PVS Pathway

PVS Laboratory Mission Report

Bhutan

January 2016

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WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

OIE PVS PATHWAY LABORATORY

REPORT FOR

THE VETERINARY SERVICES OF

BHUTAN

11 - 22 January 2016

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Acronyms and Abbreviations

AAS	Atomic Absorption Spectroscopy
Agg	Agglutination
AGID	Agar Gel Immunodiffusion
AH	Animal Health
AMR	Antimicrobial Resistance
BAFRA	Bhutan Agriculture and Food Regulatory Authority
BBAT	Buffered Brucella antigen test
BQ	Black Quarter
CBPP	Contagious Caprine Pleuropneumonia
CC	Critical Competency (of the OIE PVS Tool)
CCHFV	Crimean Congo Haemorrhagic Fever Virus
CEC	Cost Estimation Card (of a CC in the PVS Gap Analysis)
CF	Complement fixation
CIF	Cost, Insurance and Freight (Incoterm)
CMT	California Mastitis Test
CSF	Classical Swine Fever
DoL	Department of Livestock
DVL	District Veterinary Laboratory
ELISA	Enzyme-linked Immunosorbent Assay
FMD	Food and Mouth Disease
FOB	Free On Board (Incoterm)
FS	Food safety
GC	Gas Chromatography
GC-MS	Gas Chromatography Mass Spectrometry
GMO	Genetically Modified Organism
HPAI	Highly Pathogenic Avian Influenza
HPLC	High Performance Liquid Chromatography
HS	Haemorrhagic Septicemia
IBD	Infectious Bursal Disease
IBR	Infectious Bovine Rhinotracheitis
IHA	Immunohemagglutination
MAT	Microscopic Agglutination Test
MoAF	Ministry of Agriculture and Forests
NABL	National Accreditation Board for Testing and Calibration Laboratories
NCAH	National Centre for Animal Health
NDV	Newcastle Disease Virus
OIE	World Organisation for Animal Health
PVS	OIE Tool for evaluation of the Performance of Veterinary Services (OIE PVS Tool)
PCR	Polymerase Chain Reaction
PPR	Peste des Petits Ruminants
PRRS	Porcine Reproductive and Respiratory Syndrome Virus
qPCR	Quantitative Polymerase Chain Reaction

QA	Quality Assurance
Rt-PCR	Reverse Transcription Polymerase Chain Reaction
VS	Veterinary Services

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Executive Summary

This OIE PVS Pathway Laboratory Mission is part of the OIE PVS Pathway and follows the OIE PVS Evaluation ("diagnosis") the PVS Gap Analysis ("prescription"), and the PVS Follow Up evaluation mission as a part of the complement of Tools that the OIE can provide to support compliance ("treatment") of the quality of Veterinary Services with international standards as defined in the OIE *Terrestrial Code*.

The objective of the PVS Pathway Laboratory Mission in Bhutan was to provide decision makers with information to allocate appropriate resources to the Veterinary Laboratory, and to make strategic decisions to support accurate and timely diagnosis, while ensuring the sustainability of the laboratory network.

Based on established procedures and practices of the OIE PVS Pathway, and using different Tools, a PVS Pathway Laboratory Mission allows:

- analysing the demand for veterinary laboratory analysis in the country,
- analysing the existing or potential offering of services, or "supply", of laboratory veterinary analysis at the national level, and
- presenting a range of sustainable management, organizational, budgetary and financial solutions, with different Options and their costs, including human and physical resources estimates.

As a consequence of the mandate of the Veterinary Services in Bhutan, the network of Animal Health laboratories, technically administered under the Department of Livestock, processes clinical samples as well as samples for official tests (surveillance programmes and tests for outbreak diagnosis). There is also a laboratory located in Yusipang, near the Capital city of Thimpu that was recently built specifically for food safety testing that is administered under BAFRA (Bhutan Agriculture and Food Regulatory Authority)

The current demand for laboratory analysis is 70 700 tests for Animal Health, out of which approximately 58 200 are clinical tests, approximately 12 500 tests are for official surveillance programmes and 1 800 tests are for Food Safety.

The PVS team analysed the demand for laboratory analysis, mainly driven by official programmes of the VS, and the potential capacity and capability of the national laboratory network.

The official programme for next year for Animal Health (AH) is currently limited to 25 000 tests for epidemiological surveillance of Brucellosis and Johne's disease, sero-conversion post-vaccination efficacy monitoring for FMD and Rabies, and outbreak rapid diagnosis (total estimated at approximately 13 000 tests).

No official data was available for planned food safety (FS) programmes, so the PVS team presents in this report possible test numbers derived from discussions with staff.

In terms of the demand for laboratory analysis in the next five years, two Scenarios were analysed. The first Scenario includes the official programmes only, comprising approximately 35 000 tests / year for AH and 38 000 tests for FS.

The second Scenario includes the official programmes for AH tests as well as all clinical tests estimated at 97 000 tests and 38 000 tests for FS per year.

For the FS programme, three options are proposed, a) performing all tests in house, b) outsourcing molecular tests from the BAFRA laboratory to the National Centre for Animal Health (NCAH) laboratory and c) outsourcing residue testing to external laboratories as well, thus maintaining microbiological tests and Atomic Absorption Spectrometry (AAS) only in BAFRA laboratory.

The present report proposes different strategic Options for the Animal Health laboratory network: a) one central AH health laboratory (NCAH), b) maintaining existing and planned structure comprising 29 laboratories and c) an optimised structure with 1 central laboratory (NCAH) and 20 clinic laboratories.

The report describes strategies, human, physical and financial resources, and the advantages and disadvantages of each Scenario and each Option.

Scenario 1, Option 3, whereby one central laboratory (NCAH) processes all official AH tests as well as Enzyme-linked Immunosorbent Assay (ELISA) and Polymerase Chain Reaction (PCR) for FS, and outsources Gas Chromatography GC and High Performance Liquid Chromatography (HPLC) for FS, would be optimal in terms of national budget sustainability.

However, Scenario 2, which addresses the total testing needs for Bhutan (i.e. official AH and clinical tests) probably best reflects the country's needs, as there are no private laboratories to perform clinical tests. Scenario 2, Option 3, is recommended, comprising one central AH laboratory and 20 small laboratories best suited to the geographical context of the country and the dynamic of interactions with farmers. Although much costlier for the national budget compared with Option 1, we believe that Option 3 may also be more acceptable in political terms.

For FS testing, Option 3, in either scenario – whereby molecular tests and residues testing are all outsourced--is the more economical option and the best option for the quality of results. However, if Bhutan wishes to be technically independent, then Option 2--whereby NCAH performs FS molecular tests (ELISA and PCR)—will avoid duplication of techniques, equipment and human capacity between BAFRA and NCAH laboratories.

The challenges in maintaining financial sustainability results from the need to maintain a large spectrum of laboratory functions (and thus related equipment), compared to the relatively limited variety of tests expected in the medium term.

It is accepted that, despite the anticipated limited variety of tests that will be needed, Bhutan desires to remain technically independent in terms of animal health diagnostics and expertise. This will require that there is enough laboratory equipment to access a full range of laboratory functions while avoiding duplication and wastage of resources.

Bhutan's situation is common to many countries, where national veterinary laboratory networks must be subsidized by the public budget.

Introduction

Following a request to the OIE from the Government of Bhutan, an OIE PVS Pathway Laboratory Mission, based on the national priorities of the Veterinary Services as defined in the 2009 PVS Gap Analysis Report and the 2015 PVS Follow-up report, was conducted from 11 to 22 January 2016 by a team of OIE PVS Laboratory Experts. This mission, a "treatment" within the PVS Pathway, follows the initial PVS Evaluation mission in 2008, the aforementioned PVS Gap Analysis and PVS Follow-up missions in 2009 and 2015.

The overall strategy adopted when dealing with most, if not all, of the critical competencies within the 2015 PVS Evaluation Follow-up report was, taking into account the size of the country and the small number of laboratory procedures performed, to recommend concentrating resources on their central laboratory and organising a detailed and secured sampling handling and transport procedure from the field to the laboratory.

The following diseases are the main concerns for Bhutan: Anthrax, Classical Swine Fever (CSF), Food and Mouth Disease (FMD), Brucellosis, Haemorrhagic Septicaemia (HS), Black Quarter, Peste des Petits Ruminants (PPR), Highly Pathogenic Avian Influenza (HPAI), Newcastle Disease Virus (NDV), Infectious Bursal Disease (IBD), and rabies.

Anthrax, FMD, CSF, HS, NDV, PPR, and rabies were reported to the OIE in 2014.

Anthrax, FMD, HS, NDV, rabies, and HPAI were reported in 2015 (January-June, 1st 6-monthly report).

Animal health and veterinary public health priorities were identified in general terms in the PVS Gap Analysis report and the PVS Follow-up report and were:

- To fulfil obligations as an OIE Member Countries to prevent the international spread of transboundary animal diseases.
- To develop SOPs to ensure appropriate transfer of samples from the field to the central level.
- To concentrate investments only in the 2 central laboratories of NCAH and BAFRA.
- To adopt formal Quality Assurance systems for each level of laboratories throughout Bhutan.
- To develop a programme for active surveillance based on risk analysis
- To develop a control programme for FMD
- To develop a residue control programme

However, the reports of the PVS Gap Analysis and the PVS Follow-up Mission do not provide enough detail in the description of strategies and objectives of those programmes to clearly define the type and number of laboratory tests needed and both reports mention that there was a need for a specific support mission concerning the veterinary laboratory function.

Given the variety of issues to be addressed, the 2015 Report of the PVS Follow-up Mission strongly recommended that the country request a specific PVS Laboratory Mission as the PVS Gap Analysis could only provide a general overview of investments to be considered for the laboratory function. The OIE PVS Pathway Laboratory Mission, for which the methodology, strategies and recommendations are outlined in this report, builds upon the 2015 OIE PVS Follow-up report, recognizing that laboratories are an integral component of the Veterinary Services and their priority should be to meet the needs of the Veterinary Services.

II Conduct of the OIE PVS Pathway Laboratory Mission

II.1 Method, objectives and scope of the mission

This OIE PVS Pathway Laboratory Mission is part of the OIE PVS Pathway and follows the OIE PVS Evaluation ("diagnosis"), the PVS Gap Analysis ("prescription"), and the PVS Follow-up missions as a part of the complement of Tools that the OIE can provide to support compliance ("treatment") of the quality of VS with international standards as defined in the OIE *Terrestrial Code*.

Objective:

The purpose of many laboratory-related expert technical evaluation missions is to assess or evaluate technical capacity and suggest improvements. As these types of missions are generally constrained by the context and terms of reference, they often do not allow for the in-depth examination of substantive systemic or strategic issues. The most frequent outcome of these kinds of missions is at best partial examination of structures and systems, to the detriment of an overarching or strategic view. Often this leads simply to technical recommendations and over-investment in structures that are systematically unable to implement them properly.

The overall objective of the PVS Pathway Laboratory Mission is to provide Veterinary Services decision makers with information to allocate appropriate resources to the National Veterinary Laboratory system and to make strategic decisions to support accurate and timely diagnosis, while ensuring the sustainability of the laboratory system.

Method:

Based on established procedures and practices of the OIE PVS Pathway, a PVS Pathway Laboratory Mission was implemented in Bhutan:

- To analyze the demand for veterinary laboratory analysis, mainly defined through current laboratory activity, the OIE PVS Gap Analysis and described national programmes, as well as from other partners and/or from prospective demand, including an overall estimate of the number of samples and tests, of the geographical distribution of demand, of the cost of consumables (including sampling kits, samples transports and reagents) and of the international cost;
- To analyze the existing or potential offering of services, or "supply", of laboratory veterinary analysis at the national level, mainly delivered by the national veterinary laboratory infrastructures, as well as by other laboratories (from other public institutions or the private sector), including their existing capacity and their potential to break into new markets to make the laboratory function a more coherent investment; and
- To present a range of sustainable management, organizational, budgetary and financial solutions, with different Options and their costs, in order to assist decision making at the highest levels related to the cost of autonomy and distribution of the national laboratory network, including Options for externalization through official delegation to the private sector or to international Reference Laboratories.

Outcomes:

The Veterinary Services decision makers of Bhutan should have a better understanding of:

- the laboratory analysis demand in their country (current and prospective);
- the sustainable ways to organize the national veterinary laboratory network to make the laboratory function a more coherent investment; and

- how to better allocate or advocate for sufficient resources to support accurate and timely diagnosis of priority animal diseases and veterinary public health issues.

Outputs:

The present report presents the main outputs of the mission, which include:

- An estimate of the demand for laboratory tests for the next five years, inclusive of the related costs of consumables and of the international price of these tests if sent abroad for analysis;
- An estimate of the current offering, or "supply", of laboratory analysis, including prospects for potential new markets;
- Proposals of sustainable management and organizational solutions of the national veterinary network; and
- Estimates of human, physical and financial resources needed for the implementation of the best solutions adapted to the national veterinary network.

Tools:

In order to facilitate the analysis of current and prospective data, the PVS Pathway Laboratory Mission used several Tools, from which are extracted the tables presented below and in annexes. Here is a brief description of theTools and the way they are used during the mission.

1. Demand Tool

The Laboratory Analysis Demand Tool (the first Tool used during a PVS Pathway Laboratory Mission) validates the estimation made during the PVS Gap Analysis Mission of both the budget required for laboratory analyses on the international market (including cost of analyses, sample kits, local and international shipment, etc.) and the required budget for consumables in the national laboratory network (including cost of reagents, samples kits and local shipment). During this portion of the mission, the current demand, the PVS Gap Analysis demand, and the possible prospective demand for veterinary laboratory analyses is examined with the country team, as well as the limiting factors and opportunities for demand.

2. Supply Tool

The purpose of this Tool is to collect data mainly on the full array of veterinary laboratory analyses that are offered by the laboratory network. This Tool establishes automatic ratios for human, physical and financial resources. It assesses if the laboratory analyses offered by the laboratory function meet the demand. Most of the tables (sheets) are annexed in this report to support findings and proposals described in the body of the report.

3. Calculation Tool

The Calculation Tool can be used to simulate different Scenarios depending on the distribution of the budget. It highlights real costs, possible benefits, or required subsidies.

The tables of the first sheet entitled "current and proposed budget" are incorporated directly into Chapter VI of this report.

The second sheet allows estimation of the "true costs" of laboratory analyses taking into account their respective numbers, and the costs of capital, staff and functioning of the laboratory.

The third sheet allows an estimation and calculation of a national tariff of laboratory analysis.

The fourth sheet automatically estimates the required human resources based on the number of tests, and the balance for financing between costs and tariffs. It allows simulating different programmes and budgetary and strategic Options.

4. Analytical Line Tool

The Analytical Line Tool proposes a pre-established check-list of equipment lines, including a set of equipment and proposed international price.

II.2 Availability of data relevant to the mission

The Supply Tool was distributed to Dr Ratna Gurung, as the nominated country focal person to be completed by all laboratories before the mission. Completed Supply Tools were received from the central laboratory (NCAH), from each of the 4 regional laboratories, from 1 satellite laboratory and 2 district laboratories prior to the mission as requested. During the first day's meeting, the OIE PVS Team wase told that there were an additional 2 functional satellite laboratories and 12 functional district laboratories, for which data was either gathered by phone during subsequent meetings or data was extrapolated from completed Supply Tools for other similar category laboratories.

The BAFRA laboratory was contacted but did not complete the Supply Tool. It took the mission more than one week after arrival to obtain a final number of tests performed in 2015; the estimated demand for BAFRA could not be obtained.The data supplied by NCAH laboratory was very accurate and the tests well described. For all other laboratories, accurate data were provided for staff and buildings. The equipment inventory was not always provided. Complete information concerning tests was only provided prior to the mission for NCAH.

Most of the laboratory system's records are kept on hard copy and quarterly reports are sent to NCAH for sample analysis.

Missing data was captured through general discussions with laboratory staff and entry of data into the Demand and Supply Tools during the Mission.

Discussion with staff from the NCAH laboratory allowed an estimation of the prospective demand for tests for the national surveillance programme.

II.3 Context of the mission

II.3.A General organisation of the national veterinary laboratory network

The national veterinary laboratory network of Bhutan has been established since 1978 as a part of the Animal Health Division (AHD) under the authority of Department of Livestock (DoL).

Presently, it consists of 1 central laboratory, 4 regional laboratories, 4 satellite laboratories strategically based along the border with India at quarantine posts (albeit one that is not yet functional) and 18 district laboratories (14 fully functional at present). The satellite laboratories are under the authority of the regional laboratories and the district laboratories under the authority of the DoL (Figure 1).

The 4 Regional Laboratories are Kanglung, Tsimasham, Wangdue and Zhemgang.

The three functional satellite laboratories, strategically located near the border with India and next to the quarantine stations, are Gelephu, Phuentsholing and Deothang. One satellite laboratory is under construction at Nganglam. At district level, there are 18 District Veterinary Laboratories (14 currently functional), which are all based on the same model and are all associated with a district veterinary hospital. These are located at Bumthang, Chukha (not functional), Dagana, Gasa (not functional), Haa, Lhuntse, Mongar, Paro, Pemagatshel, Punakha, Samdrup-Jongkhar, Samtse, Sarpang, Thimphu, Trashigang (not functional), Trashiyangste (not functional), Trongsa and Tsirang.

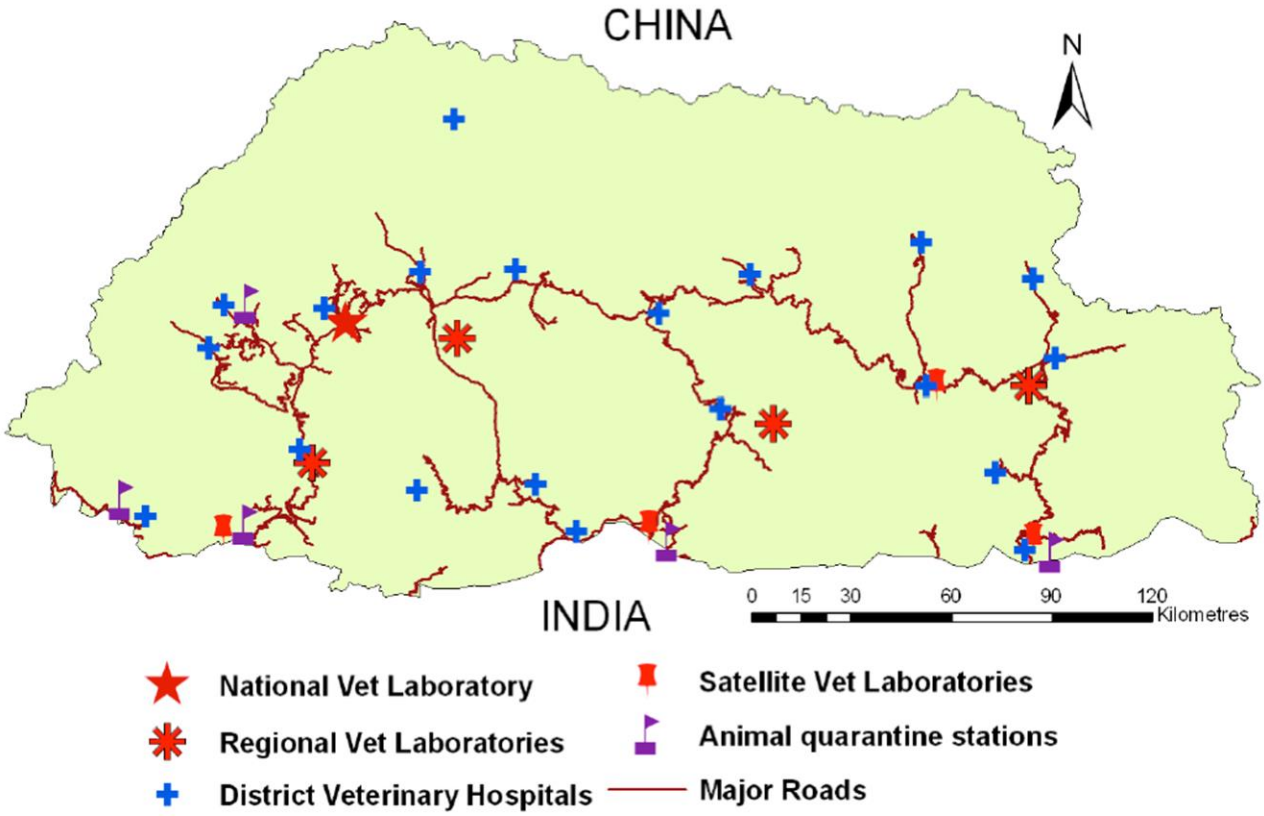

Figure 1: Location of the AH laboratories in Bhutan (PVS GAP 2009)

The Food Safety laboratory of BAFRA (the Bhutan Agriculture and Food Regulatory Authority) is responsible for residue testing and is directly under MoAF while the NCAH, the regional veterinary laboratories and satellite veterinary laboratories are supervised by DoL (see Figures 2 and 3), The regional laboratories are located within integrated Regional Livestock Development Centres. Similarly the district veterinary laboratories are integrated with district veterinary clinics/hospitals, so that the veterinary officer and the laboratory technical officer are required to allocate some of their time to support the team of para-veterinary field staff located at the sub-district (or Geog level) in local disease control programmes.

