INVESTMENT PLAN
ANIMAL HEALTH SUB-COMPONENT

CONSULTANCY FOR THE IADB FOR SUPPORTING THE INVESTMENT LOAN ON THE ANIMAL HEALTH SUB-COMPONENT (SU-L1020)

FINAL VERSION

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EXECUTIVE SUMMARY

The Investment Plan considers Animal Health as a subcomponent of a broader proposal aimed at increasing the competitiveness of the Agricultural sector of Suriname. The proposal anticipates funding by the Inter-American Development Bank (IADB). The proposal is set against the background of the agricultural sector performance and the major goals of the national agriculture master plan for the development of Agriculture in Suriname as defined by the government.

The Veterinary Services (VS), regarded as an institution that is critical to the realization of the government's goals is unable to give adequate support because of its low technical, managerial, administrative and operational capacity. The Investment Plan addresses technical and operational resources development consistent with the requirements to respond to the VS mandate. It targets the lack of facilities and information system to prevent further introductions of animal diseases as imminent threats that can cause serious damage, and provides the basis to demand imports free from diseases. Securing the borders and establishing procedures is also among the priorities but is covered in the Plant Health Sub-Component.

Other areas of concern include the absence of an animal diseases control programs that should be supported by a range of sanitary activities, including laboratory diagnoses, and the relationship with the Private Sector, which today is weak and needs to be strengthened.

The results matrix and the budget presented in Annexes, present the expected outputs and required activities per year, over a five years period. The strategies for addressing the weaknesses of the subcomponent are considered technically feasible and environmental considerations have been taken into account. The Private sector, the Government as well as the general population will benefit from a strengthened VS because of the wide implications of its functions for increase food production, food security and in view to export.

ACCRONYMS

AHSCP:	Animal Health Surveillance and Control Program
AHPT:	Animal Production and Health Technician
CDD:	Custom Destination Document
CVO:	Chief Veterinary Officer
FAO:	Food and Agriculture Organization for the United Nations
FMD:	Foot and Mouth Disease
GDP:	Gross domestic product
IADB:	Inter-American Development Bank
IICA:	Instituto Interamericano de Cooperación para la Agricultura
LVV:	Ministry of Agriculture, Livestock and Fisheries of Suriname
MI:	Meat Inspectors
MCP	Melkcentrale Paramaribo
NADSMP:	National Animal Diseases Surveillance and Monitoring Plan
OECD:	Organization for Economic Co-operation and Development
OIE:	World Organisation for Animal Health
OIRSA:	International Regional Organization for Plant Protection and Animal Health
PANAFTOSA:	Pan American Foot and Mouth Disease Center
PHEFA:	FMD Hemispheric Eradication Program
PVS Report:	OIE Tool for the Evaluation of Performance of Veterinary Services
SCO:	Suriname Customs Office
SRD:	Suriname Dollar
VS:	Veterinary Services
WAHID:	OIE World Animal Health Information Database
WB:	The World Bank
WTO:	World Trade Organization

I. PROBLEM DESCRIPTION

A. Economic indicators

In 2015, Suriname had a total population of 542,975, a GDP of US$ 4,88 billion, leading to a per capita GDP of US$ 9,825. It is an upper middle income country and was one of the Caribbean's best performing economies over the last decade, largely due to its rich endowment in natural resources and biodiversity. The economy grew by 4.5 percent per year on average between 2004 and 2014, bringing the per capita income to US$9,950 in 2014. However, GDP growth came to a halt in 2015 and the economy was expected to contract in 2016 as it has (Figure 1), but recent investments in large oil and gold operations are expected to provide some support for GDP growth once those projects enter full production in 2016–17 (The World Bank, 2016).

Figure 1. Suriname GDP evolution from 2006 to 2015

Source: Trading Economics, 2016

Suriname's economy is highly concentrated in the extractive industries (gold, oil, and bauxite), which have played a key role in driving growth and revenues. While high commodity prices have benefited Suriname for several years, reliance on natural resource revenues exposes the country to commodity price fluctuations. In addition, Suriname is highly vulnerable to climatic disasters, especially flooding due to rising sea levels, excess rain fall, and recently high force winds.

To address these issues, the Government has prioritized economic diversification through broad private sector development, a program to strengthen social services, and better management of disaster risks. The National Development Plan (2016) lays out a detailed set of actions to address economic and climatic vulnerabilities. The Government has reached out to several international development agencies including the Inter-American Development Bank and bilateral partner governments to assist in implementing its plan.

Suriname has great agricultural potential, but has not been able to exploit it fully. Despite some export successes (fisheries, rice and bananas), decreasing competitiveness has turned Suriname into a net importer of agricultural and food products. In order to reverse this situation, and as stated in the National Agricultural Innovation Strategy of the Republic of Suriname, innovation (i.e., the generation, adaptation and exploitation of new knowledge and technology) is essential. In this setting, Suriname acknowledges that a revitalized, more productive and diversified agricultural sector will contribute to reducing macroeconomic uncertainty by insuring against risks and external shocks, improve food security, and provide opportunities for employment and income generation that will help to alleviate poverty in rural areas where about 50% of Surinamese live (The World Bank, 2016).

The projections for the country's agricultural sector are diverse. Throughout the last decades, the share of agriculture in the economy has fallen significantly from levels around 15% of GDP in the mid-1990s to below 10% today (EUI, 2016). Still, Suriname remains a country with strong potential for agricultural development. Of the country's total 1.5 million ha that are considered suitable for agricultural production, it is estimated that only 120,000 ha (8%) are currently used for crop cultivation and pastures (Derlagen, 2013). Approximately 85% of the suitable agricultural land is located in the country's coastal plain, which allows the districts of Nickerie, Coronie, Saramacca and Commewijne to be the main production areas.

In the early 1990s, Suriname's self-sufficiency rate for livestock products was around 100%; today Suriname is a net importer of all livestock products, as the current production levels do not meet the domestic demand for these products. Overall, the sector attracts low levels of investment compared to crops. In various subsectors, including meat cattle, dairy cattle and poultry, the number of farms has been decreasing. In the vast majority of farms, animal husbandry is a part-time economic activity. In addition, the absence of domestic feed production has driven up the cost of production of most meat products, and the processing industry is weakly developed (PSE, 2016).

B. Situation of the Animal Health Sector

1. Institutionalization

Legislative framework

The officers of the VS carry out their official animal health mandate under the provisions of two main Acts, The Animal Diseases Act (1954) and The Meat Inspection Act (1961). These Acts lack provisions for main VS activities such as poultry meat inspection, quarantine, animal identification, traceability, etc.

