maintain lucrative export markets. Budgetary allocations for fence construction, vehicles and vaccines bear testimony to government's commitment to the control of the disease. In July 2003, Cabinet approved a strategy for the control of FMD. The strategy focuses on the procurement of vaccines and vehicles, rehabilitation of FMD barrier fences (the DVS currently maintains 500 km of buffalo and cattle fences nationwide), public awareness of FMD and encouraging community participation. FMD vaccine is budgeted for annually under the GOZ Recurrent Budget. In the 2004 recurrent budget, some Z\$8 billion has been allocated for the purchase of the FMD vaccine. However, the vaccine is imported from the *Botswana Vaccine Institute* (BVI) and because of the current shortages of foreign exchange, vaccine procurement has been erratic and this has adversely affected the FMD control programme.

I.9. Tsetse-transmitted trypanosomiasis is also a major livestock disease in Zimbabwe. Infected cattle experience morbidity, have reduced productivity and cannot be used as draught animals. The cost of treating the animals is also high and most farmers cannot afford the curative drugs. The Zimbabwean government has adopted vector control as the main method of controlling the disease. The *Tsetse and Trypanosomiasis Control Branch* (TTCB) of DVS has an extensive network of field stations strategically located to carry out control operations in the infested areas of the country. The Branch's Headquarters in Harare has a mapping office and a laboratory that could be upgraded to meet the high demand.

I.10. The country experiences other major outbreaks of infectious diseases like blackleg, anthrax, Newcastle, lumpy skin and Brucellosis. These outbreaks can be prevented by vaccinating cattle and poultry populations.

## **C. Government Policy**

I.11. The long-term policy objectives for the agricultural sector as a whole are set out in the *Zimbabwe Agricultural Policy Framework* (ZAPF), 1995–2020. Although there is no written livestock policy blueprint, the Framework envisages an expansion of livestock output through growth in production and increased smallholder participation in marketing of livestock and livestock products. The major objectives as stated in the Framework are to:

- increase the national cattle herd through breeding and implementing sustainable grazing systems, particularly in smallholder farming sector;
- increase milk production primarily by developing viable smallholder dairy schemes to meet both urban and rural milk requirements; and
- achieve greater production of other livestock categories (sheep, goats, pigs, poultry, etc.) in order to increase family farm incomes, particularly on smallholder farms.

#### D. Constraints and Opportunities

I.12. Major *constraints* faced by the livestock subsector include:

- Animal diseases, particularly FMD, trypanosomiasis and Newcastle.
- Insufficient grazing resources and the high cost of animal feeds.
- Periodic water shortages resulting from drought conditions.
- Low productivity in the traditional farming sector.
- Stock thefts.
- Inadequate marketing infrastructure.
- Foreign exchange shortages which have restricted the imports of essential veterinary drugs (including vaccines and reagents), equipment, vehicles and fencing materials.
- Deteriorating extension delivery because of insufficient GOZ budgets.
- An overall difficult macro-economic environment for undertaking viable livestock and other related agricultural activities.

I.13. Major *opportunities* include the following:

- There is a long tradition of keeping livestock in most households.
- Local and export markets are available for Zimbabwe’s livestock products.
- A surplus livestock product processing capacity exists in public and private sector enterprises.

#### E. Institutions

I.14. The following are the main institutions involved in the livestock subsector:

- The *MARD* sets policy and regulations for the subsector, coordinates activities, provides disease surveillance and control strategies, provides extension support to farmers, laboratory-testing services through the Central Veterinary Laboratory (CVL), and carries out animal health research.
- The *Cold Storage Company* with extensive infrastructure for livestock product processing.
- The *private sector enterprises*, consisting of feed manufacturers, abattoir operators and agro-chemical suppliers. These are involved in livestock farming, extension, processing and marketing.
- The *University of Zimbabwe (UZ)* is involved in animal health and production training and in research on brucellosis. Other universities and colleges are also involved in general livestock training and research.
- *Non-governmental Organisations* which are involved in facilitating rural inputs supply, marketing, credit and extension/training.