There is no private laboratory network in Bhutan. Hence all animal clinical tests are conducted by the network of DoL laboratories.

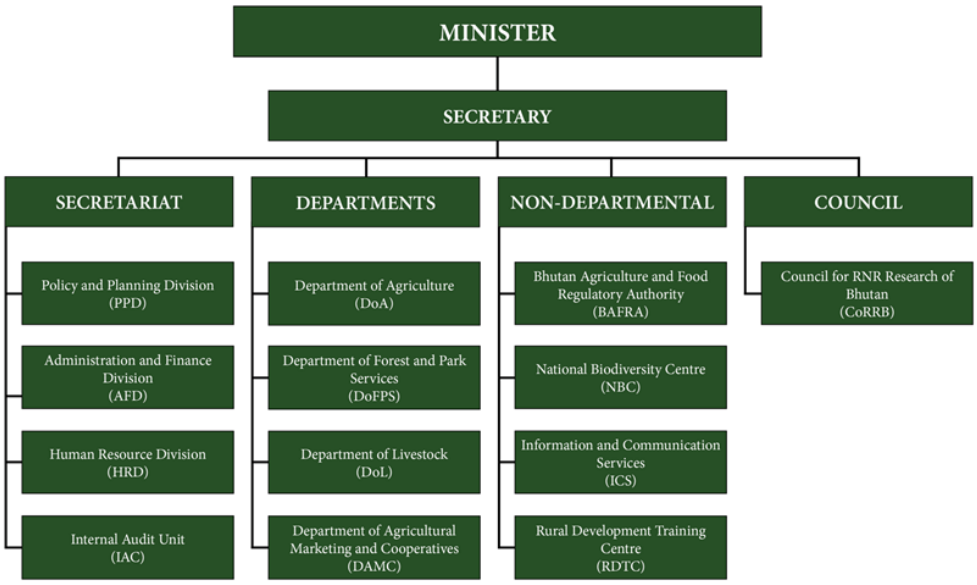

Figure 2: Organisational structure of Ministry of Agriculture and Forests

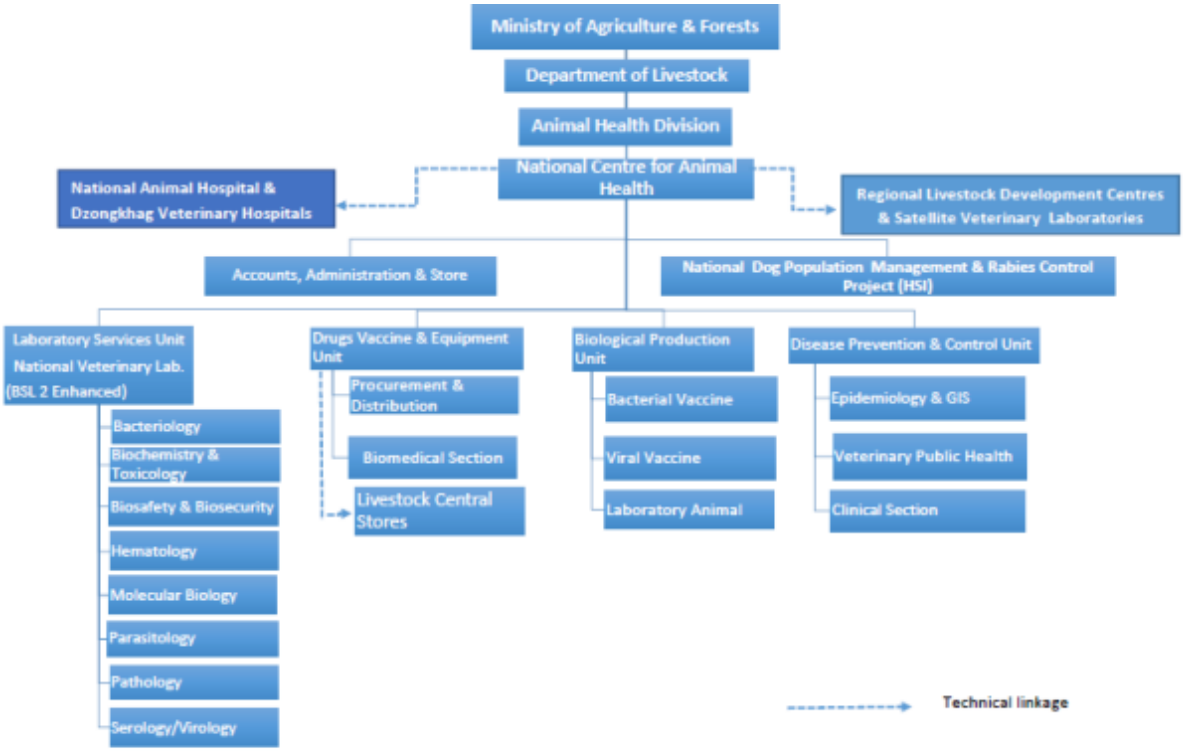

Figure 3: Organisational structure of the National Centre for Animal Health

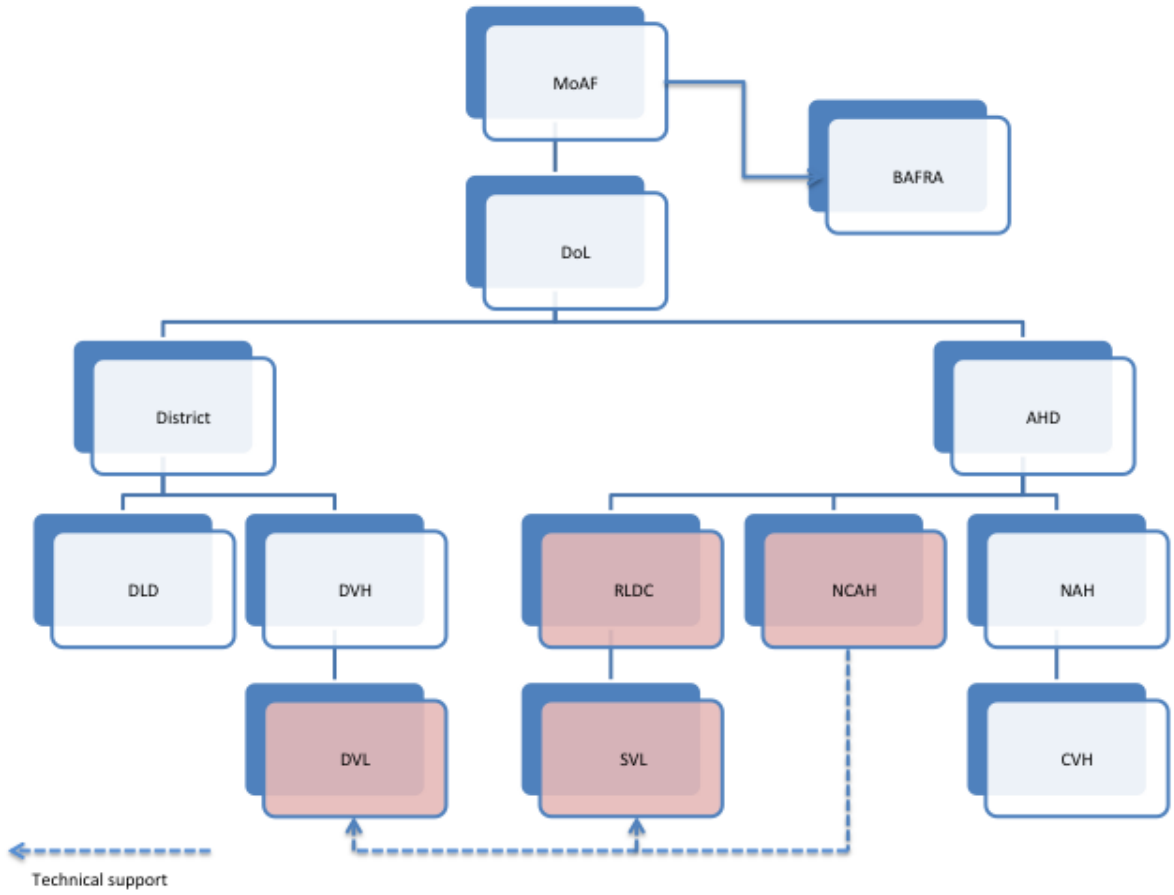

Figure 4: Organisational Chart of the existing laboratory network[1]

[1] NAH=National Animal Hospital; CAH=City Animal Hospital; DLDC=District Livestock Development Centres; DVH=District Veterinary Hospital; RLDC=Regional Livestock Development Centres; SVL= Satellite Veterinary Laboratory

II.3.B OIE PVS Evaluation for veterinary laboratory critical competencies

Table 1: Findings of the 2015 OIE PVS Follow-Up Mission

II-1 Veterinary laboratory diagnosis 2015 **A Access to veterinary laboratory diagnosis** *The authority and capability of the VS to have access to laboratory diagnosis in order to identify and record pathogenic agents, including those relevant for public health that can adversely affect animals and animal products.*	**Levels of advancement achieved (in grey)**
	1. Disease diagnosis is almost always conducted by clinical means only, with no access to and use of a laboratory to obtain a correct diagnosis.
	2. For major zoonosis and diseases of national economic importance, the VS have access to and use a laboratory to obtain a correct diagnosis.
	3. For other zoonosis and diseases present in the country, the VS have access to and use a laboratory to obtain a correct diagnosis.
	4. For diseases of zoonotic or economic importance not present in the country, but known to exist in the region and/ or that could enter the country, the VS have access to and use a laboratory to obtain a correct diagnosis.
	5. In the case of new and emerging diseases in the region or world, the VS have access to and use a network of national or international reference laboratories (e.g. an OIE Reference Laboratory) to obtain a correct diagnosis.

PVS 2008 and PVS Gap Analysis 2009	3. For other zoonosis and diseases present in the country, the VS have access to and use a laboratory to obtain a correct diagnosis.

II-1 Veterinary laboratory diagnosis 2015 **B. Suitability of national laboratory infrastructures** *The sustainability, effectiveness and efficiency of the national (public and private) laboratory infrastructures to service the needs of the VS*	**Levels of advancement achieved**
	1. The national laboratory infrastructure does not meet the need of the VS.
	2. The national laboratory infrastructure meets partially the needs of the VS, but is not entirely sustainable, as organisational deficiencies with regard to the effective and efficient management of resources and infrastructure (including maintenance) are apparent
	3. The national laboratory infrastructure generally meets the needs of the VS. Resources and organisation appear to be managed effectively and efficiently, but their regular funding is inadequate to support a sustainable and regularly maintained infrastructure
	4. The national laboratory infrastructure generally meets the needs of the VS and is subject to timely maintenance programmes but needs new investments in certain aspects (e.g. accessibility to laboratories, number or type of analyses).
	5. The national laboratory infrastructure meets the needs of the VS, and is sustainable and regularly audited.

PVS 2008 and Gap Analysis 2009	CC not evaluated in 2008 and 2009

II-2 Laboratory quality assurance 2015 *The quality of laboratories (that conduct diagnostic testing or analysis for chemical residues, antimicrobial residues, toxins, or tests for, biological efficacy, etc.) as measured by the use of formal QA systems including, but not limited to, participation in relevant proficiency testing programmes.*	**Levels of advancement**
	1. No laboratories used by the public sector VS are using formal QA systems.
	2. Some laboratories used by the public sector VS are using formal QA systems.
	3. All laboratories used by the public sector VS are using formal QA systems.
	4. All the laboratories used by the public sector VS and most or all private laboratories are using formal QA systems.
	5. All the laboratories used by the public sector VS and most or all private laboratories are using formal QA programmes that meet OIE, ISO 17025, or equivalent QA standard guidelines.

PVS 2008 and Gap Analysis 2009	1. No laboratories used by the public sector VS are using formal QA systems.

II-3 Risk analysis 2015 *The authority and capability of the VS to base its risk management measures on risk assessment.*	**Levels of advancement**
	1. Risk management measures are not usually supported by risk assessment.
	2. The VS compile and maintain data but do not have the capability to carry out risk analysis. Some risk management measures are based on risk assessment.
	3. The VS compile and maintain data and have the capability to carry out risk analysis. The majority of risk management measures are based on risk assessment.
	4. The VS conduct risk analysis in compliance with relevant OIE standards, and base their risk management measures on the outcomes of risk assessment.
	5. The VS are consistent in basing sanitary measures on risk assessment, and in communicating their procedures and outcomes internationally, meeting all their OIE obligations (including WTO SPS Agreement obligations where applicable).

One should note that quality assurance has been initiated since 2014 in NCAH. BAFRA FS laboratory has obtained accreditation for ISO 17025 for 30 bacteriological tests.

II.3.C Recommendations of the 2009 Gap Analysis report and the 2015 OIE PVS Follow-up report for the national veterinary laboratory network

The 2009 PVS Gap Analysis report recommended that the laboratory network and the specific functions of regional and central laboratories should be re-assessed, as laboratories with low sample throughput tend to have difficulty in achieving and maintaining consistent quality diagnostics.

The 2009 report also suggested that Bhutan strengthen sample submission pathways (packaging, transport, laboratory accession, field-to-laboratory communication) from the field to a regional laboratory, as the issue of remote locations could not justify the establishment of satellite laboratories where little diagnostic activity takes place. The report also recommended a better coordination between BAFRA and NCAH in order to avoid redundancy of methods, staff, equipment and infrastructures.

The 2015 PVS Follow-up report recommended developing and implementing a strategic plan for continuing education and to establish a budget at the national level to enable coordination of animal health programmes.

Reports from both the 2009 and 2015 PVS missions recommended establishing a clear chain of command between all laboratories, including the BAFRA laboratory.

Finally, the 2015 report recommended planning of active surveillance for major diseases and evaluation of FMD.

II.4 Organization of the mission

The OIE team visited the central laboratory, one regional laboratory and one district laboratory. It was not possible to travel and visit a satellite laboratory due to time constraints.

The main events and timeline of the mission are described in Table 2.

Table 2: Time Table for the Mission

Date	Location/meetings	Activities
Monday 11 January	Thimphu: NCAH office and laboratory	General meeting with NCAH staff chaired by Dr Kinzang Dukpa, Program Director. Presentation of the NCAH facilities by Dr Dukpa. Presentation of the NCAH laboratory by Dr Ratna Gurung. OIE team presentation of the objectives of the mission; request data. Visit of the NCAH lab.
Tuesday 12 January	Thimphu: meetings at DoL offices	Meeting with Dr Tashi Samdup, DG of DoL and OIE delegate and Dr Namgay Wangchuk,, DG of BAFRA; NCAH: compiling data from Supply Tool with NCAH staff
Wednesday 13 January	Yusipang and Thimphu	Visit BAFRA laboratory in Yusipong with Dr Jambey

		NCAH: current demand and obtain some of the missing data
Thursday 14 January	Travel to Wangdue and overnight	Meet with Dr Rinzin Pem, laboratory Manager; Visit regional laboratory and gather missing information
Friday 15 January	Punakha	Visit district laboratory Punakha; meet Dr Sonam Jamt, veterinary officer
Saturday 16 January	Thimphu	Discussion with focal point concerning epidemiological data required for prospective demand
Sunday 17 January	Thimphu	Meeting with Dr Gurung and Dr Tenzin, Epidemiologist. Establish the prospective demand
Monday 18 January	Thimphu	Reconcile data; brain storming
Tuesday 19 January	Thimphu	Visit to His Excellency Hon'ble Minister of Ministry of Agriculture and Forests, Yeshey Dorji. Brain storming
Wednesday 20 January	Thimphu	Prospective demand BAFRA, Finalise options
Thursday 21 January	Thimphu	Final OIE presentation of options in a general meeting with BAFRA and NCAH representative and Regional laboratory representative, chaired by His Excellency Hon'ble Minister of Ministry of Agriculture and Forests, Yeshey Dorji
Friday 22 January	Thimphu	Final discussion
Saturday 23 January	Departure	

III Analysis of the Demand for Veterinary Laboratory Analysis

III.1 Current demand for veterinary laboratory analysis

Although in most countries, the PVS Laboratory Mission analysis is restricted to the national veterinary programme and excludes all clinical diagnostic tests, it was explained to the OIE PVS team that in Bhutan, all tests for animal diseases are included in the work programme for laboratories and are presently offered free of charge.

The BAFRA laboratory is in charge of food quality testing and currently performs bacteriological tests. Since it is at present a separate geographical entity, located 14 km from NCAH and under another jurisdiction, data and analyses for this laboratory have been recorded separately.

Data were gathered during meetings for NCAH, the 4 regional laboratories, the 3 functional satellite laboratories, for 2 district laboratories and for BAFRA laboratory.

Considering that all district laboratories function on the same model and are fundamentally annexed to the veterinary clinics, essentially performing parasitology tests and a few basic microbiological tests, data were extrapolated from the mean data for the 2 DVLs for which the data were available to the other 12 DVLs.

The detail of all laboratory tests performed by all laboratories as supplied in the OIE Supply Tools is compiled in the current Demand Tool (Annex II).

In 2014, an estimated 70 650 tests were performed for animal diseases, out of which 83% were for clinical tests and 17% (in red) were for official Animal Health Programmes of the Veterinary Services for disease control (Table 3).