The Department of Animal Production and Health is currently updating these Acts and developing five new ones: the Animal Health, Production and Welfare Act, the Veterinary Professions Act, the Slaughterhouse and Meat Inspection Act and the Animal Feed Act.

The revision of these drafts by a Legal officer from Suriname has been completed and the new drafted law is soon going to be submitted to the Parliament for endorsement, and thanks to a loophole in The Animal Disease Act (Wet bestrijding dierziekten), in Article 10, that allows the promulgation of new provisions by decree (Decree of 24 October 1986 or Decree E-60) to overcome animal diseases, there are new regulation regarding Animal Genetic Resources management, Import and Export procedures and veterinary Certification, a list of Notifiable diseases, the stray animal population management, the welfare of animal during transport, and the use of animal for research purposes; all in accordance with OIE standards and obligations.

Organization

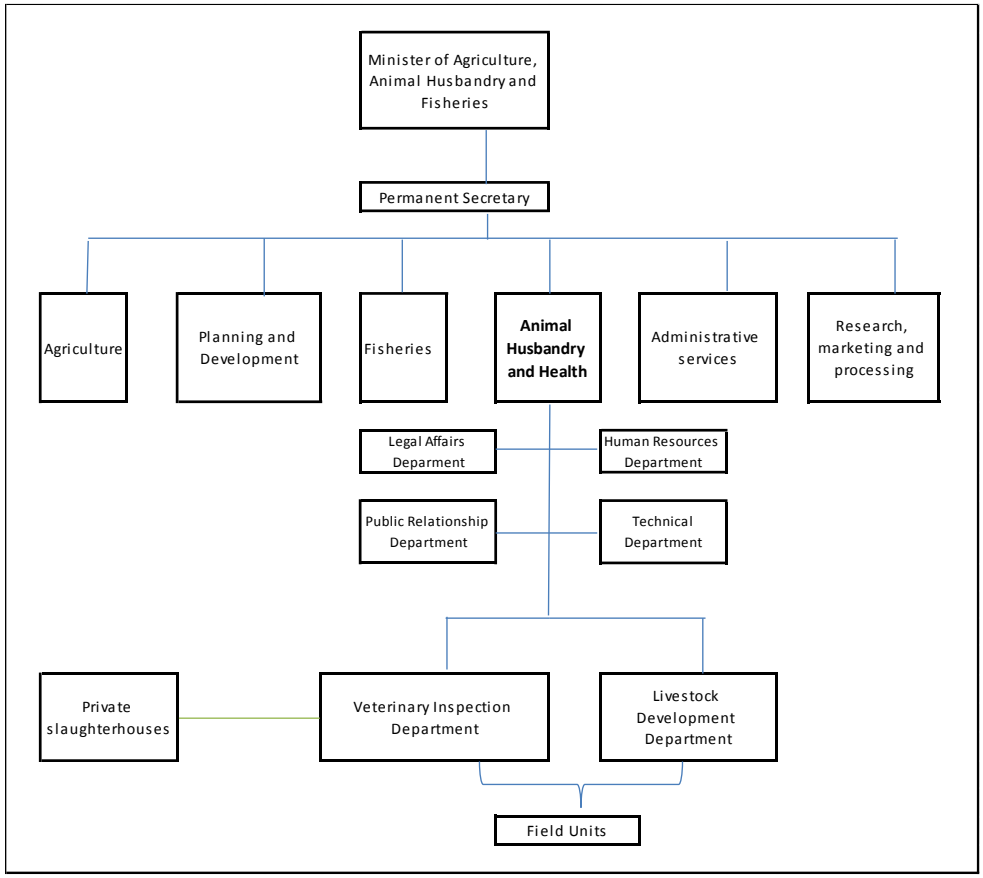
The Ministry of Agriculture, Livestock and Fisheries (MAAHF) is the institution responsible for the administration of public sector programs and projects of Suriname's agriculture, fisheries and livestock sectors. The Ministry is directed by a Minister of Agriculture, and the civil service is led by a Permanent Secretary. The Ministry comprises six departments or Sub-Directorates (Onder Directoraat): (I) Agriculture, (II) Planning and Development, (III) Fisheries, (IV) Animal Husbandry and Health, (V) Administrative Services and (VI) Research, Marketing and Processing. The Directors of these departments, together with the Permanent Secretary, establish the management team of the Ministry.

MAAHF is also responsible for a set of foundations and public companies that are active in the agricultural sector (e.g. slaughterhouses, state farms). In the budget of the Ministry, the profits (or losses) from these institutions, partly or completely controlled or owned by the government, is not individually recorded, but only collectively. As a result, the contribution of each institution to the Ministry of Agriculture's budget cannot be assessed.

The Animal Husbandry and Health Sub-Directorate that for the purpose of this document will be referred herein as the Veterinary Services (VS) comprises 2 main departments: Veterinary Inspection and Livestock Development. These departments find their activities supported by the

Field Units which are not considered VS staff. Figure 8 represents the organization of the VS within the MAAHF.

Figure 8. Organizational Chart of the Animal Husbandry and Fisheries Sub-Directorate

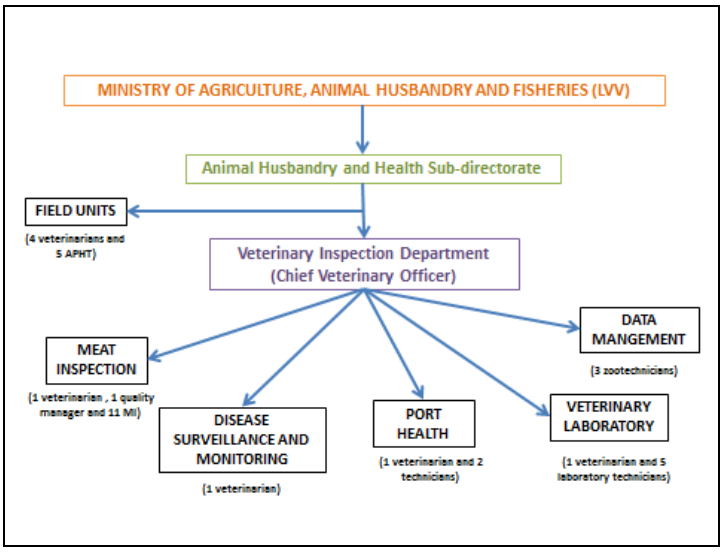


The VS mandate includes fulfilling the following activities:

- Veterinary health care (curative and preventive)
- Inspection of animals for slaughter (ante- and post-mortem inspections) and animal products (home slaughtering and checkpoints)
- Animal disease surveillance and monitoring
- First responders in case of an outbreak of a contagious animal disease
- Extension and research (Good Animal Production Practices)
- Animal welfare
- National Registration and Identification of Animals/establishments (Traceability)
- Biosecurity
- Genetics and animal breeding (A.I. services, conservation)
- Field inspections (feed production, production)

The VS structure is clearly defined within the MAAHF; however, the paraprofessionals or Animal Production and Health Technicians (APHT) to fulfill all the above activities is insufficiently trained.