## F. Ongoing and Planned Development Projects in Animal Health

I.15. A number of other donor-supported development projects were halted following suspension of financial disbursements by some donors/lenders because of GOZ non-payment of loan arrears and (for some) because political differences with GOZ. However, GOZ has continued to support some development projects from its own resources under the Public Sector Investment Programme (PSIP).

I.16. Ongoing and planned operations include:

- GOZ programmes: In 2003, the government spent US\$1.5m on vaccine procurement. Towards the end of 2003, DVS was allocated a Supplementary Budget of Z\$4 billion with which it procured 24 pickup trucks. In the PISP for 2004, another Z\$1.8bn was allocated for vehicle procurement and Z\$3.4bn for FMD fence construction. In the 2004 recurrent budget, some Z\$8bn has been allocated for purchase of FMD vaccine.
- FAO, through the emergency programme, is supporting FMD control activities through the provision of vaccines and other inputs.
- A regional emergency FMD and CBPP eradication project is in the pipeline, covering several SADC countries including Zimbabwe. The project will be financed with trust funds from South Africa and executed by FAO.
- A regional infectious disease control project is planned under an EU Trust Fund.

## II. PROJECT AREA

II.1. The FMD control component activities will cover the whole country, although the extent in each province will vary according to the susceptible cattle population. The tsetse control activities will cover approximately 3,500 km<sup>2</sup> in the tsetse infested area of the Matusadona National Park and the surrounding communal areas where two tsetse species (*Glossina morsitans* and *G. pallidipes*) are abundant. The National Park is in an isolated area on the southern shores of Lake Kariba and is surrounded by communal settlements.

## III. PROJECT RATIONALE

III.1. Livestock production plays a pivotal role in improving and sustaining the nutritional levels of the population and in poverty alleviation through profitable livestock enterprises such as beef, milk, eggs, pork, poultry, hides and skins, as well as contributing to crop production through provision of draught power and manure. Protection of the livestock industry through animal disease prevention is therefore important.

III.2. The livestock populations and stock product export markets for Zimbabwe are declining mainly due to the incidence of animal disease outbreaks. Currently about 4 million cattle are in the FMD high-risk areas where vaccinations are required. The Matusadona National Park and surrounding communal areas remain a constant source of tsetse re-invasion in the Western front and threaten vast areas previously cleared of tsetse. This threat needs to be contained. Current government and donor efforts have tended to concentrate on FMD but even these efforts have tended to be short term, emergency-type interventions because of insufficient resources. The rationale of the proposed

project is therefore to complement those efforts on a more sustained basis and to address the other major diseases that afflict Zimbabwe’s livestock subsector.

III.3. Part of the constraints to animal disease control is the over-dependence on imported vaccines. While this was not a problem during the past when foreign exchange was readily available, it has become a constraint in recent years as availability of foreign exchange has become increasingly limited. There is therefore need to create local capacity in the production of the most important vaccines and to reduce dependence on external sources.

#### **IV. PROJECT OBJECTIVES**

IV.1. The *overall objective* of the project is to increase Zimbabwe’s livestock production and productivity thereby improving food security, increasing incomes for rural communities and boosting export earnings.

IV.2. The *specific objectives* are to:

- eradicate livestock diseases such as FMD, Trypanosomiasis, Blackleg, Anthrax, Newcastle, Lumpy skin and Brucellosis which hamper the production and productivity of livestock;
- increase local access to affordable animal disease vaccines;
- safeguard the quality of livestock products for domestic and foreign markets and meet the phytosanitary requirements regarding livestock products;
- boost export earnings from livestock products; and
- protect the fragile environment by using environmentally friendly disease control strategies.

#### **V. PROJECT DESCRIPTION**

V.1. The project will be implemented for five years and comprises three components.