Table 3: Estimation of Laboratory Tests Performed in 2014 for Animal Diseases

		NCAH	Gelephu	huentsolin	Dewatang	Knglung	simasham	Wangdue	Zhemgang	Punakha	Tsirang	16 other district labs	All labs
Tests			satellite	satellite	satellite	regional	regional	regional	regional	district	district	extrapolated from average of Punakha & Tsirang	Total Tests
Avian influenza PCR		80				2							**82**
Avian influenza rapid		35	5	40	44	71	110	**3000**	4	12	333	2760	**6414**
Johnes ELISA		1123											**1123**
Gram stain on Milk		1000	179			6	444	326	750		240	1920	**4865**
in for Black quarter identification						19		26	29				**74**
Brucellosis rose bengale		414				415	116	326					**1271**
Brucellosis ELISA		306				0							**306**
Brucellosis PCR		34				0							**34**
CBPP ELISA		240											**240**
Class Swine F ELISA		300											**300**
FMD (ELISA)		336				180							**516**
FMD rapid technique		275	1			20	5		12				**313**
Gumboro IBD ELISA		319											**319**
mboro IBD rapidtechnique		7	6		15	7		40	16		40	320	**451**
IBR ELISA		107											**107**
NDV rapid technique		12		10	25	7			5				**59**
NDV PCR		19				2							**21**
PPR ELISA		313				0							**313**
Rabies ELISA		196											**196**
Rabies IF		23											**23**
Rabies rapid technique			15		14	19							**48**
Porcine PRRS ELISA		92											**92**
Parasites fecal		1700	8565	2231	2253	4010	7150	645	1048	454	720	9392	**38168**
Parasites blood		**570**		420	80	380	125	280	86				**1941**
Biochemistry		400	3	2	0	439			18		20	160	**1042**
Histopath general		1126			12				27				**1165**
General bacteriology		4694		1021	57	1566	1544	280	277	4		32	**9475**
Haematology manual				1079	0	380							**1459**
Residues		232			0								**232**
Total		13953	8774	4803	2500	7523	9494	4923	2272	470	1353	11850	**70649**

Table 4: Tests Performed in the BAFRA Laboratory in 2014

Microbiology tests for Food and Water	Number of tests
Aerobic plate count	540
Total Coliform count	540
E.coli count	300
Yeast and Mold count	420
Total tests	**1 800**

III.2 PVS mission demand for laboratory analysis

The 2015 OIE PVS Follow up report did not provide data about the required type and number of laboratory tests. The 2009 PVS Gap Analysis report suggested an approximate number of 10 000 tests per year, out of which 5 000 for official surveillance for animal diseases and 3 600 samples for residue testing for pesticides done by BAFRA.

The OIE makes a clear distinction between clinical tests, done for diagnostic and treatment purpose and the veterinary services programme tests, performed to control major animal diseases and zoonoses. The OIE recommends strongly that the VS laboratory network should only perform tests which are required to run the VS programmes and that the clinical tests should be performed either by veterinary clinics or in private or public laboratories, but should not be budgeted as part of the VS laboratory programme.

During the current PVS Pathway Laboratory Mission, the DoL required that all diagnostic tests be taken into consideration, because in Bhutan there is no distinction between official programmes and clinical tests. It also seems unlikely that the BAFRA and DoL veterinary laboratories could be formally linked.

Bhutan plans to become residue-free and GMO-free at the national level, and this involves surveillance of local and imported food products.

III.3 Possible prospective demand

Taking into account the epidemiological and economical context of the livestock sector in Bhutan, the public sector will continue to drive the demand for laboratory analysis. Although the country encountered a number of IBD, HPAI FMD and PPR outbreaks in the last two years, they were well managed and it is unlikely that the number of tests will increase dramatically in the next five years.

Although all tests are currently free of charge, the possibility of charging private companies for some tests was mentioned for the future.

Table 5: Animal Census Estimate (source: OIE PVS Follow-up Report 2015)

Species	Cattle	Small Ruminants	Pigs	Poultry
Numbers	343 500	49 000	7 500	550 000

1. Animal Health programme demand:

During the current PVS Pathway Laboratory Mission, the official programme was outlined as follows for the coming years:

22 313 tests will be required, out of which 13 500 will be ELISA (Table 6).

ELISA tests

- 600 cattle sera to be tested for FMD vaccination sero-monitoring. Compulsive vaccination will progressively be implemented in Bhutan on an estimated number of 100 000 cattle (once a year in low risk regions, twice per year in high risk regions. The country is at stage 2 of the FMD-PCP programme, and would like to reach stage 3.
    - 1 500 cattle sera to be tested for Jones disease, Bovine Leucosis and IBR (total 4 500 tests)
    - 80 cattle sera to be tested for brucellosis (confirmation of possible positive animals with the Buffered Brucella antigen test *BBAT*)
    - 1 300 dog sera to be tested for rabies vaccination sero-monitoring
    - Composite total of 7680 samples to be tested in order to evaluate the prevalence of Aflatoxin residues in food and of various diseases (Japanese Encephalitis, Crimean Congo Haemorrhagic Fever Virus (CCHFV) in goats and cattle, Leptospirosis in dogs, Toxoplasmosis in cats.

BBAT for Brucellosis

A preliminary survey in a dairy farm has indicated a high prevalence of Brucellosis (no accurate data available); however, a study in Wangdue on 326 animals has shown no positive animals. Because of the country religious beliefs, positive animals at present are quarantined but not slaughtered. 1 500 samples will be collected to be processed by BBAT (further confirmation by ELISA and CFT).

Serotyping of Salmonella in chicken and E. coli in pigs

4000 samples will be collected for this purpose.

2. Early detection and outbreak investigation

Although it is difficult to predict the number of cases which could erupt in the future, it seems reasonable to postulate that the number will not notably increase in the next 5 years but can be estimated at worst to rise by 20%.

The current demand for rapid tests is approximately 11 000 for HPAI, NDV, IBD, Rabies, FMD. Therefore the prospective demand is estimated at 13 000 tests.

Table 6: Annual Prospective Demand for Animal Health Official Programmes

Diseases: Test method	Prospective AH Official Surveillance Program
Avian influenza: PCR	
Avian influenza: Rapid test	
Bacto Milk gram	
Black quarter	
Brucellosis: Rosebengal test	1 500
Brucella: ELISA	80
Brucella: PCR	200
Brucella:CF	40
CBPP: Elisa	
Class Swine Fever: ELISA	
Crimean Congo Hemorrhagic Fever Virus in Goats & Cattle:ELISA	2 500
Enzootic Bovine Leukosis:ELISA	1 500
FMD: ELISA	606
FMD: Rapid test	
Infectious Bursal Disease: ELISA	
Infectious Bursal Disease: Rapid test	
IBR: ELISA	1 500
Japanese Encephaliti: ELISA	1 176
Johnes disease: ELISA	1 500
Leptospirosis in Dogss: ELISA	1 500
Newcastle disease: Rapid test	
Newcastle disease: PCR	
PPR: ELISA	
PRRS: ELISA	
Rabies: ELISA	1 330
Rabies: IFAT	
Rabies: Rapid test	
Toxoplasmosis in Cats: ELISA	1 500
Parasites: Fecal examination	
Parasites: Blood examination	
Biochemistry tests	1 300
PCR: other diseases	
Histopathology: General	
Bacteriology: General (AMR monitoring)	869
Bacteriology: Specific (E.coli in Pigs)	1 212
Bacteriology: Specific (Salmonellosis in Chicken)	3 000
Haematology: manual method	
Residues in Animal feed (Aflatoxins)	1 000
Total	**22 313**

3. Clinical tests

The clinical tests compose the vast majority of all samples needing laboratory analysis and are mainly fecal and blood samples and to a lesser extent bacteriological tests and California Mastitis Tests (CMT). (Note that for cost analysis, the CMT samples have been amalgamated with rapid tests under the denomination “agglutination” tests).

Three governmental “Megafarms” will be developed in Bhutan in the next 5 years with an approximate number of 300 cattle, 350 goats, 3 000 turkeys and 100 000 chickens. These

animals have been taken into account in the official animal health programmes but will require clinical tests (i.e., parasitological samples, CMT tests).

The number of ruminants in the country will not be greatly impacted in the future, but the total number of chickens will increase by 20%.

Each of these farms will have a small in-house laboratory for sample preparation and some basic testing so it is expected that the total prospective demand for clinical tests for the country will be around 62 000 tests in the next five years (10% increase compared to the current demand of 58 000). The prospective demand for official animal health programme tests is 22 300 (Table 6), thereby giving a total prospective demand of around 97 000 (i.e., 62 000 + 22 000 + 13 000) for all tests (excluding FS).

4. Food /feed safety and residue testing

Bhutan would like to implement a strategy to become Genetically Modified Organism (GMO)-free and to become an “organic” country. For this purpose, BAFRA plans to test various imported and locally produced food for GMO, antibiotic, pesticide and hormone residues, aflatoxin and water for heavy metals.

It was not possible to get figures for the prospective demand. The OIE PVS team was told that heavy metal testing in water by Atomic Absorption Spectrophotometer is operational with a plan to test 250 samples per year.

Should the equipment already in place, HPLC and GC be operational, reagents available and the staff trained, the laboratory might process 500 samples per year for pesticide testing. Assuming that a panel of 40 pesticides per sample would be investigated, this amounts to 20 000 samples to be processed by HPLC or GC (estimated to be 10 000 for each technique).

The BAFRA team did not mention the possibility of testing for hormonal growth promoter residues in meat products imported into Bhutan, based on risk analysis.

However, the OIE PVS team estimated a possible 1 000 tests for hormonal growth promoters in order to undertake an initial risk assessment on imported meat products. Testing of specific commonly used hormonal growth promoters such as ractopamine can be performed by ELISA.

GMO food will also be tested by quantitative qPCR.

In the absence of prospective test requirements from by BAFRA, the OIE PVS team made an informed estimate of 30 250 FS-related tests (Table 7) in order to allow the analysis carried out by the Calculation Tool.

Table 7: Estimation of the Prospective Demand for Food Safety in BAFRA Laboratory

Food Safety tests	Estimated number of tests
Bacteriological tests	5 000
AAS for Heavy Metals	250
GC-MS tests	10 000
HPLC tests	10 000
ELISA tests (Aflatoxin + Growth promoters residues Ractopamine)	3 000
PCR for GMO	2 000

The prospective Demand Tool, presented in Table 8 for Animal Diseases and Table 9 for Food Safety (BAFRA) and below in the budgets, takes into account the total number of tests

(clinical and VS programmes) and summarises generic parameters including cost of sampling kits, reagents, local transport (estimated at 4 €/ two kilograms and 25 samples), international transport (estimated at 80 € / two kilograms and 25 samples), and average international cost of laboratory analyses.

The Demand Tool inputs the prospective demand and allows for an estimation of the cost of performing these tests if they were sent abroad (e.g. to a laboratory in a neighbouring country or regional laboratory) based on the international shipment cost as estimated during the meetings.

For the purposes of costing, rapid tests and CMT test have been recorded as “agglutination tests”.

It would cost approximately 1.8 € million per year to meet all of Bhutan’s laboratory analysis demand for animal disease (Table 8) and 2.2 € Million for the food safety programme (Table 9) in an international laboratory; the majority of thess costs is attributable to international transport. The international price also represents the maximum price that a national laboratory in Bhutan could charge its domestic clients, if they choose to charge clients for laboratory services.

In comparison, if laboratory analyses are handled at the national level, the cost of consumables (including reagents, sampling kits, and domestic transport within the laboratory network) is approximately 427 500 € per year for animal diseases and 722 000 € for food safety.

It should be noted that these costs do not include the cost of purchasing new equipment, maintaining laboratory equipment/infrastructure or staff required to perform this tests; these figures will be indicated in Part IV of this report.

Please note that in Part VI, different scenarios will be presented with different simulation Demand Tools (excluding clinical tests for AH or molecular tests in BAFRA being done in NCAH or in BAFRA laboratory).

Table 8: Prospective Demand Tool for Animal Diseases (Clinical Tests and Official Demand)

OIE Manual Chapter Number	Laboratory Tests	OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																		Other Tests					Cost by Programme	
		Agent Identification				Serology																			Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
		Parasitology	Bacteriology	Virology	PCR or RTPCr	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	gamma interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)	1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)	3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test	15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples) 4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples) 80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery (a + d)		1.2	1.2	1.2	1.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	2.0	2.0	2.0	2.0		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery (a + b + d)		4.2	8.7	16.2	17.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	36.0	30.0	4.5	11.0		
Unit price of laboratory test at international level (a + c + d + e)		19.4	29.4	54.4	44.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	107.0	92.0	47.0	52.0		
OIE Listed Animal Diseases (as of May 2013)																										
2.1.5.	Foot and mouth disease							606					376												2,495	7,982
2.1.11.	Paratuberculosis (Johne's disease)							1500																	5,190	14,490
	Bovine Leucosis							1500																		
2.1.13.	Rabies							1330					58	28											4,693	13,335
2.3.4.	Avian influenza				98								7076												9,182	44,397
2.3.12.	Infectious bursal disease (Gumboro disease)							383					469												1,822	6,354
2.3.14.	Newcastle disease				25								71												504	1,511
2.4.3.	Bovine brucellosis				250			80	40			1500													5,797	19,239
2.4.12	IBR							1500																	5,190	14,490
	Crimean Congo Hemorrhagic Fever Virus (CCHFV)							2500																		
2.7.6.	Contagious caprine pleuropneumonia							288																	996	2,782
2.7.11.	Peste des petits ruminants							376																	1,301	3,632
2.8.3.	Classical swine fever (hog cholera)							360																	1,246	3,478
	Japanese encephalities (JE)							1200																		
2.8.7.	Porcine reproductive and respiratory syndrome							110																	381	1,063
Other animal diseases (non OIE listed)																										
	General parasitology	43688																							181,742	845,800
	Specific parasitology (blood)	2329																							9,689	45,089
	General bacteriology		12322										5406												112,439	392,372
	Specific bacteriology (BQ, E.coli, Salmonella)		4301																						37,247	126,277
	General serologies																								0	0
	Specific serologies Leptospirosis Toxoplasmose)							3000																	10,380	28,980
	General anatomo-pathology																			1751					9,631	99,807
	Specific anatomo-pathology																								0	0
	haematalogy	1459																							6,069	28,246
																									0	0
																									0	0
Food Chemistry and Residues																										
	Other residues or contaminants (Aflatoxin)							1000																	3,460	9,660
																									0	0
																									0	0
																									0	0
Cost by Test: Consumables for National Laboratory n * (a + b + d))		197500.16	######	0	6401	0	0	54436.18	90.4	0	0	1140	14263	29.7	0	0	0	0	0	0	9631	0	0	0	0	427,446	
Cost by Test: International Laboratory Analyses (n * (a + c + d + e))		919135.36	######	0	16546	0	0	151980.78	386	0	0	6990	76161	158	0	0	0	0	0	0	99807	0	0	0	0		1,759,217
Total Number of Tests (n)		47476	16623	0	373	0	0	15733	40	0	0	1500	13456	28	0	0	0	0	0	0	1751	0	0	0	0	96,980	

Table 9: Possible Estimated Prospective Demand for BAFRA Food Safety Programme With All Tests Being Performed in BAFRA Laboratory.

OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																			Other Tests					Cost by Programme	
			Agent Identification				Serology																				Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
			Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	gamma interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)		0	0	1		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	0	0	0	0		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery		**(a + d)**	0.2	0.2	1.2	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	1.0	1.0	1.0	1.0		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery		**(a + b + d)**	3.2	7.7	16.2	16.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	35.0	29.0	3.5	10.0		
Unit price of laboratory test at international level		**(a + c + d + e)**	18.4	28.4	54.4	43.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	106.0	91.0	46.0	51.0		
Cost by Test: Consumables for National Laboratory		**n * (a + b + d))**	0	38300	0	32320	0	0	10380	0	0	0	0	0	0	0	0	0	0	0	0	0	350000	290000	875	0	**721,875**	
Cost by Test: International Laboratory Analyses		**(n * (a + c + d + e))**	0	141800	0	86720	0	0	28980	0	0	0	0	0	0	0	0	0	0	0	0	0	1E+06	910000	11500	0		**2,239,000**
Total Number of Tests		**(n)**	0	5000	0	2000	0	0	3000	0	0	0	0		0	0	0	0	0	0	0	0	10000	10000	250	0	**30,250**	

III.4 Conclusion: limiting factors and opportunities for demand

The current demand is approximately 70 000 tests/year for animal diseases - from which only 12 000 are performed for an official programme and 2 000 tests for food microbiology.

The opportunities for demand seem to be limited to the food safety programme as Bhutan doesn't wish to implement large scale seromonitoring for infectious diseases.

The OIE PVS team has only been able to meet once with BAFRA laboratory staff and was told the laboratory was planning to perform 10 samples per week for pesticide residues and 5 samples per week for heavy metal residues, without specifying how many residues would be tested and by which technique. No indication was given for other tests (i.e., GMO, microbial or hormonal residues, etc.)

The country team stated that a strategic master plan for the prospective demand will be written in the near future; however at this stage the prospective demand is impossible to estimate for BAFRA and figures in Table 9 are at best an "educated guess" in order to conduct some limited, preliminary budgeting analyses.

Although the laboratory is very well equipped for the tests (donation from the World Food Programme), staff has not been trained. The equipment is not maintained or calibrated and the consumables and reagents are not currently or frequently available.

Currently, 10 samples are sent once a year to be tested for a panel of 40 pesticides in Thailand for a cost of US $360 per sample. It is unlikely that BAFRA will be able to perform these tests in-house at such a low cost and with adequate quality control.

IV Analysis of the Supply of Veterinary Laboratory Analysis

IV.1 Current capacity of the national veterinary laboratory network

The Supply Tool was provided to all laboratories within the Animal Health diagnostic network of Bhutan and to the BAFRA laboratory (Annex 1).

IV.1.A Human resources

The district laboratories do not have dedicated laboratory staff. Staff share their time between the field, the clinic and the laboratory. Estimation of the time allocated to laboratory work was made based on discussions during meetings. For example, if a person was spending 30% of their time performing laboratory tasks, then the staff number is recorded as 0.3.

Data were not supplied for the majority of district laboratories so an average was extrapolated from the 2 district laboratories for which data were available.

Table 10: Present Human Resources of the Animal Health Laboratory Network (from the Supply Tool)

	NATIONAL LABS		SATELLITE LABS			REGIONAL LABS				DISTRICT LABS			Total
	NCAH	BAFRA	Gelephu	Phuensch	Deothang	Kanglung	Tsimashar	Wangdue	Zhemgang	Punakha	Tsirang	16 other district	
Lab head	1	4				1	1	1	1				9
Manager		3	0.3	0.3	0.3					0.3	0.3	4.8	9.3
Technical	15	5	3	2	2	4	2	4	1	0.8	0.8	12.8	52.4
Support	1		2	1	1	2	0	0	3	0	0	0	10
Total	**17**	**12**	**5.3**	**3.3**	**3.3**	**7**	**3**	**5**	**5**	**1.1**	**1.1**	**17.6**	80.7

Accurate data were provided for 58 staff out of 81:

57% of the staff is male and 43% female. The average age of laboratory staff is 39 (range 27-58 years). Only 5% of staff is over 50 years old.

For the purposes of the PVS Pathway missions, the OIE recommends a ratio of 1 laboratory manager for 5 technicians and 1.3 support staff for 5 technicians but in Bhutan, the definition of manager, technician and support staff is not always very clear and in a small laboratory the same person can assume all tasks.

The estimated figures of Table 10 are very close to PVS recommendations.

However, the analysis of the real data provided for 58 staff show a high number of high level staff compared to technical staff (18 veterinarians and other professionals, 37 laboratory technicians and 3 support staff).

Salaries vary according to seniority and localisation of veterinarians and other professionals; discussions with NCAH staff and Wangdue laboratory have indicated that the average monthly salaries are currently between 343 € and 486 € for a veterinarian and other professionals, 214 € for a technician and 100 € for support staff.

Per Diems

Per diem are provided to all staff that are required to travel either for overnight or single day official activities. Whilst many of the samples tested by the Laboratory network are collected by field based staff including the veterinary para-veterinarians based in each of the approx. 223 Geogs (sub-districts); these costs for field based staff were not included in the laboratory cost estimates.

However, on regular occasions, especially for National surveillance activities or for investigations of field outbreaks, laboratory staff would travel to the field to coordinate and perform sample collections for laboratory analysis. The per diem rate for an over-night activity is 900 Ngultrum and 800 Ngultrum for a single day activity. In addition staffs receive an allowance for visits that involve extended walking and may require hire of a horse or mule to carry equipment and samples.