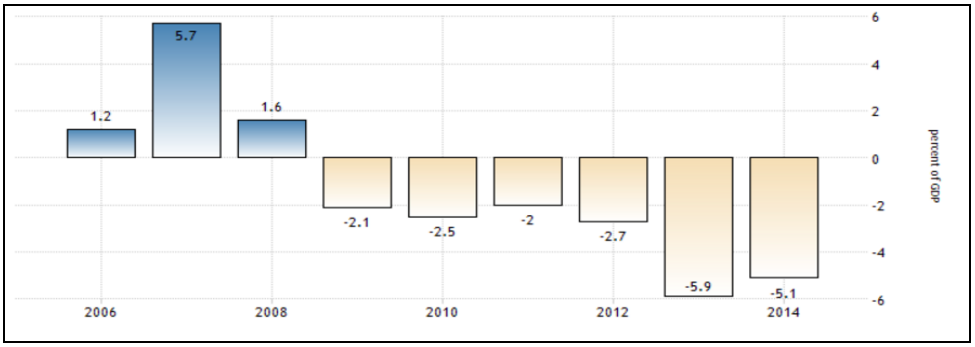
Figure 9. Organization of the Veterinary Inspection Department



Budget

The Gross Domestic Product (GDP) in Suriname expanded 0.20 percent in 2015 from the previous year. GDP Annual Growth Rate in Suriname averaged 1.69 percent from 1977 until 2015, reaching an all-time high of 10.80 percent in 1988 and a record low of -8.80 percent in 1987 (Trading Economics, 2016). Suriname recorded a Government Budget deficit equal to 5.10 percent of the country's Gross Domestic Product in 2014. Government Budget in Suriname averaged -1.27 percent of GDP from 2005 until 2014, reaching an all-time high of 5.70 percent of GDP in 2007 and a record low of -5.90 percent of GDP in 2013 (Figure 10).

Figure 10. Suriname Government Budget



Source: Trading Economics, 2016.

The total budget of the Ministry of Agriculture, Animal Husbandry and Fisheries showed significant fluctuations. The total budget in 2014 amounted to SRD 271,56 mln, of which 15% (SRD 40,38 mln) consisted of administrative costs, while the remaining 85% (SRD 231,18 mln) was budgeted for programme costs.

Furthermore, for 2015, the budget reserved for the Animal Husbandry and Health Sub-Directorate was fixed at 15.395.500 SRD but the Sub-Directorate only received 228.036,41 SRD which roughly corresponds to 1,5% of the expected budget (Annex 1).

2. Animal Health Status in Suriname

Suriname has been historically free of several diseases of economical and public health importance and it's a country that shows a lot of agriculture potential that could allow to export animals and animal products. However, there is very little data on the prevalence of present diseases and therefore no disease control programs are put in place. Furthermore, no survey has been carried-out so far to rule-out the presence of transboundary diseases of economic importance and therefore, the country doesn´t have a disease free status that would allow not only to be able to export but also, and more importantly, to demand import free from diseases to protect its sanitary status.

Absent Diseases and Prevention

The list of absent diseases for Suriname is long and most of them have been informed as "never reported" in the country (Annex 2), including Foot-and-Mouth Disease (FMD), Aujeszky´s disease, Classical Swine Fever (CSF), etc. However, no active surveillance exists whatsoever to prove the absence of a particular disease and therefore to obtain a free disease status.

When an exotic disease enters the country, it may cause important economic losses due to morbidity, mortality, treatments and veterinary costs. Indirect economic losses will also be produced as a result of markets closure, zoning, and especially because of costs related to the eradication of the disease.

Animal disease such as FMD in cattle, CSF in pigs, and Newcastle disease (NCD) in poultry, may cause large loss of production, and threatens local food availability and impedes international trade. Reporting of disease outbreaks though is not a binary event (confirmation or denial), and countries differ significantly in the speed of reporting outbreaks which may cause a large threat for an importing country, such as Suriname.

Economic impact of transboundary disease introduction

Evaluating the reporting of FMD by South America's main beef-producing countries, including Argentina and Uruguay, a report found that of all the countries in the region, Uruguay was the only country that on average quickly reported outbreaks (COSALFA, 1996). Yet during a 2001 outbreak in Uruguay, uncertainty about the nature of the outbreak and poor communication with Argentine authorities about Argentina's high cross-border movement fueled the spread of disease and resulted in outbreaks in 4 percent of Uruguay's total livestock. Additionally, during an FMD outbreak in Argentina in July 2000, the government failed to acknowledge the severity of the disease spread and did not create an eradication program until April 2001 (Rich, 2004). Consequently, nearly 2.8 million cattle, or 5–6 percent of the cattle population, had been exposed to FMD by the end of the Argentine outbreak in January 2002. In 2000, an outbreak of CSF among 35 pig farms in the United Kingdom resulted in import bans of all food animals to the United States, Belgium, the Netherlands, and Spain. Furthermore, after a 2007 FMD outbreak in approximately 60 cattle in the United Kingdom, Britain banned all exports of food animals, meat, and milk in hopes of preventing a larger outbreak, such as the one that occurred in 2001 resulting in $16 billion in losses for that country. This puts on evidence the importance of having an early detection plan and to organize simulation exercises (Keusch et al., 2009).