##### **Component 1: Control of Foot and Mouth Disease**

V.2. The project will finance five main activities under this component:

- Vaccination of all cattle in high-risk areas currently estimated at 4 million head. Vaccination will be carried out over a period of three years. In PY1, the following vaccinations will be done: primary vaccinations, booster vaccinations within 3–4 weeks and another booster vaccination six months later. In the PY2 and PY3, two 6-monthly booster vaccinations will be done each year. In all, there will be seven vaccinations over the 3-year period.
- Assessment of the effectiveness of the vaccination by collecting samples of sera from cattle in vaccinated herds on farms and dip tank catchments. Sera will be collected at least 30 days from the last vaccination. The sera will be tested for FMD.



- Using the 3ABC ELISA technique, serological surveys will be conducted in vaccinated herds to distinguish vaccine from infectious antibodies. Although sheep and goats do not play a major role in the epidemiology of FMD, the project will screen them in FMD outbreak areas since lesions are normally difficult to observe.
- Construction of 1,005 km of buffalo fence from Gokwe in the western part to Nyanga in the east. Another buffalo fence 300 km in length will be constructed from Hwange in the west of the country to Lutope in Lupane. DVS staff will construct the fences.

### **Component 2: Eradication of Tsetse Flies in Northwestern Zimbabwe**

V.3. This component will be implemented in two phases:

- ***Suppression Phase:*** Initially 17,500 targets will be deployed in the Matusadona National Park and the surrounding areas in order to suppress the tsetse population to low levels; and
- ***SIT Phase:*** When the tsetse population has been reduced to low levels, sterilized flies will be released by aircraft into the area. The release of sterilized tsetse flies will continue until the area has been cleared of tsetse flies.

V.4. The area under Component 2 will be 3,500 km<sup>2</sup>. It is proposed to deploy targets at a density of five targets per square kilometre, giving a total of 17,500 targets. Each target will be treated with deltamethrin suspension concentrate. After drying, the treated targets will be packed in plastic bags before dispatch to the field. Odour baits will be dispensed as follows: acetone or butanone will be placed in a bottle with 5 mm hole and a metal roof to prevent contamination by rainwater. The two phenols and octenol will be placed together in a sachet. The quantities required will be expected to last six months.

V.5. It is proposed that the entire park be treated with targets at one time. It is also proposed to develop an additional 150 km–200 km of track and to repair existing access roads to facilitate the deployment of targets. The project will then regularly monitor the tsetse population using static epsilon traps. Veterinary staff will check these monthly.

V.6. The project will construct a tsetse–breeding facility close to the airport where there will be adequate environmental controls (temperature and humidity) and instruments to monitor these environmental variables. A freezer with a capacity to freeze down to minus 20 °C for storage of about six thousand litres of blood, sterile equipment for blood quality controls will be acquired by the project. Feeding trays, membranes, chillers, fixtures for fly holding rooms and a Gamma source will also be provided by the project. A colony of about four million female flies will be established.

### **Component 3: Establishment of a Vaccine Production Unit**

V.7. The project will establish a *Vaccine Production* Unit to manufacture critical vaccines. The project will finance a market survey to identify the demand for different vaccines. It will also finance preparation of the necessary designs, construction and equipping of the facility and will provide initial working capital. The recommended vaccine production methods will be adopted and the vaccine “seed” isolates will be obtained from well–established WHO/FAO recognized reference laboratories. A comprehensive quality management system for the vaccine production process will be put in place to ensure the safety and efficacy of all the vaccines produced.

## VI. INDICATIVE COSTS

VI.1. The project will cost about US\$ 53.5 million over a 5–year implementation period. Table 2 gives the estimated costs per component. About US\$22.2m (42%) of the cost will be in local currency and US\$31.3m (58%) will be in foreign exchange. The costs have been derived from reports in DVS. Where information is limited or lacking, estimates have been based on professional experience.