Overall in discussion with counterpart staff from NCAH it was estimated that a total of 60,000 € per year is allocated for per diem for laboratory staff for official activities.

Table 11: Salary Range

	Higher level Labs				Lower level Labs			
	NCAH, BAFRA, REGIONAL LABS				SATELLITE, DISTRICT LABS			
	salary/month local currency	salary/year local currency	salary/month Euro	Salary/year Euro	salary/month local currency	salary/year local currency	salary/month Euro	Salary/year Euro
LAB HEAD	34,000	408,000	€ 486	€ 5,829	24,000	288000	€ 343	€ 4,114
TECHNICAL	15,000	180,000	€ 214	€ 2,571	15,000	180000	€ 214	€ 2,571
SUPPORT	7,000	84,000	€ 100	€ 1,200	7,000	84000	€ 100	€ 1,200
MANAGEMENT	34,000	408,000	€ 486	€ 5,829	34,000	408000	€ 486	€ 5,829

Note that the Management Salary is estimated to be the same as a Laboratory Head as no data was available. Only BAFRA has 3 management staff.

Continuing education is not provided on a regular basis and the lack of competency for the use a simple rapid tests or the execution of BBAT is common amongst field officers and technical staff.

Only 3 staff obtained short course training last year and five veterinarians have undergone specialized postgraduate training.

IV.1.B Physical resources

All laboratories have means of telecommunication and Internet, as well as computer equipment and cold chain. Only NCAH and one RLDC have their own dedicated vehicles. Electricity supply is very reliable in Bhutan, however most of national and regional laboratories have power back-up system. All laboratories have a small autoclave.

The local currency is the Ngultrum and an exchange rate of 70 Ngultrum to one Euro was used for all cost estimations

Building and Premises

The value of all building construction is 500 € per m^2 for a standard laboratory room and 1 000 € per m^2 for BSL2[2] facility.

The same construction cost estimate per m^2 was used for all buildings regardless of whether they were located on valuable land in major towns and cities or on lower valued land in remote areas.

Table 11 below describes the physical resources of all Animal Health and BAFRA laboratories.

The OIE PVS team was informed that all district laboratories were built on the same model. Data were extrapolated for the 12 district laboratories for which no data were available.

The whole laboratory network comprises a total building surface area of approximately 20 485 m^2 of BSL1 and 40 m^2 of BSL2.

The cost of a 4WD in Bhutan is estimated at 28,000 €. Only NCAH has 2 cars. In Regional, Satellite and District Laboratories cars are pooled and shared and motor bikes are allocated to some staff or staff is paid an allowance if they use their own vehicle for approved field visits, for purposes of vaccination, case investigations, sample collections and participation in national surveillance programmes etc. Accordingly, to estimate vehicle and allowance costs for laboratory purposes only, an estimated 10% of the cost of a single vehicle has been allocated for each Regional, Satellite or District Laboratory.

The cost of each computer, printer and associated landline for Internet access has been estimated as 1 500 €.

[2] See Chapter 1.1.3, “Biosafety and biosecurity: standard for managing biological risk in the veterinary diagnostic laboratory and animal facilities” of the Manual of Diagnostic Tests and Vaccines for Terrestrial Animals for more information on the biosafety risk analysis approach.

Table 11: Physical Resources (buildings, cars and IT) of the Animal Health Network and BAFRA Laboratory

		NATIONAL LABS				SATELLITE LABS								REGIONAL LABS								DISTRICT LABS							
		NCAH		BAFRA		Gelephu		Phuentsholi		Deothang		Nganglam New Sat Lab		Kanglung		Tsimasham		Wangdue		Zhemgang		Punakha		Tsirang		18 other district labs extrapolated		TOTALS	
Construction Costs	price in Euro/m2	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area	Value Building	Surface Area (Sq Metre)	Value Building
Lab BSL1	€ 500	466	€ 233,000		€ -	0	€ -	0	€ -	0	€ -	0	€ -	0	€ -	0	€ -	0	€ -	0	€ -	37	€ 18,500	37	€ 18,500	666	€ 333,000	1,206	€ 603,000
Lab BSL2	€ 1,000	40	€ 40,000		€ -		€ -		€ -		€ -		€ -		€ -		€ -		€ -		€ -		€ -		€ -		€ -	40	€ 40,000
Total for each Lab			€ 273,000		€ -		€ -		€ -		€ -		€ -		€ -		€ -		€ -		€ -		€ 18,500		€ 18,500		€ 333,000	1,246	€ 643,000
Purchase Price of 4WD in Euro	€ 28,000	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value	No. Vehicles or proportion share of pool vehicles	Value
Vehicles		2	€ 56,000	0	€ -	0	€ -	0	€ -	0	€ -	€ -	€ -	0	€ -	0	€ -	0	€ -	0	€ -	0.1	€ 2,800	0.1	€ 2,800	1.8	€ 50,400	4	€ 112,000
Ave. System Price in Euro	€ 1,500	No. Systems	Value	No. System	Value	No. System	Value	No. System	Value	No. System	Value	No. Systems	Value	No. System	Value	No. System	Value	No. System	Value	No. System	Value	No. System	Value	No. System	Value	No. System	Value	No. Systems	Value
IT, Computer, Land line etc		10	€ 15,000	0	€ -	0	€ -	0	€ -	0	€ -	€ -	€ -	0	€ -	0	€ -	0	€ -	0	€ -	1	€ 1,500	1	€ 1,500	18	€ 27,000	30	€ 45,000

Equipment

Completed Supply Tools were received from NCAH, all of the 4 Regional Laboratories, 2 of the 3 current Satellite Laboratories and 2 of the 14 current District laboratories.

The value of equipment was not recorded and provided by the laboratory managers. The mission calculated the amount by applying international reference costs from the Analytical Line Tool with some price reductions compared to International Prices for items that were identified as being purchased from Indian manufacturers. The values were entered by the OIE PVS team in each Supply Tool.

For laboratories where the Supply Tool was not completed (BAFRA and for the majority of district laboratories) an equipment list was compiled by the OIE PVS team. This was based on a visit to BAFRA and to a representative District laboratory where a list of required equipment was recorded according to the tests that were conducted or were proposed to be conducted. Recommended International prices in the Analytical Line Tool were used with price adjustments for Indian sourced items (refer to Annex 4).

The list of equipment described in the Supply Tool was not always coherent with the functions described by the different laboratories of the network. Some laboratories seem to be significantly over-equipped for the number and type of tests performed. For example, a thermocycler and an ELISA reader are located in one of the regional laboratories and are not used.

Only 4% of the total value of equipment is dysfunctional in the 9 laboratories which supplied the information (NCAH, BAFRA, 4 regional laboratories, 1 satellite laboratory and 2 district laboratories).

Based on information provided and estimation by the OIE PVS team, it is estimated that the overall value of the equipment is approximately 1 686 000 € (Table 12).

There are no corrective or preventive maintenance, metrology or calibration programmes. Although they are mentioned in the QA manual of NCAH and BAFRA laboratories and in the Supply Tool for 2 small laboratories, they are not implemented. A number of the laminar flow cabinets in remote laboratories and all micropipettes seem to be very old.

Table 12 : Equipment Value of the Animal Health Network and BAFRA Laboratory

Laboratory	NCAH Central	BAFRA Lab Central	Gelephu Satelite	Phuonscoling Satellite	Deothang* Satelitte	Knglung Regional	Tsimasham Regional	Wagdue Regional	Zhemgang Regional	Punakha District	Tsirang District	Other 16 District Labs extrapolated from Punakha data	Total Value
Equipment value	€ 345,000.00	€ 405,000.00	€ 16,000.00	€ 70,000.00	€ 46,000.00	€ 121,000.00	€ 39,000.00	€ 122,000.00	€ 200,000.00	€ 38,500.00	€ 73,000.00	€ 616,000.00	€ 1,686,500.00

Note that the equipment value for the Deothang regional laboratory was estimated using the OIE Analytical Tool (Annex 4) according to the tests performed.

IV.1.C Financial resources and budget

None of the laboratories were able to describe their annual budget prior to the mission.

NCAH allocated budget for last financial year was approximately 100 000 €.

The estimated budgets presented in Table 13 (Animal Health) and Table 14 (BAFRA) have been compiled on the basis of data collected during the mission for the main budget lines.

Note that the maintenance calibration and metrology of the equipment for BAFRA has been estimated at 20% because of the high cost of maintaining equipment such as HPLC or GC.

Table 13: Current Budget Estimate for Animal Health with all existing facilities

Proposed Budget for Animal Health Current Demand in existing structure	Unit Cost	Number	Renewal Rate	Annual Budget
Capital Investment				462,000
Buildings and Premises	1,677,000		0.05	83,850
Vehicles	28,000	7	0.2	39,200
IT and Office Equipment	1,500	50	0.33	24,750
Telecommunication Equipment			0.2	-
Refrigerators			0.1	-
Deep Freezers (-20°C & -80°C)			0.1	-
Laboratory Equipment	1,571,000	1	0.2	314,200
Other Equipment			0.2	-
Salaries and Remuneration				234,130
Veterinarians and Other Professionals	4,541	10		45,864
Laboratory Technicians	2,571	46		118,266
Support Staff	1,000	10		10,000
Per diem and travel allowance in the country	60,000	1		60,000
Per diem and travel allowance abroad				-
Operating Costs				500,046
Continuing Education (short courses, etc.)	Salaries	5%		8,707
Administrative Expenditures (office supplies, etc.)	Salaries	30%		52,239
Reagents and Consumables	282,000	1		282,000
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		157,100
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-
Other				-
Total				**1,196,176**

Table 14: Current Budget Estimate for BAFRA

Proposed Budget for BAFRA current demand	Unit Cost	Number	Renewal Rate	Annual Budget
Capital Investment				112,370
Buildings and Premises	568,000		0.05	28,400
Vehicles			0.2	-
IT and Office Equipment	1,500	6	0.33	2,970
Telecommunication Equipment			0.2	-
Refrigerators & Deep Freezers (-20°C & -80°C)			0.1	-
Laboratory Equipment	405,000	1	0.2	81,000
Other Equipment			0.2	-
Salaries and Remuneration				34,700
Veterinarians and Other Professionals	4,550	4		18,200
Laboratory Technicians	2,580	5		12,900
Support Staff	1,200	3		3,600
Per diem and travel allowance in the country				-
Per diem and travel allowance abroad				-
Operating Costs				116,125
Continuing Education (short courses, etc.)	Salaries	5%		1,735
Administrative Expenditures (office supplies, etc.)	Salaries	30%		10,410
Reagents and Consumables	22,980	1		22,980
Maintenance, Calibration and Metrology	Laboratory Equipment	20%		81,000
External Services (Pesticide testing in a reference Laboratory), External Analysis, Transport, etc.)	3,600			-
Other				-
Total				**263,195**

In 2014, the total budget for Animal Health (1 200 000 €) was distributed as follows:

- 82% for clinical testing
- 18% for Animal Health official programmes

BAFRA performed 1 800 bacteriological tests for a total estimated budget of €263 000.

The total current budget for AH and FS is approximately 1.46 Million €.

All tests are free of charge to the public and the network is entirely supported by the Bhutan government solely with occasional international funding for equipment.

IV.2 Analysis of the capacity of other laboratories in the country

There are no private or research laboratories in Bhutan.

IV.3 Analysis of potential collaboration of the national laboratories with other entities

Bhutan collaborates actively with a number of other entities:

1. National Institute of Animal Health, Bangkok, Thailand: PRRS, HPAI, Brucellosis
2. Chulalongkorn University, Bangkok, Thailand: Rabies
3. World Reference Laboratory, Pirbright, UK: FMD
4. Australian Animal Health Laboratory, Geelong, Australia: HPAI
5. Oita University, Japan: Rotavirus, Rabies
6. Centers for Disease Control and Prevention, Atlanta, USA: Anthrax
7. Centers of Excellence for Influenza Research and Surveillance, NIAID, Memphis, USA: HPAI
8. National Institute of High Security Animal Disease, Bhopal, India: HPAI
9. University of Calgary, Canada: CD, CSF
10. OIE, WHO, FAO: Professional services, diagnostic kits and training

Under the One Health programme of Bhutan, NCAH processed some samples for Leptospirosis detection in the laboratory of the Ministry of Health.

V Possible Strategies for the National Veterinary Laboratory Network

V.1 Constraints

Several constraints are undermining the sustainability of the Bhutan Animal Health laboratory network:

1. Geography of Bhutan
   Bhutan has a mountainous topography with a network of roads following the main river valleys. This means that collection of samples from animals often requires extended walking by veterinary and para-veterinary staff to reach small villages and grazing sites. Similarly transport of samples from the district laboratories to the central laboratory of NCAH may take days rather than hours if consigned for transport by local buses. This constraint has already been considered and addressed for disease outbreaks caused by predicted infectious agents through the provision of a range of rapid tests to the district laboratories. It was also described to the OIE mission that transport of samples to NCAH does regularly occur and with a cost effective rate of around 4.00 €. For the larger scale collection of surveillance samples these can be readily stored in strategically located freezers in district sites until transported by a DoL vehicle once the collection sample has been completed.
2. Organisational constraints
   Several organisational constraints were identified which are contributing to reduced sustainability of the Bhutan Animal Health laboratory network. A key constraint is the absence of a clear chain of command between the central authorities and the regional and district levels. The Head of Veterinary Services has no financial authority over the regional and district laboratories, whilst having more control over the satellite laboratories. This deficiency was identified both in the OIE PVS Evaluation and the PVS Gap Analysis reports and persists at present.
3. Clash of responsibilities between BAFRA and DoL, leading to no clear definition of the Competent Authority for animal health, quarantine regulation and food quality control.
   BAFRA was established under an Act of Government and has mandated responsibilities for animal and plant quarantine regulation and food quality control. The coordination between NCAH and BAFRA relies more on personal commitments rather than the official policies and operating parameters. BAFRA operates the quarantine stations situated adjacent to the Indian border and collects samples for animal disease testing (Brucellosis and FMD) but rather than send the samples to the one of the nearby satellite laboratories that were established for import animal testing, instead the samples are transported to NCAH.
4. Lack of quality assurance
   Laboratory Quality Assurance is not always established. This has been identified and with appropriate recommendations made in the reports of the previous three PVS Missions. NCAH has no regular calibration programme for pipettes. All provincial laboratories perform microbiological tests and rapid tests for early detection of outbreaks as well as quality tests on milk, without strategically planned continuing education programme.

V.2 Strategic Options: advantages and disadvantages

The overall objective of the PVS Pathway Laboratory Mission is to provide Veterinary Services decision makers with information to allocate appropriate resources to the National Veterinary Laboratory system and to make strategic decisions to support accurate and timely diagnosis, while ensuring the sustainability of the laboratory system. One purpose of a PVS Laboratory mission is to provide Veterinary Services with information to allocate appropriate

resources to the National Veterinary Laboratory network while ensuring the sustainability of the laboratory system. However, in the context of Bhutan, where all tests are currently free of charge and performed in the same facilities, two Scenarios will be discussed with 3 Options for each Scenario.

The first Scenario will only analyse the official Animal Health surveillance programmes and rapid tests for early detection of outbreaks, and in parallel, the FS programme.

In order to take into account the fact that at present there is no difference in budgeting for clinical tests and official programmes, a second Scenario will take into account all tests within the prospective demand that includes official Animal Health programmes, all clinical tests and the FS programme.

For both Scenarios, the estimated number of tests for FS will be the same. However, FS tests could theoretically be done with a) BAFRA performing all tests in-house; or b) PCR and ELISA tests transferred from BAFRA to NCAH; and c) GC and HPLC tests being outsourced by BAFRA to overseas commercial testing facilities.

The cost analysis for Options 1, 2 and 3 will be presented in detail under the first Scenario.

V.2.A Scenario 1:

This Scenario would mean that there is a separate budget for clinical tests. Accordingly, this analysis only includes costing for official programmes and FS. In this scenario, field officers will have access to rapid tests as required and would be provided with sampling consumables (vacutainers). Considering the very small number of tests for prospective demand for official tests and early detection of outbreaks, there is no need for remote laboratories. NCAH would therefore perform all laboratory analyses for official programmes.

The 3 Options under this Scenario 1 will only vary according to the transfer or not of the molecular and ELISA based analyses from BAFRA to NCAH.

- If molecular and ELISA tests are transferred from BAFRA laboratory to NCAH, then no additional equipment purchases would be required, as operational PCR and ELISA equipment currently exists within NCAH. Moreover, existing PCR and ELISA equipment would be transferred to NCAH as back-up equipment from the Kanglung regional laboratory.
- However, if PCR and ELISA tests remain at BAFRA then additional PCR and ELISA equipment purchases will be required by BAFRA and this has been taken into account in the costing.

Option 1: NCAH performing AH tests and BAFRA doing all FS

Advantages:

- BAFRA laboratory has been established under an Act and this option would justify the Act and would make use of the existing infrastructure in buildings
- Avoids transport issue once a week between the 2 laboratories, located 12 km apart
- Maintains technical independence of Bhutan for all tests (including HPLC and GC-MS)

Disadvantages:

- Very high cost of training staff on HPLC and GC-MS and possibly having to recruit an international expert for a few months
- Very high cost of maintenance for HPLC, GC-MS and AAS

- Difficulty sourcing consumables (columns, etc.) for HPLC and GC-MS
- Duplication of equipment between NCAH and BAFRA for molecular techniques
- Purchase of 50 000 € of equipment: BAFRA has no ELISA and is not satisfied with the PCR thermocycler they currently have
- May need extra staff in BAFRA and staff would need to be trained

Option 2: NCAH performing all AH tests as well as the FS molecular and ELISA tests

Advantages:

- Maximize use of equipment at NCAH: the current prospective demand for ELISA tests for AH is 15 700 and 377 for PCR. Incorporating an additional 3 000 ELISA and 2 000 PCR tests into NCAH's current working programme as a service for BAFRA would not require more equipment or more staff at NCAH.
- Avoids need to recruit more staff at BAFRA
- Better system for ordering and managing consumables and reagents. At present NCAH and BAFRA have two separate ordering systems.
- Maintains autonomy of Bhutan for all tests (including HPLC and GC-MS)

Disadvantages

- Samples will have to be sent to NCAH once a week for molecular testing.
- Very high cost for training staff in BAFRA on HPLC and GC and possibly having to recruit an international expert for a few months
- Very high cost of maintenance for HPLC, GC-MS and AAS
- Difficulty sourcing consumables (i.e., columns, etc…) for HPLC and GC-MS
-

Option 3: **NCAH performing all AH tests and FS molecular tests; BAFRA outsourcing HPLC and GC-MS**

Advantages:

- Maximizes use of equipment at NCAH: the current prospective demand for ELISA tests for AH is 15 700 and 377 for PCR. Incorporating an additional 3 000 ELISA and 2 000 PCR into NCAH's current working programme as a service for BAFRA would not require more equipment.
- Avoids need to recruit more staff for BAFRA
- Better system for ordering and managing consumables and reagents. At present NCAH and BAFRA have two separate ordering systems.
- Significant potential cost saving for BAFRA (although difficult to accurately estimate at this point in absence of formal quotes for a programme of outsourced testing through Indian or Thailand based entities).

Disadvantages

- Doesn't maintain technical independence of Bhutan for all tests (including HPLC and GC-MS)

V.2.B Scenario 2

Under this Scenario, all tests for both clinical samples and official programmes are taken into account. For each option under this Scenario, FS tests can be transferred or not from BAFRA to NCAH as described in the above Scenario:

- All FS tests to be performed in the BAFRA laboratory
- Molecular and ELISA FS tests to be performed at NCAH laboratory and BAFRA laboratory performing AAS, GC-MS, HPLC and microbiological tests
- Molecular FS tests to be performed at NCAH laboratory and BAFRA laboratory doing AAS and microbiological tests. GC-MS and HPLC tests to be outsourced.