Attempting to do an estimation of the potential direct costs in case of introduction of a disease, like FMD in Surinam, we can foresee that one of the most immediate associated losses will be a drop in the milk production. Surinam current annual production is 3.980 million of litters per year. As Surinam is a FMD free country without using vaccination, it is difficult to estimate the real dimensions of an outbreak; it would be however, plausible to think that it could reach to affect 30% of the susceptible animal population (depending of the promptness in the early detection of the disease and the time reaction and resources available to control it). The expected drop in milk production is 80%, related either to the infection with the FMD virus or to secondary diseases associated with it, taking place over the course of one and half month) (Ruston et al., 2012). Additionally, most of the milk production needs to be disposed of and destroyed, and this situation would be intermittent over the length of the epidemic. This scenario would lead to a 3% drop in the production (119,400 liters) with a potential cost of 2,558,571 SRD (3 SRD per liter) equivalent to 50,148 USD.

Usually dairy costs are considered to be one third of all direct costs, so the total direct cost (Ruston et al., 2012) due to an outbreak of FMD in Surinam could be over 150,000 USD including those losses due to reduced livestock growth and mortality in young stock; abortions in which the cost of a single abortion is high as the farmer will have to keep the cow without it producing anything for another year or more, or cull the animal. It is in the dairy and in the pig production industry where the majority of the losses would be found (FAO, 2016).

On the top of this, it would be necessary to consider the indirect losses due to the cost on controlling and managing the disease, potential impact on market opportunities; given that FMD

impact on market closure has been seen to affect not just animal and animal product from cloven-hoofed species but also for those no susceptible to the FMD such as poultry meat and eggs.

According to historical data from the Organismo Internacional Regional de Sanidad Animal (OIRSA), in 1996, it was estimated that only in Guatemala, El Salvador, Honduras and Nicaragua, annual losses attributed to Classical Swine Fever amounted to US$ 20 million, only considering the dead pigs, weight loss and the recovery period after illness.

Present Disease and Control

According to latest available information (2015) of the OIE World Animal Health Information Database (WAHID), Suriname has declared the following OIE listed diseases as present in the Country:

- Bovine anaplasmosis
- Bovine babesiosis
- Equine piroplasmosis
- Infectious bursal disease (Gumboro)
- Leishmaniosis
- N. w. screwworm (C. hominivorax)
- Newcastle disease
- Trypanosomosis

The economic impact of the presence of endemic diseases in Suriname has not been a subject of study so far and therefore there are no data on their incidence or prevalence. A special attention must be paid to Newcastle and Gumboro diseases, which can be associated with high mortality in young birds, and to the fact that there is no control program in place to fight against these diseases in the country.

In 1971, a major outbreak of Newcastle disease occurred in commercial poultry flocks in Southern California. In all, 1.341 infected flocks were identified and almost 12 million birds were destroyed. The eradication program cost taxpayers US$56 million, severely disrupted the operations of many producers and increased the prices of poultry and poultry products to consumers.

How to prioritize which of the present diseases will be subjected to control will depend on various factors, such as:

- Zoonotic impact: those diseases with are consider important zoonosis, need to be prioritized due to its impact on public health
- Economic impact of the disease should be considered:
    - Direct cost: e.g. drop in production, mortality, abattoir rejections, etc.
    - Indirect cost: e.g. treatment, vaccination, veterinary services, etc.
- Prevalence/Incidence: In the decision making it is necessary to count on information on the level of occurrence of the disease and its geographical distribution.
- Reliability of the diagnosis and case definition: It is necessary that the disease and its agent can be detected and identified.

- Zoo-sanitary situation of the region or neighboring countries: it is important to be aligned with the regional animal disease initiatives and the health situation of the neighboring countries.
- Impact on trade: identify the sanitary requirements demanded by the potential trade partners.
- Industry views: consider the perspective and inputs from the livestock industry.
- Feasibility to implement the strategy: before implementing a strategy it is important to know its cost and the practicality of achieving the objectives.

The need for the implementation of disease control programs have to be evaluated accordingly. As described above, a key factor for deciding on the implementation of a control program is the prevalence/incidence of the disease. It is essential to know first with robustness what diseases are present and their level of occurrence before designing and implementing any control program.

Therefore, as it described by the National Animal Disease Surveillance and Monitoring Plan (NADSMP) prepared by the VS last year, there is a necessary sequence of actions before implement the control of animal diseases. In short, the NADSMP foresees that on the third year, the VS will initiate the active surveillance system identifying the high risk properties to perform target surveillance on them to confirm or rule out the presence of a particular disease. In the fourth year, the VS will start implementing Animal Health Control Programs for those relevant diseases (starting with the measure of the disease occurrence baseline and utilizing the above mentioned criteria to prioritize and to choose the target diseases).

Over the next two years, the VS need to strengthen their disease surveillance system and to start studying, together with the private sectors, what are the potential diseases for which a control program would be beneficial. In principle, according to the current knowledge on the disease situation of the country and regarding its figures on imports and exports, it will be necessary to work particularly with poultry industry to decide on the disease control programs.

For cloven-hoofed species, including bovines, small ruminants and pigs, it has been already agreed to implement the control-prevention program for declaring the country free from FMD. This would be the gateway to how to implement a control program that could lead the way to other similar initiatives. Also for ruminants, the presence of Bovine TB and brucellosis needs to be evaluated and as well as their zoonotic impact within the country (Müller et al., 2013), as these two zoonoses, based on the Regional priorities, would be candidates for the implementation of control program/disease eradication.

For pigs, the mayor disease within the Caribbean Region would be Classical Swine Fever, where there is the objective to improve the sub regional control and eradication and/or the prevention of the introduction of this disease (Lepoureau et al., 2012). For this disease, Surinam,

together with Guyana and French Guyana, is considered to be free, but a surveillance as described in the NADSMP to demonstrate its absence will need to be organized.

For poultry, the presence of Newcastle disease in Surinam is known, which causes high rates of mortality in susceptible poultry flocks with the greatest economic impact is through loss of productive assets (FAO, 2016). Thus, NCD is a clear potential disease to be considered for a control program implementation; however, before designing and implementing a control program, it is necessary to evaluate the prevalence and its distribution across the different farm types and to agree a plan of action with the industry.

The main costs of implementing any disease control will be essentially met by the industry (vaccination, culling by slaughtering, depopulation/restocking, etc.) while the role of the VS will be to establish the national policy for the control program (which could be mandatory or voluntary), contributing to the surveillance (e.g. farms, abattoirs), implementing the movement control (utilizing the IS) and restriction, and with the laboratory diagnosis to confirm, rule out and certify the disease status of the farms participating the control program.

The FAO livestock policy discussion paper "Assessment of socio-economic impact and institutional response" is provided as Annex 3 for further information and rational to invest in animal disease surveillance, prevention and control.