Component	Local	Foreign	Total	% Foreign exchange	% Total base costs
1. Control of Foot & Mouth Disease	17,443	24,420	41,863	58	98
2. Eradication of tsetse flies	109	399	508	78	1
3. Establishment of a vaccine production unit for infectious animal diseases	262	223	485	46	1
<b>Total baseline costs</b>	<b>17,814</b>	<b>25,042</b>	<b>42,856</b>	<b>42</b>	<b>100</b>
Physical contingencies	1,781	2,504	4,285		10
Price contingencies	2,672	37,56	6,428		15
<b>Total project costs</b>	<b>22,267</b>	<b>31,302</b>	<b>53,569</b>	<b>42</b>	<b>125</b>

## VII. PROPOSED SOURCES OF FUNDING

VII.1. The GOZ will provide US\$5.4m or 10% of total project financing. The donors/IFIs will provide US\$32.1m or 60%. The beneficiaries and the private sector will contribute 10% and 20%, respectively. Donor partners who have expressed interest in funding livestock projects include the EU, FAO and the World Bank. These have largely funded past and ongoing projects in the livestock sector. The private sector, through the cattle producer associations and processors may be interested in financing vaccination campaigns, training of technical and field staff, purchase of vehicles and equipment. This aspect, together with the role of beneficiary communities, will be assessed during project formulation.

## VIII. PROJECT BENEFITS

VIII.1. The key project benefits will be:

- Increased income and improved food security for over two million livestock farming households in Zimbabwe. These households will benefit through the reduced prevalence of diseases and this will ultimately lead to increased milk and meat production as well as draught power for crop production.
- The control of diseases will enable the country to access lucrative regional and international markets. This will enable the country to boost its foreign exchange earnings.
- Improved animal health and local production of vaccines are expected to result in foreign exchange savings and easier access to affordable vaccines by livestock farmers.
- Capacity will be built through training of livestock farmers and staff of public and private institutions that will participate in the project.

## IX. IMPLEMENTATION ARRANGEMENTS

IX.1. **Control of Foot and Mouth Disease.** The DVS, being at the forefront in the control of FMD, will take overall responsibility for the implementation of this project component. The department has a staff complement in excess of 2,000 consisting of veterinarians, animal health inspectors, veterinary extension assistants, computer operators and support staff. It has a network of offices at provincial, district and subdistrict levels. The *Department of Veterinary Technical Services* (DVTS) is responsible for laboratory diagnosis and research and their role in this project will be conducting laboratory diagnosis of FMD. The farming community and the livestock industry will be expected to cooperate with DVS during disease control activities such as vaccinations.

IX.2. **Eradication of Tsetse Flies in Northwestern Zimbabwe.** The project will establish a two-tier management structure for implementation. At the TTCB headquarters, the head of Branch will take overall charge of this project component and will be responsible for planning, procurement and coordination. The project will use the existing DVS facilities and arrangements for procurement, administration and finance as well as monitoring and evaluation. However, some responsibilities will be extended to the Western Regional Office of DVS, which will be responsible for the day-to-day planning, implementation and supervision of the project. The local community will play an important role of providing labour to the project. An experienced Principal Research Officer working on full-time basis and with no other responsibilities will supervise the project.

IX.3. **Establishment of a Vaccine Production Unit.** The DVTS, through the *Central Veterinary Laboratory* (CVL), will be responsible for implementation of this project component. Some work on Brucellosis will be carried out at the University of Zimbabwe (UZ), which will also be involved in training of some of the project personnel. At the CVL, personnel involved in the project will include two principal Veterinary Research Officers (a bacteriologist and virologist), two technologists and four laboratory assistants. Some of the support staff will be provided by other diagnostic units of the CVL. All staff on the project will report to the Chief Veterinary Research Officer. Field veterinary personnel and cattle farmers will also be involved in sample collection. Farmers will be approached to provide animals and other facilities for field vaccine trials.

IX.4. Selected NGOs will be involved in project implementation support, particularly training, extension and inputs delivery for Components 1 and 2.

## X. TECHNICAL ASSISTANCE REQUIREMENTS

X.1. Local and foreign technical assistance (TA) will be required in the following areas:

- In the control of FMD, TA expertise will be required in laboratory diagnosis using the 3ABC ELISA kit for detecting non-structural antibodies.
- Specialist TA, composed of experts from the International Atomic Energy Agency (IAEA) will be required for the training of local staff on treatment of animal diseases that involves radiation.
- An expert in vaccine production.
- An environmental specialist to carry out environmental impact assessments.