In the three options below, the cost of FS molecular tests performed at NCAH will be approximately 50 000€, which is the cost of reagents for ELISA and PCR.

Option 1: Maintaining existing structure

This Scenario maintains the current structure of the Animal Health laboratory network of 29 laboratories, with NCAH as the central veterinary reference laboratory, 4 regional laboratories, 4 satellite laboratories and the planned 20 district laboratories. In this context, district laboratories form an integral part of the veterinary clinics and are only offering basic parasitology, microbiological testing, and rapid tests for early outbreaks of diseases. The satellite laboratories, next to the border and quarantine stations can theoretically perform BBAT and rapid tests. However data from 2014 show that they are mostly performing the same tests as the district laboratories.

The regional laboratories have very little passive demand. They do perform some BBAT for surveillance programmes. They are considerably over equipped for the number of analyses they perform. For example, Zhemgang regional laboratory reports 4 autoclaves, 5 microscopes, 2 spectrophotometers (including one uv-vis), 6 centrifuges (including one refrigerated). They performed 2 200 tests last year, out of which 1 000 were faecal tests (see test summary in Table 3).

Kanglung regional laboratory reports a PCR machine and an ELISA reader, however only 2 PCR and 180 ELISA were performed last year (Table 3).

Advantages

- Allows greater capacity for new government sero-surveillance programmes and an increase in the number of samples as well as maximal surge capacity in the future
- Reduces cost and time of transport
- Allows Veterinary Services to have more presence through their laboratory staff at regional centres, in border areas and in the District clinics
- At district level the staff multi-tasks across laboratory, field services, animal treatments, vaccinations programmes and other government initiatives. It is an efficient cost sharing model at the district level.

Disadvantages:

- High cost to maintain under-utilised human, material and financial resources and no economies of scale for reagents used in each laboratory.

It is unrealistic to expect scientists to maintain skills and expertise in a variety of techniques if samples are not submitted routinely. The techniques and equipment used will not be put into practise on a regular basis sufficient to obtain or maintain proficiency and accuracy of results.

- The cost of maintaining high technology equipment and human resources for small numbers of tests are much higher than shipping samples to a central laboratory.
- It is difficult to collate and aggregate data on tests performed and results obtained on a national basis for disease control planning purposes

Option 2: Only one central laboratory (NCAH) performing all tests and field officers having access to rapid tests

Taking into account the number and type of tests to be performed, theoretically one laboratory is sufficient. Staff in districts clinics would be able to perform rapid tests in the field.

Advantages:

- Maintains staff expertise and allows for continuing education
- Allows centralised quality control and proper maintenance and calibration of equipment, making accreditation more accessible
- Facilitates improved data management and reporting
- Facilitates proficiency testing implementation
- Reduces costs related to equipment maintenance and calibration services, utilities, and other fixed costs and allow use of existing equipment in regional laboratories for replacement at central level as needed.
- Reduces the need for laboratory staff to be collocated in the regional laboratories.

Disadvantages:

- Increases transport costs and delivery time of samples
- Centralises the provision of tests leading to less value added from more experienced veterinary staff present in the regional laboratories
- Potential to frustrates regional and district level clients in the absence of a diagnostic laboratory in proximity
- Less opportunity for coordination and planning of Veterinary Services at the regional level with other livestock services and initiatives.
- Limits surge capacity of the national veterinary laboratory network

Option 3: NCAH supervising 20 decentralised laboratories

Based on geographical accessibility and current diagnostic activities of all existing AH laboratories of Bhutan, a network consisting of NCAH, and 20 decentralized laboratories (originally called either satellite or regional or district laboratories) could be reorganized under the technical management of NCAH.

The 20 decentralized facilities would perform basic diagnostic tests for parasitology, basic hematology, and rapid tests for early detection of outbreaks. All samples that need any further confirmation/analysis would be submitted to NCAH that would act as a national reference laboratory.

NCAH would perform tests requiring specialized equipment and specific laboratory skills and process all samples for the official programmes of the Animal Health service.

Advantages:

- Better repartition and possible relocation of the equipment
- Possible temporary relocation of staff depending on work load (e.g., if an important number of animals are due to be imported in a specific location). However, staff would still be paid by the district in which they are working.
- This model appears to already work well in a cost effective delivery of animal health and first level laboratory diagnostic services at a district level.
- Timely disease reporting for NCAH from all laboratories
- Better system for ordering and managing consumables and reagents. At present NCAH supplies all existing laboratories with rapid tests and organizes tenders but laboratories place orders themselves.
- Allows for strategic geographic placement of the laboratories so that they can best serve the present and anticipated livestock needs (e.g., Megafarm development and animal quarantine testing for brucellosis with use of rapid tests).
- Low cost of maintenance since these 20 decentralized laboratories will be integrated part of the veterinary clinics. The clinic staff would multitask and a percentage of their time will be allocated to laboratory work, depending on demand. In this model there is no dedicated laboratory staff in these decentralized facilities.

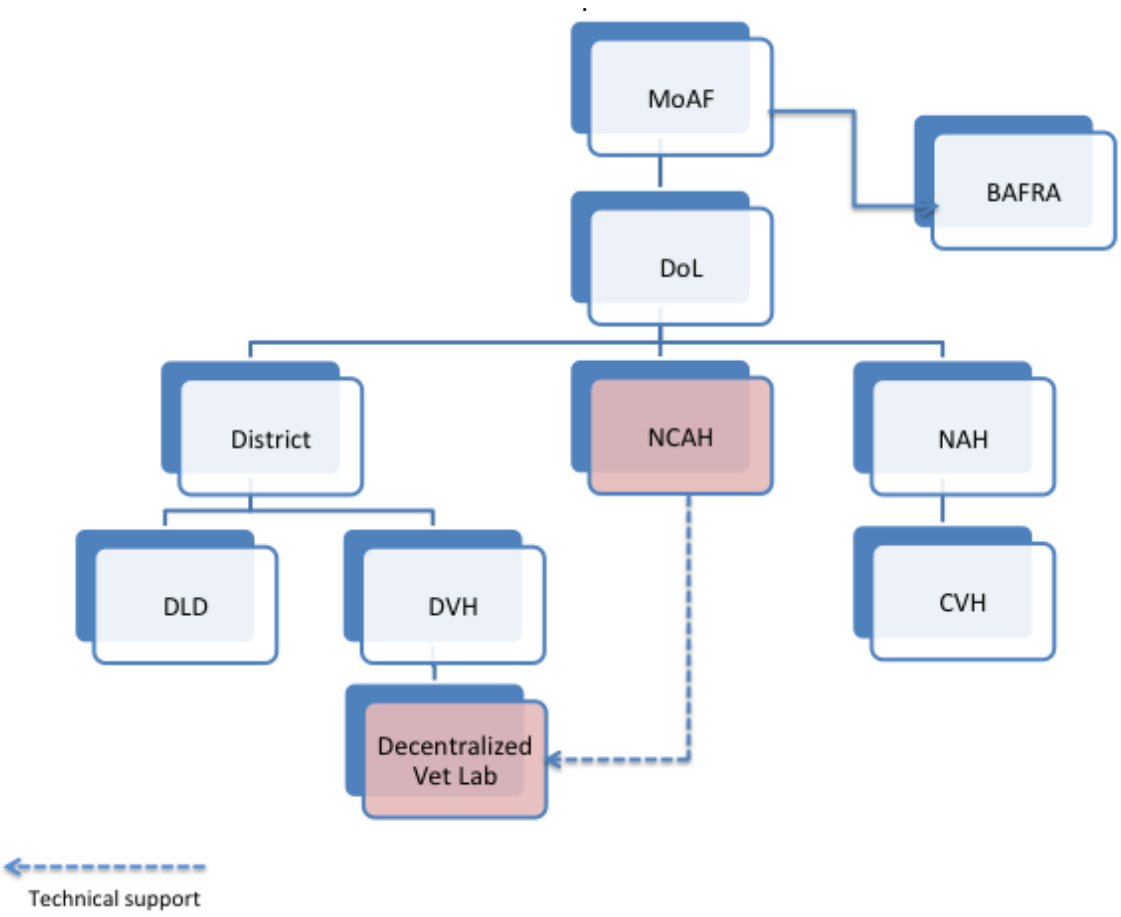

Figure 5: Possible structure for Option 3

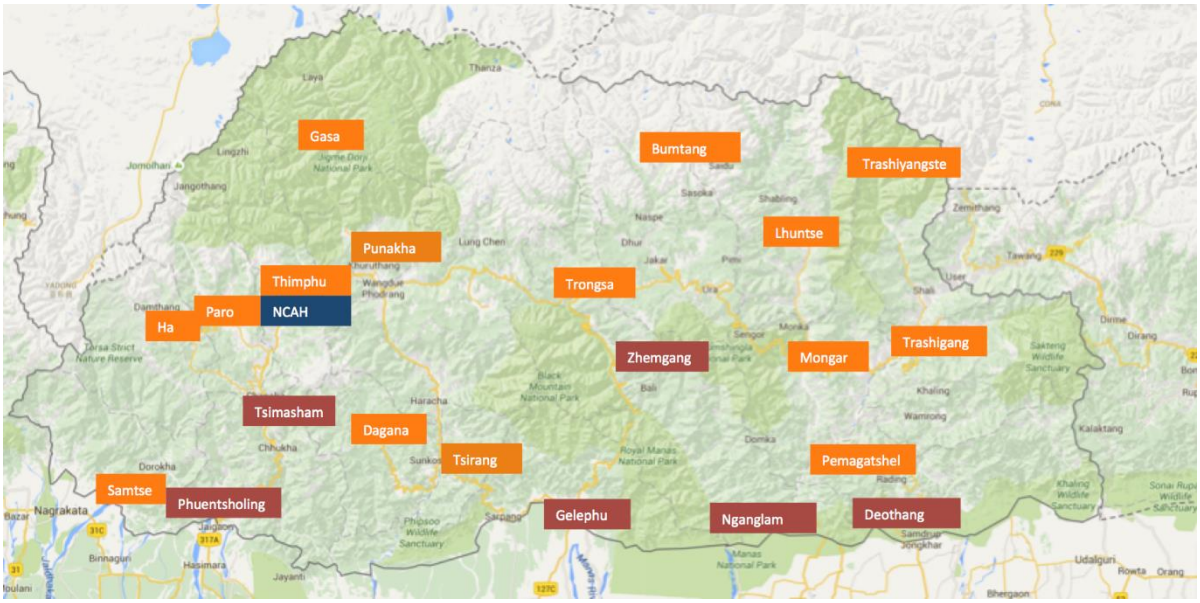

Figure 6: Possible localisation for the decentralised laboratories.

Disadvantages

- Requires the prioritization of physical and human resources
- Acceptance of a reorganization of the present infrastructure and functioning at central and district levels.

VI. Comparative budgeting of proposed strategies

The proposed budgets are made in reference to international standards in order to ensure adequate functioning of laboratories that are able to deliver timely and correct results, including quality assurance. Local costs are incorporated whenever necessary and possible.

VI.1. Budgeting of human resources

Human resources are budgeted on average costs and regrouped into three categories: veterinarians and other professionals with a university degree, laboratory technicians and support staff.

The level of salaries in the calculations is based on current annual salaries: on average 4 400 € for veterinarians and other professionals 2 570 € for laboratory technicians and 1 200 € for support staff. This level of salaries appears to be adequate compared to the cost of living in Bhutan and is similar to those of other governmental agencies. The salaries should allow excellent performance, commitment and technical independence of staff.

Travel per diem allowances have been estimated by DoL staff at a total aggregated cost of 60 000 € under in all of the developed Options.

As a reference and to maintain a reasonable quality standard, continuing education for staff is estimated to cost around 5% of the salary total.

Under normal circumstances, staffing should be calculated in relation to the number of tests performed. As different tests require more or less manpower, a system of relative values has been devised as a reference in the “Estimated Staff & Finances” sheet of the Calculation Tool. This provides an estimate of the required number of technical staff, taking into account the number of tests (and their respective relative value in points) as reported by the laboratory. It is estimated on the following basis:

- 1 laboratory technician for 30 000 points of relative values of tests
- 1 manager (laboratory or administrative) for 5 laboratory technicians
- 1 support staff for 5 laboratory technicians
- 1 secretary for 3 laboratory managers

The Calculation Tool provides an estimate of the number of staff required according to the number and type of tests performed.

Animal Health:

Despite the fact that the number of tests performed by the AH laboratories does not justify more than a minimal number of staff under Scenario 1 (i.e. 1 veterinarian, 10 technicians and 2 support staff), and Scenario 2 (4 veterinarian, 22 technicians and 6 support staff.), such minimal staffing levels would not be realistic nor acceptable from a political point of view.

Depending on the options under Scenario 2, the estimated staff number has been adjusted according to the number of laboratories to be maintained.

It is worth noting that the actual staff number at NCAH is currently 18 (comprising 2 head of laboratory-managerial positions and 16 technicians). This number would have to be increased for Scenario 2, Option 2 where NCAH would perform all testing.

In the other Options, common sense should guide the allocation of staff between the different laboratories according to the number of tests each laboratory will perform.

In both Scenarios, the number of staff required will not change if NCAH performs FS molecular and ELISA testing. This can be explained by the fact that the vast majority of the tests are done in a 96 well plate format. However, the OIE PVS team allowed for extra staff to take into account the possibility of performing the tests in individual tubes or strip format (Table 15).

Table 15: Estimate of Staff Required for Different Scenarios and Options and Comparison with Actual Number of Prospective Number for AH only excluding FS

Scenario	Vet and Managerial	Technical staff	Support staff	Total
OIE recommendation (Calculation Tool for Scenario 2)	**4**	**22**	**6**	**32**
Actual total staff number (from table 10) excluding BAFRA	11	47	10	68
Scenario 2 Option 1 NCAH only	4	22	6	32
Scenario 2 Option 2 existing and planned structure with 29 laboratories (increased number of staff to take into account large number of laboratories)	11	47	10	68
Scenario 2, Option 3 NCAH and 20 remote laboratories (higher number of staff than recommended to take into account number of laboratories)	6	29	1	36
PVS recommendation (Calculation Tool for Scenario 1 with or without FS molecular work) **Number of staff identical due to high throughput nature of extra tests**	**5**	**1**	**2**	**8**
Scenario 1 at NCAH doing VS work only or with FS molecular	1	10	2	13

Food Safety

1. If BAFRA were performing all tests as estimated in the possible prospective demand, then the Calculation Tool estimates this would require 30 technicians, 6 laboratory head or managerial staff and 8 support staff. This high number is explained by the fact that HPLC and GC-MS tests are very labour intensive. The number of staff is reduced to 28/6/8 if the molecular tests were performed in NCAH because these are tests performed in high throughput plate format**.**

Table 16 Estimated Number of BAFRA Staff Required to Perform all Food Safety Tests

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)
Agent Identification						
PCR or RTPCR	20	40,000	2,000	1.33	0.27	0.36
HPLC	42.5	425,000	10,000	14.17	2.83	3.78
CPG	35	350,000	10,000	11.67	2.33	3.11
Spectrophotometry	12.5	3,125	250	0.10	0.02	0.03
Food Microbiology Standard 5 Parameters	15	75,000	5,000	2.50	0.50	0.67
Totals		893,125	27,250	**29.77**	**5.95**	**7.94**

VI.2. Budgeting of physical resources

Buildings:

The cost of construction in Bhutan is estimated at 500 €/m^2 for a normal laboratory building. The mission estimates that the cost of construction for a BSL 2 would double (around 1 000 €/m^2) according to international standards (including waste management and air filtering and pressure systems). Maintenance of current buildings is 5% of the construction cost per year.

The existing surface figures have been kept in the calculations.

Laboratory equipment:

The estimated cost of laboratory equipment is made according to international reference costs for each laboratory equipment line (see indicative detailed equipment and costs in Annex 4: Analytical Line Tool).

In the current Calculation Tool, the existing figures have been kept for the existing equipment value.

Some laboratories have far too much equipment and this should be rationalised.

The OIE PVS team estimated that in the context of Bhutan, a decentralised laboratory performing parasitology tests, basic microbiology tests and sharing equipment such as centrifuge and autoclave with a veterinary clinic, would require a total value of equipment of 28 500 € (refer to Table 17 for itemised list of required equipment).

Table 17: Estimated Laboratory Equipment Costs for a Remote Laboratory

Required equipment and costing for a remote location laboratory			
Description		**cost per unit in €**	**total cost in €**
General purpose centrifuge	1	4,500	4,500
shared cost of a refrigerator	0.5	2,500	1,250
shared cost of an autoclave	0.5	6,000	3,000
Balance (0,01)	1	1,000	1,000
Distillator	1	2,500	2,500
pH meter	1	1,000	1,000
Automatic pipettes - monochanne	3	270	810
Incubator	1	2,500	2,500
Scale	2	160	320
Microscope	1	2,500	2,500
Binocular microscope	1	2,500	2,500
Vortex	1	250	250
Mixer jar	1	550	550
Safety cabinet	1	4,000	4,000
Oven (150L)	1	1,800	1,800
Total			**28,480 €**

In the prospective Calculation Tool for Scenario 2, Option 2 where the existing structure doesn't change, it was estimated that the current equipment supply, with a total value of approximately 1.6 Million € (Table 13) will be kept and maintained.

In the other Options, where the equipment will be re-distributed and rationalised, the calculations were based on a value of 28 500€ for the proposed 20 decentralized laboratories, a value for NCAH equipment estimated at 345 000€ for their current equipment inventory and an additional 40 000€ to account for the transfer of the existing PCR and ELISA units from Kanglung to NCAH. The visit of the laboratory shows that the equipment lines and number are quite adequate.

Accordingly under the Option with NCAH performing FS testing, the existing PCR and ELISA machines will be sufficient without having to purchase more equipment especially as the thermocycler and the ELISA reader at Kanglung laboratory would be relocated as back up units at NCAH.

The cost of equipment for BAFRA has been estimated by using the Analytical Line Tool (Annex 4) applied to the list of equipment supplied in the Supply Tool. If BAFRA was to start using an ELISA and a real-time cycler, they would require an additional 45 000€ worth of equipment.

The cost of equipment lines is indicated in the tables 25 to 33 for each Scenario and Option.

As a reference and in order to maintain quality assurance, it is estimated that:

- Renewal of laboratory equipment should occur on average every five years (20% per year).
- Calibration and metrology costs are calculated as 10 % of equipment costs per year for all AH laboratory and 20% for BAFRA considering the nature of the equipment (HPLC and GC-MS).

Other logistics:

Renewal of vehicles should occur every five years (20% per year), and computer and other office or telecommunication equipment, every three years (33% per year). Local costs are applied.

VI.3. Budgeting of operational costs

The administration budget is estimated on the basis of 20% of salary costs.

The budget takes into account a parametric cost for sampling kits and reagents and consumables as well the cost of local or international transport. The prospective Demand Tool (Annex 2 and Tables18, 19, 20 and 21) provides an estimation of cost for consumables**.**

VI.3.1 Animal Health

In Scenario 1, the budget for reagents (including sampling kits and sample delivery) would be approximately 105 000 € in Option 1 without FS tests, and 152 000 € with the FS molecular tests (Tables 18 and 19).

VI.3.2 Food Safety programme: BAFRA programme

For both Scenarios, the cost for reagents for BAFRA for FS would be 728 875 € if BAFRA were performing all tests (Table 22), 680 000 € if BAFRA outsourced the molecular tests to NCAH (Table 23) and 40 000€ if molecular tests were outsourced to NCAH and HPLC/GC outsourced to an international laboratory (Table 24).