3. Infrastructure

Laboratory network

The veterinary laboratory at the MAAHF mainly does tests for parasites in fecal and blood samples and bacteriological analysis. Limited ELISA testing has been done in the past to carry out surveys on diseases such as avian influenza. These tests are performed for the VS, producers/farmers, private veterinary clinics and anyone else who owns an animal and wants a sample tested.

At the moment, the laboratory performs analysis on food microbiology (mainly Salmonella) and testing AMR test (antimicrobial resistance). However, it is very difficult for the laboratory to receive permission and funds from MAAHF and from the Ministry of Finance to purchase materials and equipment.

All tests are done completely free of charge. In the near future, it is possible that the Laboratory will charge a fee to undertake laboratory analysis; however, the collected fees are unlikely to be kept within the VS, but according to procedure, deposited directly at the Ministry of Finance.

In order for the VS to be able to do surveillance and control programs, the laboratory needs to be fully functional and therefore its construction must be ensured. New equipment will be needed to allow performing the related diagnostic tests. Not only the Terrestrial animal sector would

benefit from a fully functional laboratory in order to perform disease surveillance and control, but also, the aquaculture sector would largely benefit from a laboratory able to provide water quality testing and aquatic animal disease testing, particularly PCR. More on Aquaculture in Annex 4.

Quarantine and borders inspection

The VS will be working with Plant Health and Food Safety authorities at the control post and the staff will be trained to inspect products of all origins. The Inspection at Control Posts will be addressed in the Plan Health Sub-component.

Regarding quarantine for imported live animals, these are put in quarantine on premises in the same location where they will be fattened or bred afterwards, and there is a periodic control from VS officers to those premises but no registration is recorded. Furthermore, there are no protocols for the transport of these animals from the port of arrival to the quarantine premises, and this supposes a high risk of disease introduction in the country.

Information system

Over the last year, the VS have been actively forming a new farm cadaster by visiting each farm. This cadaster is being incorporated into InterTrace®, a software system that supports the Information System (IS), to maintain the database electronically. This cadaster and the use of the information system will set the basis for the implementation of the animal movement control which needs to be backed up by the legislation and by control points on strategic roads of animal transports. Regarding this point, there is already a registry for transport that contributes to control and restricts who is moving animals.

InterTrace® will be a tool to monitor the reference population under passive surveillance and will also support the implementation of disease control program and active surveys, as the system also allows the inclusion of specific health epidemiological data for each farm. The implementation of the IS through InterTrace® for a wide usage, will involve not only the veterinarians but also the IT people and data managers, from the VS but also for the Plant Health and Food Safety sectors.

Identification and Registration of the Animal Population in Suriname

The on-going FAO "Development of an Animal Identification and Traceability System in Suriname" Project, which has designed an information technology system for animal identification, registration and traceability, has started with pilot experience with dairy cattle identification. It is essential to move further and to continue with all relevant livestock species in the whole country-wide in order to be able to perform disease surveillance and control.

4. Relationship with the Private Sector

The relationship between the Private Sector and the VS is tired because the VS provide very little technical support to the Private Sector. Although frequently requested for their opinion, little feedback has been given to the Private Sector over the past years, even when their farms and animals were the subject of studies, so the relationship finds itself debilitated.

Veterinary Drugs Management and practice of veterinary medicine

For the import of veterinary drugs, a license by the Veterinary Inspection is required. Applications are filled in and submitted with the invoice at the secretariat of the Sub-Directorate Animal Husbandry and Health. New importers also need to submit the Chamber of Commerce registration document and the facility of the importer is inspected, before the application is considered. Certain veterinary drugs are only allowed to be imported by a veterinarian or used under control by a veterinarian. There is an urgent need to raise awareness on the (mis)use of veterinary drugs and its consequences.

Coordination and communication

In general, the private sector thrives best in environments without government interference. However, governments can help by creating and ascertaining conditions and regulations that support private initiative and private sector operation. As such, it is important to obtain input from the private sector, whether producers, processors, consumers or veterinarians in the process of policy formulation and drafting of quality control regulations (FAO, 1997).

C. Results, GAPS and Lessons Learned

1. Results

The MAAHF doesn´t count at the moment with all the technical, operational and institutional competences necessary to protect the country from disease introduction and even to understand to impact that this could produce, nor to support disease control activities or to provide technical assistance to producers. This reflects poorly in the economy of the sector that, as for today, can´t foresee to produce more and to produce better and therefore the country still depends a lot on the imports. The "dream" of access to external market can only be reached if the public and the private sector work together towards a common goal and lots of efforts have to be made in order to strengthen this relationship, as it´s the only way to ensure the development of the sector.

The Veterinary Services are well structured within the MAAHF but there the lack of trained paraprofessionals to fulfill its activities of surveillance, meat inspection and inspection at the control posts, imply that smaller farmers have little technical support to improve their production.

Although the country has been historically free from mayor animal diseases or no evidence of these diseases has been notified, there is no survey to prove the absence or presence of most of diseases. Furthermore, the laboratory is unable to provide diagnostic assistance for this surveillance, including diseases control programs, and an adequate information system to gather and analyze all relevant information to support these programs is missing.

2. GAPS

Taking into consideration the information of the situational analysis, the evaluations and the results of OIE PVS Report, the actual problem of the agricultural health of Suriname can be summarized as follows:

There is no precise knowledge about present diseases and their prevalence and location and therefore there are no animal disease control programs in place.

There is no common information system within the different departments and units of the MAAHF that could help preventing disease spread in case of introduction, or that could allow disease control for present diseases, by sharing, comparing and analyzing data. This information system requires all production animals to be identifies in order to be traceable.

As for now, the country is incapable of proving its free status for major animal diseases which are a major constrain for demanding free diseases imports, and it represents an impediment for potential export of animal products.

The VS do not perform risk analysis and therefore there is a real risk of disease introduction as the country depends on the imports for the meat consumption, there is no international status to justify a demand for imports free from diseases and there are not exports to fulfil the mandate of becoming the protein provider of the region (an unexploited opportunity).

In summary, in order to improve the transparency and the knowledge of the animal health situation in Suriname, it will be necessary to count with an identification and traceability system, a fully functioning laboratory to support disease surveillance, an information system widely implemented to gather and analyze all collected data, trained staff able to fulfill all related activities and to define the country´s strategies for disease control and prevention.

3. Learned lessons

The following learned lessons are considered in the present investment plan:

Sub-Components: The Program will consider an integrated approach with the other sub-component on Plant Health and Food Safety, particularly on border post control.