X.2. Estimated person–days required for specific tasks will be worked out during project formulation.

## **XI. ISSUES AND PROPOSED ACTIONS**

XI.1. ***Donor Funding Uncertainties.*** Donor funding might not be forthcoming in the short term. This might delay project implementation. However, the GoZ has recently resumed some negotiations with the IMF and World Bank. This is an indication that donors have not closed the doors completely and is a hopeful sign for this and other projects.

XI.2. ***Environmental Impact Assessment.*** A preliminary Environmental Impact Study has been conducted for the control of tsetse flies in Matusadona National Park and a few issues were raised which need to be addressed. The immunity of the Black Rhino in the absence of tsetse flies was raised as an issue. However, there is no conclusive knowledge on this at the moment. A further study to find a solution to this problem is therefore recommended.

XI.3. ***Lack of a Local Tsetse Colony.*** Currently, there is no established tsetse colony in the country to be used to rear a large population for sterilizing and release later on. There is need to carry out a feasibility study to find out if it is economic to establish one in the country. If the study establishes that it is not economic to have one, then the logistics of using the colony in Botswana or elsewhere will need to be looked into.

XI.4. ***Road/Access Construction Techniques.*** Construction of access roads in previous tsetse control areas has been done using heavy motorized equipment. This has resulted in soil erosion in some instances as roads required regular maintenance. However, if access is opened up using hand tools, chances of massive erosion will be reduced and the dangers of excessive cutting down trees will reduce.

XI.5. ***Beneficiary Community Participation.*** In controlling the FMD, community participation in the demarcation and construction of fences is vital to promote a sense of ownership of the fence line and enhance sustainability after the completion of the project. This aspect has been missing in past projects. In order to enhance ownership and sustainability, contract labour should be recruited from the local community. In addition, care should be taken that the fences erected do not divide the community; otherwise it will be difficult to maintain the fences after project completion.

XI.6. ***Vaccine Production.*** The proposal in this document to establish a vaccine production laboratory for reasons of shortage of foreign currency needs to be considered more carefully during project formulation. There are very well–established vaccine production institutes in Botswana, South Africa and in East Africa. Vaccine production, especially for anti virus vaccines, is complicated and costly, therefore regional cooperation should be explored as a possible solution. This calls for special conditions to be negotiated with these countries. A detailed cost–benefit analysis will be needed to evaluate the options and to determine the financial viability of establishing a vaccine laboratory in Zimbabwe.

XI.7. ***Tsetse Fly Eradication.*** Eradication by use of sterile males is the state–of–the–art method to reduce the tsetse population, but this is a long–term effort, where no loopholes can be permitted and the TTCB will have to work on a continuous and sustained basis for years. Otherwise, the flies will return and re–invade previously cleared areas. Therefore, a cost–benefit analysis of the proposed tsetse eradication is also needed.

## **XII. POSSIBLE RISKS**

### **XII.1. Risks that could influence the outcome of the project include:**

- The prevailing macro-economic environment may not improve during project implementation. This would influence negatively on all stages of project implementation.
- If the current difficulties the Government is having with donors are not resolved soon, there may be poor donor response to funding the project, at least in the short run. Government has started re-engaging the Bretton Woods institutions and that is a hopeful sign.
- Delays in implementation of a number of projects have occurred in the past in various institutions due to a number of factors beyond the scope of the project, for example, delays in disbursement of resources and bureaucratic procedures. Possible implementation delays may arise due to delays in sourcing finance, acquisition and delivery of equipment.
- The DVS may not be able to deliver satisfactory support services to the farmers due to financial, logistical and staffing constraints.
- In the past, government has failed to meet some of its financing obligations due to lack of counterpart funds. In addition, project beneficiaries have not always contributed their expected shares of project cost, expecting such projects to be free handouts from government.



### Appendix: References

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