Table 18: Prospective Demand: Cost of Reagents for Scenario 1 for Official Programmes AH Tests only

OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																		Other Tests					Cost by Programme	
			Agent Identification				Serology																			Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
			Parasitology	Bacteriology	Virology	PCR or RTPC	VN	IFMA	ELISA	CF	AGID	IHA	BRAT	AGI	FAVN / CAT	HI	MAT	FPA	NPLA	gamma interferon test	DTH	Anatomical Pathology	MPLC	CPG	Spectrophotometry	Food Microbiology Standards Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)		1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery		(a + d)	1.2	1.2	1.2	1.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	2.0	2.0	2.0	2.0		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery		(a + b + d)	4.2	8.7	16.2	17.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	36.0	30.0	4.5	11.0		
Unit price of laboratory test at international level		(a + c + d + e)	19.4	29.4	54.4	44.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	107.0	92.0	47.0	52.0		
Cost by Test: Consumables for National Laboratory		n * (a + b + d))	0	34640	0	6864	0	0	53616.16	90.4	0	0	1140	8458.8	31.8	0	0	0	0	0	0	0	0	0	0	0	104,841	
Cost by Test: International Laboratory Analyses		(n * (a + c + d + e))	0	117440	0	17744	0	0	149691.36	386	0	0	6990	45167	170	0	0	0	0	0	0	0	0	0	0	0		337,588
Total Number of Tests		(n)	0	4000	0	400	0	0	15496	40	0	0	1500	7980	30	0	0	0	0	0	0	0	0	0	0	0	29,446	

Table 19: Prospective Demand: Cost of Reagents for Scenario 1 for Official Programmes AH Tests and FS molecular tests

OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																			Other Tests					Cost by Programme	
			Agent Identification				Serology																				Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
			Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	gamma interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)		1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery		(a + d)	1.2	1.2	1.2	1.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	2.0	2.0	2.0	2.0		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery		(a + b + d)	4.2	8.7	16.2	17.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	36.0	30.0	4.5	11.0		
Unit price of laboratory test at international level		(a + c + d + e)	19.4	29.4	54.4	44.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	107.0	92.0	47.0	52.0		
Cost by Test: Consumables for National Laboratory		n * (a + b + d))	0	34640	0	40721	0	0	63996.16	90	0	0	1140	8458.8	32	0	0	0	0	0	0	0	0	0	0	0	149,078	
Cost by Test: International Laboratory Analyses		(n * (a + c + d + e))	0	117440	0	1E+05	0	0	178671.36	386	0	0	6990	45167	170	0	0	0	0	0	0	0	0	0	0	0		454,091
Total Number of Tests		(n)	0	4000	0	2373	0	0	18496	40	0	0	1500	7980	30	0	0	0	0	0	0	0	0	0	0	0	34,419	

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In Scenario 2, the budget for reagents for AH is estimated in the Demand Tool at 427 000 € per year for the required 97 000 tests per year, and 471 000 € with FS molecular tests (Tables 20 and 21).

Table 20 Prospective Demand: Cost of Reagents for Scenario 2 (all animal tests)

OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																			Other Tests					Cost by Programme	
			Agent Identification				Serology																				Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
			Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	*gamma* interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)		1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery		**(a + d)**	1.2	1.2	1.2	1.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	2.0	2.0	2.0	2.0		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery		**(a + b + d)**	4.2	8.7	16.2	17.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	36.0	30.0	4.5	11.0		
Unit price of laboratory test at international level		**(a + c + d + e)**	19.4	29.4	54.4	44.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	107.0	92.0	47.0	52.0		
Cost by Test: Consumables for National Laboratory		**n * (a + b + d))**	197500.16	#####	0	6401	0	0	54436.18	90.4	0	0	1140	14263	29.7	0	0	0	0	0	0	9631	0	0	0	0	427,446	
Cost by Test: International Laboratory Analyses		**(n * (a + c + d + e))**	919135.36	#####	0	16546	0	0	151980.78	386	0	0	6990	76161	158	0	0	0	0	0	0	99807	0	0	0	0		1,759,217
Total Number of Tests		**(n)**	47476	16623	0	373	0	0	15733	40	0	0	1500	13456	28	0	0	0	0	0	0	1751	0	0	0	0	96,980	

Table 21: Prospective Demand: Cost of Reagents for Scenario 2 (all animal tests and FS molecular tests)

OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																		Other Tests					Cost by Programme	
			Agent Identification				Serology																			Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
			Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	*gamma* interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)		1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery		(a + d)	1.2	1.2	1.2	1.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	2.0	2.0	2.0	2.0		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery		(a + b + d)	4.2	8.7	16.2	17.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	36.0	30.0	4.5	11.0		
Unit price of laboratory test at international level		(a + c + d + e)	19.4	29.4	54.4	44.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	107.0	92.0	47.0	52.0		
Cost by Test: Consumables for National Laboratory		n * (a + b + d))	197500.16	1E+05	0	40721	0	0	64816.18	90	0	0	1140	14263	30	0	0	0	0	0	0	9631	0	0	0	0	472,146	
Cost by Test: International Laboratory Analyses		(n * (a + c + d + e))	919135.36	5E+05	0	1E+05	0	0	180960.78	386	0	0	6990	76161	158	0	0	0	0	0	0	99807	0	0	0	0		1,876,917
Total Number of Tests		(n)	47476	16623	0	2373	0	0	18733	40	0	0	1500	13456	28	0	0	0	0	0	0	1751	0	0	0	0	101,980	

Table 22: Prospective Demand FS Programme Entirely done in BAFRA laboratory

OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																		Other Tests					Cost by Programme	
			Agent Identification				Serology																			Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
			Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	*gamma* interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)		0	0.2	1		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	0	0	0	0		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery		**(a + d)**	0.2	0.4	1.2	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	1.0	1.0	1.0	1.0		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery		**(a + b + d)**	3.2	7.9	16.2	16.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	35.0	29.0	3.5	10.0		
Unit price of laboratory test at international level		**(a + c + d + e)**	18.4	28.6	54.4	43.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	106.0	91.0	46.0	51.0		
Cost by Test: Consumables for National Laboratory		**n * (a + b + d))**	0	39300	0	32320	0	0	10380	0	0	0	0	0	0	0	0	0	0	0	0	0	350000	290000	875	0	**722,875**	
Cost by Test: International Laboratory Analyses		**(n * (a + c + d + e))**	0	142800	0	86720	0	0	28980	0	0	0	0	0	0	0	0	0	0	0	0	0	1E+06	910000	11500	0		**2,240,000**
Total Number of Tests		**(n)**	0	5000	0	2000	0	0	3000	0	0	0	0		0	0	0	0	0	0	0	0	10000	10000	250	0	**30,250**	

Table 23: Prospective Demand FS Programme without Molecular Tests done in BAFRA laboratory

OIE Manual Chapter Number	Laboratory Tests	OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																			Other Tests					Cost by Programme	
		Agent Identification				Serology																				Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
		Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	*gamma* interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)	1	1	1		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)	3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test	15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples) 4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples) 80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery	(a + d)	1.2	1.2	1.2	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		1.2	1.2	1.2	1.2	1.2		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery	(a + b + d)	4.2	8.7	16.2	16.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		4.7	35.2	29.2	3.7	10.2		
Unit price of laboratory test at international level	(a + c + d + e)	19.4	29.4	54.4	43.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		56.2	106.2	91.2	46.2	51.2		
Cost by Test: Consumables for National Laboratory	n * (a + b + d))	0	43300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	352000	292000	925	0	688,225	
Cost by Test: International Laboratory Analyses	(n * (a + c + d + e))	0	146800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1E+06	912000	11550	0		2,132,350
Total Number of Tests	(n)	0	5000	0		0	0		0	0	0	0		0	0	0	0	0	0	0	0	10000	10000	250	0	25,250	

Table 24: Prospective Demand FS Programme without the Molecular Tests and HPLC/GC in BAFRA laboratory

OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																		Other Tests					Cost by Programme	
			Agent Identification				Serology																			Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
			Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	*gamma* interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)		1	1	1		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		0.2	0.2	0.2	0.2	0.2		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery		(a + d)	1.2	1.2	1.2	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		1.2	1.2	1.2	1.2	1.2		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery		(a + b + d)	4.2	8.7	16.2	16.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		4.7	35.2	29.2	3.7	10.2		
Unit price of laboratory test at international level		(a + c + d + e)	19.4	29.4	54.4	43.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		56.2	106.2	91.2	46.2	51.2		
Cost by Test: Consumables for National Laboratory		n * (a + b + d))	0	43300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	925	0	44,225	
Cost by Test: International Laboratory Analyses		(n * (a + c + d + e))	0	146800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11550	0		158,350
Total Number of Tests		(n)	0	5000	0		0	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0	250	0	5,250	

The cost of FS molecular tests is the same whether it is imputed to NCAH or BAFRA budget.

VI.4. Proposed annual budget

Taking into account the results of the estimation of human and physical resources and operating costs, the proposed annual budgets for the two Scenarios are presented in Tables 25 to 28.

VI.4.1 Scenario 1 Budget for AH official programmes only and 3 options for FS tests

Table 25: Official AH Programmes Only

Proposed Budget for NCAH lab for the Prospective Demand for official AH programs only	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				98,800	28.90%
Buildings and Premises	273,000		0.05	13,650	3.99%
Vehicles	28,000	2	0.2	11,200	3.28%
IT and Office Equipment	1,500	10	0.33	4,950	1.45%
Telecommunication Equipment			0.2	-	0.00%
Refrigerators			0.1	-	0.00%
Deep Freezers (-20°C & -80°C)			0.1	-	0.00%
Laboratory Equipment	345,000	1	0.2	69,000	20.18%
Other Equipment			0.2	-	0.00%
Salaries and Remuneration				92,251	26.99%
Veterinarians and Other Professionals	4,541	1		4,541	1.33%
Laboratory Technicians	2,571	10		25,710	7.52%
Support Staff	1,000	2		2,000	0.59%
Per diem and travel allowance in the country	60,000	1		60,000	17.55%
Per diem and travel allowance abroad				-	0.00%
Operating Costs				150,788	44.11%
Continuing Education (short courses, etc.)	Salaries	5%		1,613	0.47%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		9,675	2.83%
Reagents and Consumables	105,000	1		105,000	30.72%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		34,500	10.09%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0.00%
Other				-	0.00%
Total				**341,839**	100.00%

Table 26: Official Programmes for AH with FS Molecular Tests

Proposed Budget for NCAH lab for the Prospective Demand for VS programs only and GMO+ Food ELISA tests	Unit Cost	Number	Renewal Rate	Annual Budget
Capital Investment				106,800
Buildings and Premises	273,000		0.05	13,650
Vehicles	28,000	2	0.2	11,200
IT and Office Equipment	1,500	10	0.33	4,950
Telecommunication Equipment			0.2	-
Refrigerators			0.1	-
Deep Freezers (-20°C & -80°C)			0.1	-
Laboratory Equipment	385,000	1	0.2	77,000
Other Equipment			0.2	-
Salaries and Remuneration				92,251
Veterinarians and Other Professionals	4,541	1		4,541
Laboratory Technicians	2,571	10		25,710
Support Staff	1,000	2		2,000
Per diem and travel allowance in the country	60,000	1		60,000
Per diem and travel allowance abroad				-
Operating Costs				201,924
Continuing Education (short courses, etc.)	Salaries	5%		1,613
Administrative Expenditures (office supplies, etc.)	Salaries	30%		9,675
Reagents and Consumables	152,136	1		152,136
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		38,500
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-
Other				-
Total				**400,975**

Table 27: Budget for BAFRA Performing all FS Tests[3]

BAFRA budget for possible prospective estimated demand for all FS tests	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				124,370	11.28%
Buildings and Premises	568,000		0.05	28,400	2.58%
Vehicles			0.2	-	0.00%
IT and Office Equipment	1,500	6	0.33	2,970	0.27%
Telecommunication Equipment			0.2	-	0.00%
Refrigerators & Deep Freezers (-20°C & -80°C)			0.1	-	0.00%
Laboratory Equipment	465,000	1	0.2	93,000	8.43%
Other Equipment			0.2	-	0.00%
Salaries and Remuneration				114,300	10.37%
Veterinarians and Other Professionals	4,550	6		27,300	2.48%
Laboratory Technicians	2,580	30		77,400	7.02%
Support Staff	1,200	8		9,600	0.87%
Per diem and travel allowance in the country				-	0.00%
Per diem and travel allowance abroad				-	0.00%
Operating Costs				864,005	78.36%
Continuing Education (short courses, etc.)	Salaries	5%		5,715	0.52%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		34,290	3.11%
Reagents and Consumables	731,000	1		731,000	66.29%
Maintenance, Calibration and Metrology	Laboratory Equipment	20%		93,000	8.43%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0.00%
Other				-	0.00%
Total				**1,102,675**	100.00%

[3]Annex IV details the value of equipment.

Table 28: BAFRA Performing Bacteriological Tests and HPLC/GC (Molecular outsourced to NCAH)[4]

BAFRA budget for possible prospective estimated demand for BAFRA outsourcing ELISA and PCR	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				112,370	10.85%
Buildings and Premises	568,000		0.05	28,400	2.74%
Vehicles			0.2	-	0.00%
IT and Office Equipment	1,500	6	0.33	2,970	0.29%
Telecommunication Equipment			0.2	-	0.00%
Refrigerators & Deep Freezers (-20°C & -80°C)			0.1	-	0.00%
Laboratory Equipment	405,000	1	0.2	81,000	7.82%
Other Equipment			0.2	-	0.00%
Salaries and Remuneration				114,300	11.04%
Veterinarians and Other Professionals	4,550	6		27,300	2.64%
Laboratory Technicians	2,580	30		77,400	7.47%
Support Staff	1,200	8		9,600	0.93%
Per diem and travel allowance in the country				-	0.00%
Per diem and travel allowance abroad				-	0.00%
Operating Costs				809,005	78.11%
Continuing Education (short courses, etc.)	Salaries	5%		5,715	0.55%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		34,290	3.31%
Reagents and Consumables	688,000	1		688,000	66.43%
Maintenance, Calibration and Metrology	Laboratory Equipment	20%		81,000	7.82%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0.00%
Other				-	0.00%
Total				**1,035,675**	100.00%

The OIE PVS team was told that presently BAFRA is outsourcing pesticide residues by HPLC and GC to a Thai laboratory for the cost of 360 € per sample for a panel of 40 residues excluding shipment (estimated at 50€ per shipment).

Assuming an average of 10 € per test, this would amount to 200 000€ for 20 000 samples.

Enquiries by the OIE PVS team by calling a Thai private laboratory indicated that prices could vary depending on the nature of the tests required. The value entered in the External services budget line depending on the number of samples tested and the nature of the tests could amount to up to 700 000€ for 20 000 tests.

In the absence of exact figures for the prospective demand and the nature and costs of the tests BAFRA plans to perform, it is very difficult to make budget estimation.

Tables 29 and 30 show that the budget could vary from 400 000€ to 850 000€.

[4] Annex IV details the value of equipment.

Table 29: BAFRA Outsourcing Molecular Tests to NCAH and HPLC/GC to International Laboratories (low cost for international services)

BAFRA possible prospective estimated demand for Microbiological and AAS tests only	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				59,390	14.82%
Buildings and Premises	568,000		0.05	28,400	7.09%
Vehicles			0.2	-	0.00%
IT and Office Equipment	1,500	2	0.33	990	0.25%
Telecommunication Equipment			0.2	-	0.00%
Refrigerators & Deep Freezers (-20°C & -80°C)			0.1	-	0.00%
Laboratory Equipment	150,000	1	0.2	30,000	7.49%
Other Equipment			0.2	-	0.00%
Salaries and Remuneration				12,880	3.21%
Veterinarians and Other Professionals	4,550	2		9,100	2.27%
Laboratory Technicians	2,580	1		2,580	0.64%
Support Staff	1,200	1		1,200	0.30%
Per diem and travel allowance in the country				-	0.00%
Per diem and travel allowance abroad				-	0.00%
Operating Costs				313,508	78.22%
Continuing Education (short courses, etc.)	Salaries	5%		644	0.16%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		3,864	0.96%
Reagents and Consumables	44,000	1		44,000	10.98%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		15,000	3.74%
External Services (Reference Laboratory, External Analysis, Transport, etc.)	250,000			250,000	62.38%
Other				-	0.00%
Total				**400,778**	100.00%

Table 30: BAFRA Outsourcing Molecular Tests to NCAH and HPLC/GC to International Laboratories (high cost for international services)

BAFRA possible prospective estimated demand for Microbiological and AAS tests only	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				59,390	6.98%
Buildings and Premises	568,000		0.05	28,400	3.34%
Vehicles			0.2	-	0.00%
IT and Office Equipment	1,500	2	0.33	990	0.12%
Telecommunication Equipment			0.2	-	0.00%
Refrigerators & Deep Freezers (-20°C & -80°C)			0.1	-	0.00%
Laboratory Equipment	150,000	1	0.2	30,000	3.53%
Other Equipment			0.2	-	0.00%
Salaries and Remuneration				12,880	1.51%
Veterinarians and Other Professionals	4,550	2		9,100	1.07%
Laboratory Technicians	2,580	1		2,580	0.30%
Support Staff	1,200	1		1,200	0.14%
Per diem and travel allowance in the country				-	0.00%
Per diem and travel allowance abroad				-	0.00%
Operating Costs				763,508	89.74%
Continuing Education (short courses, etc.)	Salaries	5%		644	0.08%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		3,864	0.45%
Reagents and Consumables	44,000	1		44,000	5.17%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		15,000	1.76%
External Services (Reference Laboratory, External Analysis, Transport, etc.)	700,000			700,000	82.28%
Other				-	0.00%
Total				**850,778**	100.00%

VI.4.2 Scenario 2 Budget for all of AH tests

For each Option, the BAFRA budget for food safety tests is identical as in Scenario 1 above.

The calculation of the cost of reagents for the Animal Health network will be either 427 000 € or 470 000€ depending if the molecular tests for FS are taken into account or not. Therefore, the difference in the total budget will only vary by approximately 50 000€ for each Option.

Option 1: In this Option, the clinics will have access to rapid tests only and all samples will be processed by NCAH.

Table 31: NCAH Performing all AH Tests

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Budget for NCAH in Scenario 2 NCAH performing all tests	Unit Cost	Number	Renewal Rate	Annual Budget
Capital Investment				106,800
Buildings and Premises	273,000		0.05	13,650
Vehicles	28,000	2	0.2	11,200
IT and Office Equipment	1,500	10	0.33	4,950
Telecommunication Equipment			0.2	-
Refrigerators			0.1	-
Deep Freezers (-20°C & -80°C)			0.1	-
Laboratory Equipment	385,000	1	0.2	77,000
Other Equipment			0.2	-
Salaries and Remuneration				140,726
Veterinarians and Other Professionals	4,541	4		18,164
Laboratory Technicians	2,571	22		56,562
Support Staff	1,000	6		6,000
Per diem and travel allowance in the country	60,000	1		60,000
Per diem and travel allowance abroad				-
Operating Costs				494,254
Continuing Education (short courses, etc.)	Salaries	5%		4,036
Administrative Expenditures (office supplies, etc.)	Salaries	30%		24,218
Reagents and Consumables	427,500	1		427,500
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		38,500
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-
Other				-
Total				**741,780**

The difference in the final budget if NCAH were to take over the molecular tests for FS would be an extra 50 000€, so an approximate total of 792 000€ (Annex V.1).