Strategy: The outcome of the program can only be reached after establishing the agricultural health basic infrastructure (e.g. laboratory).

Cost recovery: The MAAHF will establish a system that will allow the Veterinary Laboratory to charge fees for it services and to ensure that the inflow of money stays within the MAAHF.

Monitoring and Evaluation: An OIE PVS Evaluation or a consultancy mission will be performed by the end of the program, to put on evidence the improvements in animal health and the compliance of the VS with OIE and SPS standards, at the national, regional and international levels.

D. Link to Policy Loans (SU-L1032)

Under the policy loan SU-L1032- Improving the Performance of Animal Health Services in Suriname, the government was assisted in fulfilling six animal health policy conditions namely the development of:

- Regulations of the Animal Health Acts;
- Animal Health Acts submitted to Parliament;
- A plan for improving technical capabilities;
- A National Animal Disease Surveillance and Monitoring Plan;
- Protocols and rules of procedures for border control and quarantine activities;
- A strategy for declaring the country free of major animal diseases.

These were accepted by the Inter-American Development Bank (IADB) and the MAAHF and now form the basis of the current task of developing an investment loan plan for IADB financing.

E. Definition of current major problems

The problems encountered during this diagnostic have been prioritized and the recommendations to follow are aligned with the ones made by the OIE in the PVS report, as well as the ones described in the Policy Loan (2015) that was approved by the MAAHF.

The list below is sorted not by importance but by causality:

- The risk of disease introduction is unknown (as well as its consequences) because there is no trained personal to perform relevant studies such as risk analyses and because the sanitary situation of the country is also undetermined.
- The sanitary situation of the country regarding animal diseases has not been defined because there is no surveillance.
- Surveillance cannot be performed partially because animals are not identified, since the country doesn´t count with an integrated information system and because the laboratory is unable to support this activity.
- There are no prevention or control programs because without surveillance there is no scientific-based information for decision-making.
- Due to the lack of infrastructure and equipment, the laboratory is currently unable to support all the VS activities and the few services it provides are supported with Government funds and no fees revenue system is in place.
- There is a high dependency on imports for many products of animal origin, and producers are unmotivated because of lack of technical support from the VS, and as a result, there is low investment and therefore, low competitiveness of the sector.
- Loss of potential external markets.

F. Current and Future Donors Activities

Along with the present Investment Plan, The VS have 2 ongoing projects with the IICA. Each of 10.000 SRD, one for the Improvement of the carcass quality for small ruminants through a breed improvement project, and another one for the research of alternatives for growth feed for cattle. Both projects, if successfully achieved, will provide producers with new tools and opportunities for a more competitive production, particularly because the import of feed is one of the mayor costs of the sector.

There are several projects funded by FAO/UNDAF (United Nations Development Assistance Framework):

- Strengthening the Sanitary Regulatory Framework of Suriname (265.000 US$), which includes Cattle breeding legislation for regulation in the sector, and that is supposed to be finalized by September 2016.

- Development of an Animal Establishments Registration System and an Animal Identification and Traceability System in Suriname (496.000 US$). The duration of this project has expired but an extension is planned until December 2017. This project, although it only includes a pilot for dairy cattle, is critical for the program presented in this document, as it set the basis for animal identification, which is the core for disease surveillance.

- Strengthening the Aquatic Animal Health Protection Systems in Suriname with the Establishment of a monitoring and surveillance system of aquatic animal diseases (400.000 US$). This project includes the development of a strategy, the completion of the laboratory, and training for stakeholders and personnel of the Aquaculture department. This project won´t include the purchase of PCR that is contemplated in the investment plan presented in this document, and which is the missing link for aquatic animal disease diagnosis.

Finally, there is a project financed by India (50 million US$) for the Rehabilitation and upgrading of the MCP, which will include setting up an Ultra High Sterilization Line (UHT Line). The project aims to make available milk and milk products for the remote areas and also the hinterland of Suriname (areas were cooling facilities are not adequate for storage of pasteurized milk). The investment will be made in: existing processing equipment, upgrading existing laboratory facilities, renewal of the generator, distributions vehicles, raw milk collection centers, upgrading of the cooling facilities of the milk, and rehabilitation of water pumps.

All these projects aim at increasing the productivity of the sector, and if successful, the private sector will demand the MAAHF to obtain free diseases status to protect its sanitary status and maybe, to be able to export. Along with encouraging new producers to be part of this sector, these projects will increase the demand of the VS technical support for diseases control programs and traceability, amongst others VS activities.

II. PROBLEM SOLUTION

A. Objective

The General Objective of the Animal Health Sub-component is to ensure the animal health status of the country in order to maintain and prove its sanitary status and give support to the competitiveness of the Surinamese agricultural sector.

B. Strategy and Outcome

The strategy is based on a well-defined schedule of grouped activities that need to be sequentially achieved, and are focused on the following outcome:

Improving the provision of VS by ensuring strong and reliable information on animal health diseases present of the country, through the provision of an Information System, an Animal Identification and Traceability System and by ensuring the diagnostic capacity of the Laboratory; by training the staff to support the activities related to disease surveillance, inspection, amongst others; and ensure the correct preparedness for early detection and emergency response; and by strengthening to collaboration with the private sector in order to assist and encourage the animal production sector towards exports, by means of communication and awareness campaigns on international norms and regulation.

C. Indicators

1. OIE PVS Report

Under the OIE technical cooperation program, a PVS assessment of the Veterinary Services was made in March 2012. The main observations were as follows:

- The basic tasks of animal disease control, veterinary public health, imports and exports are poorly covered.
- There are not enough paraprofessionals to carry out all the assigned tasks.
- Current legislation is inadequate and needs to be updated.
- There are insufficient financial resources and training for official personnel.
- There is insufficient communication between the public and private sectors.
- There is lack of coordination between the animal health and public health services, particularly with Food Safety Institution.

Table 3 gathers the level of competences for each component under study during the PVS evaluation. The scale is from 1 to 5; 5 being the highest level of competency (OIE, 2016). Annex 5 presents a list of all critical competences for which the level is inferior to 3, and provides a brief explanation of their meaning.

Table 3. Level of competences of each component

COMPONENT	LEVEL
HUMAN, PHYSICAL AND FINANCIAL RESOURCES	2.64
TECHNICAL AUTHORITY AND CAPABILITY	1.82
INTERACTION WITH STAKEHOLDERS	2.14
ACCESS TO MARKETS	1.88
TOTAL FOR SURINAME VETERINARY SERVICES	**2.12**

Sources: OIE-PVS Report, 2012

These numbers express the weakness of the VS to undertake veterinary and technical functions efficiently and effectively, to access financial resources adequate for their continued operations, to document and manage their resources and operations in order to analyze, plan and improve both efficiency and effectiveness.

Some of these recommendations have already been addressed but some are still pending of solution and need to be taken into consideration. The investment plan will allow, for each of the component, to reach one more point on the evaluation scale.

2. OIE Disease Free Status recognition for diseases such as FDM, CSF and PPR

The official recognition of disease status of OIE Member Countries is of great significance for international trade and constitutes one of the most important legal links between the OIE and World Trade Organization (WTO), in the framework of the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), which entered into force in 1995. In 1998, the official agreement between WTO and the OIE further confirmed the OIE's mandate to recognize disease-and pest-free areas based on the SPS Agreement.

A country may either lose or enhance its commercial attractiveness in the eyes of potential or existing importing partners, depending on official recognition of its disease status. By acquiring and maintaining its official status, a country also demonstrates transparency and helps to promote animal health and public health worldwide, thereby gaining the trust of its partners and of the international community.

3. Self-Declaration to OIE of Disease Free for other diseases

By providing the relevant epidemiological evidence, the OIE Member Country can prove to a potential importing country that the entire country or a zone under discussion, meet the provisions of the specific disease chapter. Any self-declaration should be based on sound evidence demonstrating that the requirements for the disease status have been met in accordance with the OIE standards.

The self-declaration, signed by the OIE Delegate of the OIE Member Country concerned, is submitted to the OIE Headquarters with the data that conform to the requirements in the relevant Chapters of the Terrestrial or Aquatic Codes, as appropriate. Upon request of the OIE Delegate, a self-declaration may be published entirely or summarized in the OIE Bulletin for information of all OIE Member Countries. All self-declarations published by the OIE can be viewed by browsing the OIE Bulletins online.

D. Expected Outputs for the sub-component

VS are far from being able to perform all the activities under the scope of their mandate. The lack of technical and operational competences is the major constraint. In order to reach this outcome, the following outputs need to be achieved:

Animal health laboratory equipped

The expansion of international trade and of the livestock production in the country will generate the need for a broader range and higher volume of tests and the development of formal quality controls. Furthermore, the need for Suriname to estimate the prevalence of diseases such as bovine brucellosis and TB and to confirm the absence of BSE and CSF will further stretch the capacity of the laboratory. A well-managed laboratory can be an indispensable asset for Suriname. The possibility of certifying both animal products and livestock for export will depend on the guarantees that Suriname will be able to give that these commodities do not constitute a threat to the public and animal health of the importing entity. Reliable laboratory results are necessary to declare absence of animal disease and/or zoonotic diseases or harmful agents in the item exported.

The equipment and furnishing of the laboratory are included in this Investment Plan.

Training sessions on occupational health and safety for laboratory personnel and inspectors, and Standards and Operational Procedures (SOPs) published

SOPs will enable the accreditation according to ISO Certification bodies. Certification can be a useful tool to add credibility, by demonstrating that a product or service meets the expectations of the customers. For some industries, certification is a legal or contractual requirement.

Installing an integrated Information System

The implementation of the information system through InterTrace® for a wide usage, will involve not only the veterinarians but also the IT people and data managers. InterTrace® will be a tool to monitor the reference population under passive surveillance and will also support the implementation of disease control program and active surveys, as the system also allows the inclusion of specific health epidemiological data for each farm. This system will also be used by the other Departments within the LVV and can be facilitated to the private sector.

Ensure a fully functional Animal Identification and Traceability System (AI&T)

A modernized AI&T system will facilitate trade in animal products and enable Suriname to meet its regional and international obligations while ensuring fairer trade with its trading partners. The profile of the country amongst its trading partners will also be improved. An improved AI&T system will facilitate implementation of an appropriate surveillance system and provide farmers and the government a better return on investments made in food security while reducing the risk of spread of animal diseases into the country. At the same time the improved AI&T system will enable farmers to export their products to the neighboring countries as a result of compliance with international sanitary and quality standards.

A national AI&T system brings additional advantages beyond facilitation of livestock product traceability for export markets. Improved disease monitoring within a country improves control of those diseases. This in turn, helps prevent disease spread and thus reduces costs arising from disease treatment and animal morbidity and mortality. In addition, food safety is improved for local citizens by decreasing the risk and prevalence of zoonotic disease. AI&T also provide the basis for pedigree and performance recording, key aspects for improving animal management and genetic improvement, which result in increased productivity and profitability.

The Investment Plan includes activities to continue with this project, for all animals of all relevant species (Cattle, including buffaloes, small ruminants, horses, and pigs).

Training sessions for VS staff on emerging diseases, notifications and inspections

Training of staff is essential for performing the activities of the VS. The number of staff within the MAAHF is sufficient but most require training on different areas that need to be identified by the VS, including notification, inspection and emerging diseases. Three trainings are planned and will be hold at MAAHF facilities and will be prepared by a consultant for 20 people each time.

Online Master´s degrees obtained by VS' Heads of Units

The following online Masters will be included in the Investment Plan in order to give the VS the proper tools and knowledge that they require in order to perform their activities in a more accurate and efficient way:

- Master Degree Training on Veterinary Public Health Management (CVO)
- Master Degree Training on Public Health and Food Safety (Meet Inspection Unit)

- Master Degree in Risk Analysis (Disease surveillance and Monitoring Unit)
- Master on International Trade (Port Health Unit)

Setting up an Early Detection and Emergency Response System

Early detection and emergency response should be rehearsed regularly through simulation exercises. In the event of an outbreak of a priority disease, an incident command system should be established that would include other applicable ministries. A Simulation Exercise is an organized and controlled scenario-driven event carried out with the aim of: training personnel designated to be involved in an emergency situation related to the control of potentially rapid spreading animal diseases, and testing, reviewing and up-dating contingency plans, disease eradication strategies and capabilities at local, regional and national level.

The preparation and implementation of a simulation exercise is time consuming and for this reason very careful considerations should be given to defining the objectives of each individual exercise before details are prepared for the exercise. In principle an exercise may have very broad objectives, but they may also be very narrow and just refer to topics, such as the practical use of the geographical information system (GIS); disease modelling or communication in disease emergency situations. The Investment Plan contemplates 3 simulation exercises for 3 different species for the VS to be prepared in any emergency event relevant international and regional meetings. Details on the organization and costs can be found in Annex 6.