Table 32: All AH Tests Performed in the Current Context of 29 Laboratories

Scenario 2 Proposed Budget for prospective demand in existing structure total 29 labs	Unit Cost	Number	Renewal Rate	Annual Budget
Capital Investment				505,977
Buildings and Premises	2,100,535		0.05	105,027
Vehicles	28,000	7	0.2	39,200
IT and Office Equipment	1,500	50	0.33	24,750
Telecommunication Equipment			0.2	-
Refrigerators			0.1	-
Deep Freezers (-20°C & -80°C)			0.1	-
Laboratory Equipment	1,685,000	1	0.2	337,000
Other Equipment			0.2	-
Salaries and Remuneration				240,788
Veterinarians and Other Professionals	4,541	11		49,951
Laboratory Technicians	2,571	47		120,837
Support Staff	1,000	10		10,000
Per diem and travel allowance in the country	60,000	1		60,000
Per diem and travel allowance abroad				-
Operating Costs				659,276
Continuing Education (short courses, etc.)	Salaries	5%		9,039
Administrative Expenditures (office supplies, etc.)	Salaries	30%		54,236
Reagents and Consumables	427,500	1		427,500
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		168,500
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-
Other				-
Total				**1,406,041**

In this Option, again if NCAH were to perform FS molecular tests the difference would be an extra 50 000€ (Annex V.2).

Table 33: All AH Tests Performed in a New Optimised Structure of 1 Central Laboratory and 20 Remote Laboratories

Scenario 2 Proposed Budget for Prospective Demand with tests in NCAH and 20 remote labs	Unit Cost	Number	Renewal Rate	Annual Budget
Capital Investment				260,400
Buildings and Premises	643,000		0.05	32,150
Vehicles	28,000	4	0.2	22,400
IT and Office Equipment	1,500	30	0.33	14,850
Telecommunication Equipment			0.2	-
Refrigerators			0.1	-
Deep Freezers (-20°C & -80°C)			0.1	-
Laboratory Equipment	955,000	1	0.2	191,000
Other Equipment			0.2	-
Salaries and Remuneration				164,621
Veterinarians and Other Professionals	4,541	6		29,062
Laboratory Technicians	2,571	29		74,559
Support Staff	1,000	1		1,000
Per diem and travel allowance in the country	60,000	1		60,000
Per diem and travel allowance abroad				-
Operating Costs				559,617
Continuing Education (short courses, etc.)	Salaries	5%		5,231
Administrative Expenditures (office supplies, etc.)	Salaries	30%		31,386
Reagents and Consumables	427,500	1		427,500
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		95,500
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-
Other				-
Total				**984,639**

In this Option, again if NCAH were to perform FS molecular tests the difference would be an extra 50 000€ (AnnexV.3).

VI.5 Sustainability of the budget: estimated cost of tests and proposed tariffs

VI.5.A Estimation of costs of tests

The Calculation Tool estimates the cost of conducting laboratory analysis by taking into account these factors.

For example, Tables 34, 35 and 36 gives an estimate of the cost of each test (in €), taking into account their number, relative value, the standard reagent cost and the proposed laboratory budget (excluding reagents and external services budget lines) under 3 possible Options.

Under Scenario 2, Option 1 (NCAH performing all tests), estimates show the cost of testing is much lower than the cost of having tests performed in an international laboratory, an important savings if proper quality assurance can be ensured. If all AH are performed in the existing structure of 29 laboratories, then the cost is slightly higher.

However, if only official programmes for AH are analysed, then the costs are definitely higher.

The comparison with the international cost of analysis demonstrates that the cost per laboratory test, when only a small number of tests are conducted, is disproportionately high and should be taken into account when making strategic decisions concerning the national veterinary laboratory network.

Table 34: Estimation of Costs if NCAH Performs all AH Tests

Capital Investment	106,800
Staff	140,726
Other Costs (Excluding Reagents & External Services)	66,754
Annual Budget (Excluding Reagents & External Services)	**314,280**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	0.46

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)
Agent Identification							
Parasitology	7.5	4.64	1.20	16.20	49,500	371,250	9.32
Bacteriology	12.5	11.59	1.20	26.20	17,200	215,000	18.58
Virology	25	23.18	1.20	51.20	0	0	35.97
PCR or RTPCR	20	24.73	1.20	41.20	400	8,000	35.20
Serology							
VN	25	23.18	0.50	50.50	0	0	35.27
IPMA	3	4.64	0.50	6.50	0	0	6.53
ELISA	3	5	0.50	6.50	15,500	46,500	6.89
CF	3	2.78	0.50	6.50	40	120	4.67
AGID	2	1.85	0.50	4.50	0	0	3.28
IFA	5	4.64	0.50	10.50	30	150	7.46
BBAT	0.5	0.1	0.50	1.50	1,500	750	0.83
Agg	1	0.93	0.50	2.50	13,500	13,500	1.89
PRN/CAT	1	0.93	0.50	2.50	0	0	1.89
HI	3	2.78	0.50	6.50	0	0	4.67
MAT	10	18.55	0.50	20.50	0	0	23.69
FPA	2.5	2.32	0.50	5.50	0	0	3.98
NPLA	3	4.64	0.50	6.50	0	0	6.53
gamma interferon test	7.5	11.59	0.50	15.50	0	0	15.57
Other Tests							
Anatomical Pathology	17.5	5.41	2.00	37.00	1,300	22,750	15.52
HPLC	42.5	26.27	2.00	87.00	0	0	47.97
CPG	35	21.64	2.00	72.00	0	0	39.86
Spectrophotometry	12.5	3.86	2.00	27.00	0	0	11.65
Food Microbiology Standard 5 Parameters	15	37.09	2.00	32.00	0	0	46.04
Totals					98,970	678,020	

Table 35: Estimation of Costs if all AH Tests are being done in 29 Laboratories

Capital Investment	505,977
Staff	240,788
Other Costs (Excluding Reagents & External Services)	231,776
Annual Budget (Excluding Reagents & External Services)	**978,541**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	1.44

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)
Agent Identification							
Parasitology	7.5	4.64	1.20	16.20	49,500	371,250	16.66
Bacteriology	12.5	11.59	1.20	26.20	17,200	215,000	30.83
Virology	25	23.18	1.20	51.20	0	0	60.46
PCR or RTPCR	20	24.73	1.20	41.20	400	8,000	54.79
Serology							
VN	25	23.18	0.50	50.50	0	0	59.76
IPMA	3	4.64	0.50	6.50	0	0	9.47
ELISA	3	5	0.50	6.50	15,500	46,500	9.83
CF	3	2.78	0.50	6.50	40	120	7.61
AGID	2	1.85	0.50	4.50	0	0	5.24
IFA	5	4.64	0.50	10.50	30	150	12.36
BBAT	0.5	0.1	0.50	1.50	1,500	750	1.32
Agg	1	0.93	0.50	2.50	13,500	13,500	2.87
PRN/CAT	1	0.93	0.50	2.50	0	0	2.87
HI	3	2.78	0.50	6.50	0	0	7.61
MAT	10	18.55	0.50	20.50	0	0	33.48
FPA	2.5	2.32	0.50	5.50	0	0	6.43
NPLA	3	4.64	0.50	6.50	0	0	9.47
gamma interferon test	7.5	11.59	0.50	15.50	0	0	22.91
Other Tests							
Anatomical Pathology	17.5	5.41	2.00	37.00	1,300	22,750	32.67
HPLC	42.5	26.27	2.00	87.00	0	0	89.61
CPG	35	21.64	2.00	72.00	0	0	74.15
Spectrophotometry	12.5	3.86	2.00	27.00	0	0	23.90
Food Microbiology Standard 5 Parameters	15	37.09	2.00	32.00	0	0	60.74
Totals					98,970	678,020	

Table 36: Estimation of Cost for Official Programmes AH with FS Molecular Tests

Capital Investment	106,800
Staff	92,251
Other Costs (Excluding Reagents & External Services)	49,788
Annual Budget (Excluding Reagents & External Services)	**248,839**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	1.53

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)
Agent Identification							
Parasitology	7.5	4.64	1.20	16.20	0	0	17.32
Bacteriology	12.5	11.59	1.20	26.20	4,000	50,000	31.93
Virology	25	23.18	1.20	51.20	0	0	62.66
PCR or RTPCR	20	24.73	1.20	41.20	2,400	48,000	56.55
Serology							
VN	25	23.18	0.50	50.50	0	0	61.96
IPMA	3	4.64	0.50	6.50	0	0	9.73
ELISA	3	5	0.50	6.50	18,500	55,500	10.09
CF	3	2.78	0.50	6.50	40	120	7.87
AGID	2	1.85	0.50	4.50	0	0	5.41
IFA	5	4.64	0.50	10.50	30	150	12.80
BBAT	0.5	0.1	0.50	1.50	1,500	750	1.37
Agg	1	0.93	0.50	2.50	8,000	8,000	2.96
PRN/CAT	1	0.93	0.50	2.50	0	0	2.96
HI	3	2.78	0.50	6.50	0	0	7.87
MAT	10	18.55	0.50	20.50	0	0	34.36
FPA	2.5	2.32	0.50	5.50	0	0	6.65
NPLA	3	4.64	0.50	6.50	0	0	9.73
gamma interferon test	7.5	11.59	0.50	15.50	0	0	23.57
Other Tests							
Anatomical Pathology	17.5	5.41	2.00	37.00	0	0	34.20
HPLC	42.5	26.27	2.00	87.00	0	0	93.34
CPG	35	21.64	2.00	72.00	0	0	77.23
Spectrophotometry	12.5	3.86	2.00	27.00	0	0	25.00
Food Microbiology Standard 5 Parameters	15	37.09	2.00	32.00	0	0	62.06
Totals					34,470	162,520	

VI.5.B Estimation of tariffs of tests

In order to appropriately manage a laboratory, one should be able to determine a tariff based on the national costs of manpower, equipment and reagents. This enables the laboratory to propose an appropriate tariff to clients, taking into account its comparative advantages (for instance, lower cost of manpower) or disadvantages (for instance, higher cost of equipment due to importation). Finally, this enables the country to analyse the sustainability of the laboratory and the possibility to apply partial or total cost recovery methods, taking into account international and national markets

In any laboratory, the real cost of tests depends on relative factors, such as the number of tests performed by sample, and the relative value of each test (which is a theoretical calculation based on manpower, reagents and the use of equipment for each test).

The tariff estimation shown in the Calculation Tool are based on comparison of salaries between Bhutan and international salaries, and the cost of shipment of goods [(Cost-Insurance-Freight (CIF) and Free on Board (FOB)], and the local cost of sampling shipment (based on the parametric cost of local and international shipping costs in the country).

Tariffs are identical in all Options since the above parameters are identical.

The Calculation Tool proposes an estimation of the cost of reagents locally, based on an estimated international price and data given by the country for the purchase of some reagents (ELISA kits and BBAT).

Based on a point value for each test, the Calculation Tool shows an international reference price of tests based on cost of reagents, sampling kits and shipping).

The cost of a test is comprised of the cost of reagents, equipment, staff and transport.

In Bhutan, salaries are around 20 times less than on international market, and equipment is estimated to be at the same price as the international market (the low cost of products manufactured in India leveraging the cost of European-made products).

Costs for various rapid tests (entered in the “agglutination“ column) were made available to the OIE PVS team, however there is a huge variation of costs between all of them, so the standard cost of an agglutination reagent seemed adequate.

Table 37 estimates a possible national tariff (in €) for veterinary laboratory analyses based on proposed average international tariffs, and the share of costs between reagents, equipment and staff. In Bhutan’s context, it is estimated that reagents cost 1.5 times more than on the international market. Equipment would also cost the same, and salaries cost approximately 20 times less.

Table 37: Estimation of National Tariffs (in €) of Laboratory Analysis based on National Costs of Reagents, Equipment and Salaries

(a) Monthly salary of laboratory staff in a reference country in €	214
(b) Monthly salary of similar laboratory staff in the country in €	4,000

(c) Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)
Agent Identification											
Parasitology	7.5	15	3	0.20	0.10	0.70	0.2	15.20		0.45	296.84
Bacteriology	12.5	25	7.5	0.30	0.20	0.50	0.20	25.20		1.13	357.80
PCR or RTPCR	20	40	16	0.40	0.30	0.30	0.20	40.20		2.41	353.46
Serology											
ELISA	3	6	3	0.50	0.20	0.30	0.20	6.20	5.00	5	57.11
CF	3	6	1.8	0.30	0.10	0.60	0.20	6.20		0.27	102.12
IFA	5	10	3	0.30	0.20	0.50	0.20	10.20		0.45	143.24
BBAT	0.5	1	0.3	0.30	0.10	0.60	0.20	1.20	0.10	0.1	17.24
Agg	1	2	0.6	0.30	0.10	0.60	0.20	2.20		0.09	34.17
Other Tests											
HPLC	42.5	85	17	0.20	0.60	0.20	1.00	86.00		2.56	541.40
CPG	35	70	14	0.20	0.60	0.30	1.00	71.00		2.11	642.30
Spectrophotometry	12.5	25	2.5	0.10	0.50	0.40	1.00	26.00		0.38	296.75
Food Microbiology Standard 5 Parameters	15	30	24	0.40	0.10	0.50	1.00	31.00		3.61	426.97

VI.5.C Estimation of sustainability

Sustainability for the Animal Health network can be analysed by reducing expenditures or imposing fees.

Increasing resources will impose the establishment of tariffs for tests which are currently all free of charge.

As the main client is the government, most laboratories currently do not charge any fees for running the tests nor do they have a budget to cover operating costs. While most governments fund disease surveillance activities, a budget still needs to be allocated to the laboratory network in order to ensure that its activities are covered and it can maintain proper quality.

VII Financing solutions for proposed strategies

In the current context, the prospective demand for all AH tests is 97 000 tests and the estimated prospective demand of BAFRA is 38 000 tests; the Government of Bhutan is fully subsidizes the costs of all tests. The budget has been estimated at 1.4M € for AH and 1.1M € for BAFRA per year if the existing infrastructure was maintained.

The national Animal Health laboratory network is unable in any case to be financially autonomous without heavy subsidies from the national budget.

However, this does not mean that the laboratory network should not work on a cost recovery basis for some analyses and for some clients, such as megafarms and crop growers.

When BAFRA decides on a testing programme, its budget should be evaluated again and a comparison made between the cost of in-house testing and outsourcing for HPLC and GC-MS. It is likely that outsourcing these tests will be more economical than performing them in house, taking into account the huge cost of consumables, calibration and maintenance. Either way, national tariffs should be implemented, at least according to international tariffs.

Bhutan will have to make a choice between reducing expenditures balanced against maintaining technical autonomy.

VII.1Finalize the quality assurance process

None of the AH laboratories have either corrective or preventive maintenance or metrology and calibration programmes.

There is one laboratory accredited in Bhutan for the calibration of weights and thermometers, but not for the calibration of micropipettes. A cost analysis should be performed to assess if the cost of calibration of the micropipettes in India once a year or every two years is lower than the cost of purchasing a whole new set of pipettes on a regular basis.

Quality assurance procedures were initiated in 2014 in NCAH. SOPs for several tests have been developed and NCAH participates in several external proficiency testing rounds.

NCAH will seek ISO 17025 accreditation for selected diagnostic tests over the forthcoming years and thereafter to seek ISO 9001 accreditation for laboratory management.

BAFRA has obtained accreditation for ISO 17025 for 30 bacteriological tests from the National Accreditation Board for Testing and Calibration Laboratories (NABL) in India for the testing of fruit, cereal and baked goods, milk and water by Aerobic plate count, Yeast and Mold count, Coliform count and *E.coli* tastings. The OIE PVS team has no evidence of a maintenance and calibration programme for high-technology equipment.

In any case, quality assurance should be budgeted and implemented systematically through an identified QA budget line for financing preventive and corrective maintenance, as well as calibration and metrology, of all equipment.

VII.2 Establish relevant data management

NCAH does not have a clear and consistent data management system that facilitates data analysis to assist in the development of rational strategies and within laboratory resource allocations. Taking into account the relatively small activity of NCAH and the whole AH laboratory network, it is possible to distribute and collect data for analysis through the use of well designed, simple spreadsheets using the existing Internet connection.

NCAH/DoL could establish data management using the Supply Tool provided by this mission. Its primary objective is to distribute and analyze the demand, to have the relevant inventory of equipment, and to be able to describe the infrastructure and work of each laboratory.

Moreover, it is important to describe precisely the activities, expenditures, and income generated by each laboratory. It is particularly important to separate the finances of the official programmes and the clinical test programmes for DoL.

VII.3 Establish a relevant tariff for all tests

It is important to implement a relevant policy on tariffs of laboratory analysis.
It is recommended to establish a tariff at least equivalent to those on the international market, to answer any private demand and the government demand for official programmes.

VII.4 Establish efficient human resources management

If Bhutan chooses the Scenario 2, Option 3 comprising of 1 central laboratory with 20 decentralized laboratories, it will be essential to maintain appropriate allocations of staff time at the District levels between laboratory work and field work, in order to minimise the laboratory costs.

VII.5 Develop new official Animal Health and Food safety programmes within DoL

Once initial surveys have been completed and analysed to estimate the prevalence of the main diseases in Bhutan, there will be a need to establish more detailed scientific investigations to adequately monitor virus circulation and post vaccination serological monitoring for the major disease programmes. The current estimate of demand is still based on the official testing programme for next year and based on the past year with a slight increase. Following results from next year's planned surveillance activities, further prospective demand Scenarios should be undertaken by DoL.

A more structured risk analysis-based programme for residue testing will need to be implemented in future years, once results are obtained from the samples sent overseas for pesticide analysis and from the preliminary survey for GMOs and growth promoters.

Conclusions

The objective of the PVS Pathway Laboratory Mission in Bhutan was to provide national decision makers with information to allocate appropriate resources and to make strategic decisions to support accurate and timely diagnosis.

The PVS team analysed the sustainability of the national Animal Health veterinary laboratory network in Bhutan where there is no private sector to perform laboratory analysis. Presently, all tests for official veterinary programmes and clinical tests are done in the same laboratories and BAFRA performs all FS tests.

The PVS team proposed two different Scenarios for the Animal Health laboratory network of Bhutan. In each Scenario, it is recommended to transfer the FS molecular tests (ELISA and PCR) from the BAFRA laboratory to the central NCAH laboratory as the best Option to minimise costs and ensure staff competency. Until costs are definitively compared between in-house and outsourced options for residue testing, and the required number of tests estimated, the PVS team would recommend outsourcing in order to guarantee good quality of results.

In the first Scenario, a budget is allocated for clinical tests and a separate budget for official programmes.

In the second Scenario, a budget is allocated for all analyses performed in the same laboratories.

Until Bhutan decides to privatise clinical testing, the second Scenario will likely be more suitable, at least in the next 5 years.

Although one laboratory would be sufficient in theory to process all AH analyses, the mission suggests to adopt Option 3, where all basic tests are performed in 20 decentralized laboratories that are associated with a veterinary clinic and are strategically positioned (for example, next to quarantine posts and in areas of high concentration of production animals).

The report describes strategies, human, physical and financial resources, and the advantages and disadvantages of each Scenario and Option.

It is accepted that Bhutan's scientific independence requires that there is enough laboratory equipment to undertake a full range of laboratory functions. However this scientific independence comes at significant cost for food safety testing. Unless BAFRA starts to apply tariffs equivalent to those shown in Table 27, the cost of FS will rely heavily on the national budget.

BAFRA laboratory is seeking financial help to maintain and calibrate existing and obsolete equipment for residue testing and to recruit an external scientist for several months to provide training in the use of this high technology equipment. We propose instead that BAFRA actively explores outsourcing options for residue testing at least to obtain initial sets of risk profile information for their range of imported food products.