VS' participation in annual international and regional meetings of the OIE

Being updated in norms and international regulation is crucial to be prepared for any eventual discrepancy with importers and producers. This is particularly true for the Chief Veterinary Officer (CVO) who represents the Government of Suriname at OIE meetings and other technical meetings. The Investment Plan contemplates the assistance of the CVO to all relevant international and regional meetings.

Disease surveys and risk assessment studies conducted

The main surveillance needs for Suriname can be summarized as follows:

- For diseases that are not normally present, including exotic, emerging and epidemic disease, needs may include:
    - demonstrating freedom from disease for trade or political purposes, or to enable control measures to be ceased when a disease has been eradicated, or in order to be able to request the imports to be free from diseases.
    - early detection of incursions or outbreaks in order to allow rapid response.
- For endemic diseases that are routinely present, needs may include:
    - case finding – to eliminate cases as part of a control program;
    - disease monitoring by describing the level of disease to generate baseline data for future comparison, as source data for risk-analysis, or to assist with prioritization for disease control; and

- Detecting changes in the level or distribution of disease to assess progress in disease control programs, or to detect diseases that are becoming increasing problems.

Dossiers for the recognition of free from diseases status and self-declaration of free from diseases submitted to OIE.

Although Suriname may not need to demonstrate freedom from disease for trade purposes per se, or maybe not in the current situation of the country (not exporting), it still has an interest in early detection of disease incursions, and may require a disease free status in order to be able to demand the imports to be free from diseases. As described before in the Indicators Section, there are 2 ways to declare freedom form disease, one that will result on an official recognition from the OIE, and the self-declaration, depending on the disease.

Awareness campaign targeting the general public and animal owners conducted

To develop awareness campaigns for the general public to help preventing exotic diseases introduction and to motivate disease notification is part of the duty of the VS. This will include the distribution of brochures and fact sheets with basic information on animal health and animal welfare.

Workshops targeting private sector stakeholders conducted

For the Private sector though, it is necessary to have a particular and personalized approach, by holding workshops to raise their awareness on specific animal health and welfare issues such as the importance of following established protocols for the transport of newly introduced live animals.

E. Result Matrix

Result Matrix can be found as Annex 7.

F. Budget

The budget can be found as Annex 8.

G. Execution of the Sub-component

A chronogram of activities is proposed as Annex 9.

H. Indicative Terms of Reference for Consultants to be hired for the Program

All activities will be organized, supervised and supported by the VS.

International consultant to prepare the dossier for the OIE

Qualifications:

Excellent knowledge of international regulations, particularly those of the OIE, and proven experience in preparing documents for international organizations.

Activities:

Guide the VS in the preparation of the information that will be required for the dossier.

Identify, gather and analyze all relevant documentation for the dossier.

Indicate and clearly list all missing information and the means to obtain it.

Prepare the dossier according the OIE specific rules.

Train the VS for future self-declaration or other free status recognition.

Local or International Consultant to organize the training for APHT

Qualifications:

Excellent knowledge of animal diseases, veterinary services activities and international trade

Activities:

Identify the areas that will be the subject of training and prepare an appropriate calendar, including practical session.

Identify key staff to be included in the training as trainer and trainee.

Prepare training materials for local training components identified in the project.

III. TECHNICAL ASPECTS AND BENEFITS

A. Technical Feasibility

The activities displayed in this program are based on the recommendations of an international evaluation, the assessment of an international consultant and have been prioritized according to the needs of the country with the support and agreement of the LVV. There is certain logic in the chronology proposed for these activities based on the fact that many cannot be achieved if others are not up and running. This said, the feasibility of this program will depend mainly on the commitment and fulfilment of the LVV to finalize the construction of the diagnostic laboratory, without which many of the activities would be compromised. Furthermore, and acknowledging that the Animal health and Food Safety Components have received no budget at all for 2015, the feasibility of the program will also be subjected to LVV funds, not only allocated but most importantly delivered, to these components without which the VS staff will not be able to accomplish the named activities, because of lack basic commodities such as fuel.

B. Benefits and Sub-Component Beneficiaries

Veterinary Services are a public good, and strengthening their competences will therefore favor the whole community.

Producers, particularly small farmers, will obtain a strong technical support and will participate and benefit from the surveillance studies and control programs. They will be able reach a more effective and competitive production and might consider to invest in technology. Producers will also have the opportunity to expand to external market if the country manages to be officially declared free from diseases. By enabling the traceability of the products, producers will be able to apply to different labelling if they chose to provide a product from a particular production type (e.g.: animal welfare, free range, organic, etc.)

Consumers will benefit from a larger local offer of products and the safety of the products will be ensured. They will also be able to trace the provenance of their food and identify different production systems as mentioned before, when available.

The sanitary status of the whole country will be protected and trade measures will be easily be endorse by other countries who want to export to Suriname.

C. Environmental Considerations

There are some relevant environmental considerations to take into account when dealing with animals and animal diseases.

The general objective of the program is to support competitiveness of the sector by providing technical support. This implies that the sector might grow and therefore it is fair to contemplate that the animal population will grow accordingly. With this idea in mind, more land might be needed for the sector and efforts should be made to prevent indiscriminate deforestation. Moreover, livestock species implicate more animal waste and producers should be aware of different waste management options to make best use of the soil nutrients in manure while protecting natural resources. When managed properly, manure can be a valuable resource on a farm. It can be a source of nutrients for crop production and can improve soil quality. However, if there is insufficient land to use the amount of manure that is produced or if manure is mismanaged, then risks to water supplies and the environment could result.

On the other hand, when setting-up a diagnostic laboratory, there are contaminated wastes that need proper management. This program contemplates a water waste management system as well as a solid waste management system and an incinerator. All three items will ensure that no contaminant go to water supplies. Proper training of the laboratory staff will also allow to protect the environment from waste of animal origin.

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V. LIST OF ANNEXES

- Annex 1. Animal Health and Food Safety budget for 2015
- Annex 2. Absent diseases in Suriname
- Annex 3. FAO transboundary animal diseases
- Annex 4. Aquaculture Performance and Capacity Survey Report
- Annex 5. OIE PVS Summary table
- Annex 6. Simulation exercise
- Annex 7. Results Matrix Animal Health Sub-Component
- Annex 8. Estimated Budget for the Animal Health Sub-Component
- Annex 9. Chronogram of Activities