Annexes

Annex 1 : Supply Tool of all laboratories of the national network

Annex 2 : Demand Tool

Annex 3 : Calculation Tool

Annex 4 : Analytical Line Tool

Annex 5: Calculation Tool for all AH tests including FS molecular tests

Annex 1 : Supply Tool of all laboratories of the national network

1. General Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

1. Background Details

Laboratory Name:	Biological Production Unit		
Address:	National Centre for Animal Health		
Manager's Name:	Dr.kinzang Dukpa		
Telephone:	975-2-351083/351093	Fax:	9752351095
E-mail:			
Website:	ncah.gov.bt		
Opening Hours:	9 am to 5 pm (summer) & 9 am to 4 pm (winter)		
Contact in Case of Emergency:		Emergency Phone Number:	

2. Contact Person for the PVS Pathway Laboratory Mission

Surname and First Name:	Dr.V.Raika		
Position:			
Telephone:		Fax:	
E-mail:			

3. Status

Laboratory Status:	
Supervisory Authority:	

4. Documents to be prepared and supplied to the OIE PVS Expert Team		Document Availability
Laboratory Statutes:	Documents establishing the laboratory and stating its mode of governance and funding	
Location Map:	Map/Plan with a scale of ~1/25000 indicating access roads, waterways and urbanised areas	
Site Plan:	Plan with a scale of ~1/5000 indicating laboratory buildings, access roads and fencing	
Detailed Plan:	Plan with a scale of ~1/100 mentioning for each building the various premises, dimensions and biosecurity levels	
Structural Organisation Chart:	Showing current organisational structure of the laboratory	
Functional Organisation Chart:	Showing current functional organisation of the laboratory	
Job Descriptions:	For all relevant staff	
Quality Manuals:	If quality assurance or quality management system is in place, the laboratory should be able to provide such documents	
Annual Report:	For the past three years, if possible	
Budget:	Budgets including revenues and expenditures for the past three years if possible	
List of Analyses and Prices:	Including calculation method if existent	
Invoices:	Samples of invoices for locally supplied and imported large equipment and consumables from habitual Departments/Institutions/Ministries or private sector)	

2. Human Resources

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Number of Veterinarians : 1
Number of Staff : 4
% of Women : 25%

Total Area / Staff : 0,00 m²
Laboratory Area / Laboratory Technical Staff : #DIV/0! m²

% of Specialised Training : 0%
Average number days CE / Staff : 0,00

Name or ID Number	Sex	Birth Year	2016 Age	Employment Status	Type of Position	Level of Education	Field of Work in the Laboratory	Relevant Specialised Training/ Continuing Education	Number of days of CE last year
Dr.Vijay Raika	M	1970	46	Government Employee	Head of Laboratory Unit	Postgraduate University			
Hatka Bahadur Tamang	M	1963	53	Government Employee	Other Support Staff	Technical Training			
Migma	M	1973	43	Government Employee	Other Support Staff	Technical Training			
Karma Choki	F	1983	33	Government Employee	Other Support Staff	Technical Training			

Age Distribution		
	Age	Number
Age min	33	0
	34	0
	35	0
	36	0
	37	0
	38	0
	39	1
	40	0
	41	0
	42	1
	43	0
	44	0
	45	0
	46	0
	47	0
	48	0
	49	1

Status Distribution	Number	%
Government Employee	4	100,00%
Open-ended Contract	0	0,00%
Fixed-term Contract	0	0,00%
Temporary Position	0	0,00%
Total	4	

Position Distribution	Number	%
General Management	0	0,00%
Head of Laboratory Unit	1	25,00%
Laboratory Technical Work	0	0,00%
Secretary	0	0,00%
Sample Collection	0	0,00%
Total	1	

Education Distribution	Number	%
Primary/Secondary Educatio	0	0,00%
Technical Training	3	75,00%
Undergraduate University	0	0,00%
Postgraduate University	1	25,00%
Total	4	

3a. Equipment Inventory

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Only large laboratory equipment (with a value superior to 300€) should be included in the inventory. **Do not include kits, consummables, expendable equipment and glassware. Do not include vehicles.**

	Location	Name	Make	Model	Main Specifications	ID Number for Quality Management	Category of Equipment	Field of Use	Year Acquired	Acquisition Value	Present Day Cost (cost to replace)	Condition	Preventive Maintenance Conducted	Calibration or Metrological Verification Conducted	Comments
1	BPU	Autoclave	French	91410, Lequeux	270 L				1987						
2	BPU	Hot air Oven	French	39405045 Joun-Anne	115 L				1995						
3	BPU	Hot air Oven	French	1394050401 Joun -An	55 L										
4	BPU	Vaccine Dispensor	England	2187 England											
5	BPU	Capping machine	German	BM0012 Bauer											
6	BPU	Centriguge	Spain	275875											
7	BPU	Incubator	French	39405049 Joun											
8	BPU	Laminar flow		9161 Intermed											
9	BPU	Laminar flow	England	3 MAN England											
10	BPU	Cabinet dryer		Scientific LTE											
11															
12															

3b. Equipment Management

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

		Comments
Are there follow-up files for each item of equipment (invoices, notices, maintenance, calibration, etc.)?	No	

Maintenance

		Comments
Do you have preventive maintenance programmes?	No	
Do you have access to corrective maintenance service (repair) ?	No	
Do you have in-house competencies for equipment maintenance and minor repairs?	No	
Do you have maintenance service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Calibration / Metrology

		Comments
Do you have calibration / metrology programmes ?	No	
Do you have reference materials for calibration / metrology ?	No	
Do you have an in-house department for verification / calibration?	No	
Do you have calibration service providers?	Yes	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Temperature Monitoring

			Comments
Is there a centralised system for managing temperatures?			
	Incubators	No	
	Refrigerators	No	
	Freezers	No	
Is there a manual system for recording temperatures?			
	Incubators	Yes	daily recordings in a temperature chart and monthly compilation by Bio-safety unit.
	Refrigerators	Yes	daily recordings in a temperature chart and monthly compilation by Bio-safety unit.
	Freezers	No	

Procurement

		Comments
How is procurement of **consummables** (e.g. reagents, sampling kits, glassware, etc.) handled?		
call for tender for each laboratory?	Yes	
call for tender for all laboratories at the national level?	Yes	
direct ordering from the laboratory to the supplier?	No	
How is procurement of **equipment** (with a value over 300€) handled?		
call for tender for each laboratory?	Yes	
call for tender for all laboratories at the national level?	Yes	
direct ordering from the laboratory to the supplier?	No	
Is procurement subject to approval?	Yes	
If yes, at which level does approval need to be obtained?		
manager or department head	Yes	
laboratory director		
provincial authority level		
district authority level		
national authority level	Yes	

3c. Transport

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Does the laboratory participate in routine sampling or annual surveys in the field?	
Does the laboratory participate in outbreak or emergency investigation sampling in the field?	

Type of Vehicle	Age	Odometer (kms)	Specific Equipment		
			Refrigeration [1]	Biosafety [2]	Laboratory [3]
Freeze van (1 number)	5 years	44000	Cooler	No	No

[1] "No" if absent, "Autonomous" for equipment with a power supply (battery, vehicle, etc.), "Cooler" for isothermal equipment
[2] Presence of equipment (pump, sprays, etc.) and products necessary for decontamination of vehicle
[3] Is minimum equipment needed to carry out procedures in the field (microscope, centrifuge) available?

Comments

One freeze van off-road, 18 years old. Staffs are allowed to use personal cars for performing official duties for which government a

3d. Premises

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Surface Area	Unit of Measure: m^2 or ft^2	Total Surface Area	BSL1 Surface Area	BSL2 Surface Area	BSL3 Surface Area
Laboratory Departments					
Bacteriology		0			
Parasitology		0			
Serology/Immunology		0			
Virology Culture		0			
Molecular		0			
Clinical Pathology		0			
Anatomical Pathology		0			
Food Microbiology		0			
Toxicology		0			
Residues		0			
Feed Content		0			
Feed Safety		0			
Drug Quality		0			
Other		0			
Autopsy Room		0			
Animal Housing		0			
Storage other than cold chambers		0			
Cold Chambers		0			
Ancillary Areas (incinerator, garages, etc.)		0			
Administration offices and meeting rooms		0			
Circulation		0			
Other		0			
Total Surface Area		**0**	**0**	**0**	**0**

Value of Premises				
Unit cost of premises in €/m^2				
Total Value	**0**	**0**	**0**	**0**

Water

		Capacity in l^3
Type of water supply		
Is there centralised water treatment?	No	
Distillation equipment	Yes	
Deionisation equipment	Yes	

Electricity

Rate of supply or total duration of power cuts per week	6-8 hrs		
Is there a back-up electricity generator?	Yes	Output:	55kva
Comments			

Waste Management

Means of disposing of wastewater			
Means of disposing of biological waste			
Incineration	Yes	Capacity in l^3	
Means of disposing of chemical residues			
Comments			

Refrigeration Equipment

Cold chambers	Number	Total volume (m^3)
+ 4°C		
- 20°C		

Refrigerators	Number	Total volume (m^3)
+ 4°C		
- 20°C		
- 45°C		
- 80°C		

Telecommunication Availability

Number of telephone lines	2
Is there access to an international telephone line ?	yes
Is there access to the internet ?	yes
Is there an intranet system ?	

Office Equipment

Number of computers	2		
Number of printers	1		
Number of photocopiers			
Is there a data back-up system/ procedure ?	No		
Is there laboratory data management system ?		Which one ?	

6. Budget Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Person in charge of the budget and authorisation of payments:	

Actual Expenditures	Year n-3		Year n-2		Year n-1		Comments
	Internal Budget	External Funding	Internal Budget	External Funding	Internal Budget	External Funding	
Capital Investment							
Building of new premises			0				
Renewal of existing premises							
Purchase of new vehicles							
Purchase of new IT, telecommunication and other equipment							
Purchase of new laboratory equipment							
Specialised training (PhD, etc.)							
Salaries and Remuneration							
Salaries including fringe benefits			1 093 424		2059730		
Per diem and travel allowances			378 721		411 444		
Continuing education (short courses, etc.)							
Operating Costs							
Maintenance of buildings			89267,75		29055		
Power, water and utilities			58 719		313 114		
Maintenance of vehicles			489 520		1 095 974		
Operating costs of vehicles							
Other transportation (flights, etc.)							
Biological sample transport (freight, mail, bus, etc.)			17 821		36 725		
Maintenance of IT, telecommunication and other equipment					22 040		
IT and office supplies			41 575		100 000		
Telecommunications fees			42 000		220 717		
Personnel and safety equipment							
Maintenance of laboratory equipment			17 600		67 278		
Reagents and consumables			255 000		1 000 000		
Calibration							
Proficiency Testing							
Documentation							
Other							
Total	0	0	2 483 648	0	5 356 076	0	
Grand Total	**0**		**2 483 648**		**5 356 076**		

1. General Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

1. Background Details

Laboratory Name:	District Veterinary Laboratory		
Address:	Damphu: Tsirang		
Manager's Name:	Rinzin Dorji		
Telephone:	6471137	Fax:	6471137
E-mail:	rinzin_dorji85@yahoo.com / r_dorji82@yahoo.com		
Website:			
Opening Hours:	9:00 AM		
Contact in Case of Emergency:	17614406/77614406	Emergency Phone Number:	6471137

2. Contact Person for the PVS Pathway Laboratory Mission

Surname and First Name:	Rinzin Dorji		
Position:	Laboratory Technician		
Telephone:	6471137	Fax:	6471137
E-mail:	rinzin_dorji85@yahoo.com		

3. Status

Laboratory Status:	District Laboratory
Supervisory Authority:	Rinzin Dorji

4. Documents to be prepared and supplied to the OIE PVS Expert Team

		Document Availability
Laboratory Statutes:	Documents establishing the laboratory and stating its mode of governance and funding	No
Location Map:	Map/Plan with a scale of ~1/25000 indicating access roads, waterways and urbanised areas	
Site Plan:	Plan with a scale of ~1/5000 indicating laboratory buildings, access roads and fencing	
Detailed Plan:	Plan with a scale of ~1/100 mentioning for each building the various premises, dimensions and biosecurity levels	
Structural Organisation Chart:	Showing current organisational structure of the laboratory	
Functional Organisation Chart:	Showing current functional organisation of the laboratory	
Job Descriptions:	For all relevant staff	
Quality Manuals:	If quality assurance or quality management system is in place, the laboratory should be able to provide such documents	
Annual Report:	For the past three years, if possible	
Budget:	Budgets including revenues and expenditures for the past three years if possible	
List of Analyses and Prices:	Including calculation method if existent	
Invoices:	Samples of invoices for locally supplied and imported large equipment and consumables from	

2. Human Resources

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Number of Veterinarians :	0				
Number of Staff :	1	Total Area / Staff :	0,00	m²	% of Specialised Training : 0%
% of Women :	0%	Laboratory Area / Laboratory Technical Staff :	0	m²	Average number days CE / Staff : 0,00

Name or ID Number	Sex	Birth Year	2016 Age	Employment Status	Type of Position	Level of Education	Field of Work in the Laboratory	Relevant Specialised Training/ Continuing Education	Number of days of CE last year
Rinzin Dorji	M	1982	34	Government Employee	Head of Laboratory Unit	Technical Training	Mixed laboratory activities	4	0

Age Distribution	Age	Number
Age min	34	0
	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
	13	0
	14	0
	15	0
	16	0
	17	0
	18	0
	19	0
	20	0
	21	0
	22	0
	23	0
	24	0
	25	0
	26	0
	27	0
	28	0
	29	0
	30	1
	31	0
	32	0
	33	0
Age max	34	0
	0	0
	1	0
	2	0

Status Distribution	Number	%
Government Employee	1	100,00%
Open-ended Contract	0	0,00%
Fixed-term Contract	0	0,00%
Temporary Position	0	0,00%
Total	1	

Position Distribution	Number	%
General Management	0	0,00%
Head of Laboratory Unit	1	100,00%
Laboratory Technical Work	0	0,00%
Secretary	0	0,00%
Sample Collection	0	0,00%
Total	1	

Education Distribution	Number	%
Primary/Secondary Educatio	0	0,00%
Technical Training	1	100,00%
Undergraduate University	0	0,00%
Postgraduate University	0	0,00%
Total	1	

Field Distribution	Number	%
Bacteriology	0	0,00%
Parasitology	0	0,00%
Serology/Immunology	0	0,00%
Virology Culture	0	0,00%
Molecular	0	0,00%
Clinical Pathology	0	0,00%
Anatomical Pathology	0	0,00%
Food Microbiology	0	0,00%
Toxicology	0	0,00%
Residues	0	0,00%
Feed Content	0	0,00%
Feed Safety	0	0,00%
Drug Quality	0	0,00%
Epidemiology	0	0,00%
Administration	0	0,00%
Research	0	0,00%
Mixed Laboratory Activities	1	100,00%
Other	0	0,00%
None	0	0,00%
Total	1	

3a. Equipment Inventory

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Only large laboratory equipment (with a value superior to 300€) should be included in the inventory. **Do not include kits, consummables, expendable equipment and glassware. Do not include vehicles.**

	Location	Name	Make	Model	Main Specifications	ID Number for Quality Management	Category of Equipment	Field of Use	Year Acquired	Acquisition Value	Present Day Cost (cost to replace)	Condition	Preventive Maintenance Conducted	Calibration or Metrological Verification Conducted	Comments
1	General	Educational Microscope	LABOMED	2000	100V-240V AC	DVLITS/MS/05	Others	Mixed Laboratory Activities				Functional			
2		Microscope	LABOMED	TC450 D,TC650D,TC	V AC 50Hz/60Hz	DVLITS/MS/06	Others	Mixed Laboratory Activities				Functional			
3		Microscope	LAMOMED	2008	V AC 50Hz/60Hz	DVLITS/MS/07	Others	Mixed Laboratory Activities				To Repair			
4		Stereo Zoom Microscope	LAMBOMED	1007183	CZM4	DVLITS/MS/08	Others	Mixed Laboratory Activities				Functional			
5		Centrifuge	eltek	TC 4815D	(wx H) 12000 rpm	DVLITS/CT/02	Centrifuge	Mixed Laboratory Activities		4 500		Functional			
6		Centrifuge	JAICO	2000	0.18 HVA	DVLITS/CT/03	Centrifuge	Parasitology		4 500		Functional			
7		Centrifuge	JAICO	2000	0.18 HVA	DVLITS/CT/04	Centrifuge	Parasitology		4 500		Functional			
8		Incubator	JAICO	2008	) x 350 x 350 MM	DVLITS/Inv/01	Incubator	Bacteriology		2 500		Functional			
9		Hot Air Oven	Scientech	SE-126	12 x 14 x 14 MM	DVLITS/HAO/11	Oven	Mixed Laboratory Activities		2 500		Functional			
10		Hot Air Oven	JAICO	2000	14 x 12 x 12 MM	DVLITS/HAO/10	Oven	Mixed Laboratory Activities		2 500		To Repair			
11		Distilled Plant	BOROSIL	3362	230-250 V 1.5 kw	DVLITS/CT/12	Water purification	Mixed Laboratory Activities		4 500		Functional			
12		Distilled Plant	JAICO			DVLITS/CT/13	Water purification	Mixed Laboratory Activities		4 500		Functional			
13		Water Bath	LABMAN	LMWB-02	220+-50-1HZ	DVLITS/CT/16	water bath	Mixed Laboratory Activities		2 000		Functional			
14		Refrigerator	Godrej	GDP195	172 L	DVLITS/CT/14	refrigerator	Mixed Laboratory Activities		2 000		Functional			
15		Refrigerator	LG	FF2D2553S	242 L	DVLITS/CT/15	refrigerator	Mixed Laboratory Activities		2 000		Functional			
16		Autoclave	EQUITRON	7407ST	230 x 23 CM	DVLITS/CT/09	autoclave	Mixed Laboratory Activities		15 000		Functional			
17		Autoclave	EQUITRON	7407ST	12 x 08 -16L	DVLITS/CT/10	autoclave	Mixed Laboratory Activities		15 000		Functional			
18		Weighing balance	WENSAR	PGB1000	1350/1500g	DVLITS/CT/16	Balance	Mixed Laboratory Activities		1 000		Functional			
19		Digital pH meter	WENSAR	62		DVLITS/CT/19	pH meter	Mixed Laboratory Activities		1 000		Functional			
20															
21															

Analysis of Equipment Distribution

Equipment Value Distribution	Value	%
Total Value of Equipment	68 000	4%
Value of functional equipment	-	0,00%
Value of equipment to repair	2 500	3,68%
Value of equipment to renew	-	0,00%
Value of obsolete equipment	-	0,00%

Equipment Category	Value	Number	%
Agitator (Magnetic, Heater, Vortex…)	-	-	0,00%
Autoclave (all types)	-	-	0,00%
Balance	1 000	1	5,56%
Biosafety Cabinet and Chemical Hood	-	-	0,00%
Grinder	-	-	0,00%
Centrifuge (all types)	-	-	0,00%
Equipment for chemical analysis (GC, AAS, Spectrophotometry, Mass spec, HPLC)	-	-	0,00%
Equipment for Electrophoresis	-	-	0,00%
Equipement for ELISA or other immunoassay (Washer/Incubator/Reader)	-	-	0,00%
Equipment for Histology	-	-	0,00%
Equipment for HPLC with any detection system	-	-	0,00%
Equipment for PCR	-	-	0,00%
Equipment for Photometry / Spectrophotometry	-	-	0,00%
Equipment for Thin Layer Chromatography	-	-	0,00%
Freezer -20°C	-	-	0,00%
Freezer -80°C	-	-	0,00%
Incubator (normal, gas…)	-	-	0,00%
Liquid Nitrogen Container	-	-	0,00%
Lyophilizer	-	-	0,00%
Micropipette (mono, multi…)	-	-	0,00%
Microscopy (Dark Field, Fluorescent, Inverted	-	-	0,00%
Oven	5 000	2	27,78%
pH Meter	1 000	1	5,56%
Refrigerator	2 000	1	11,11%
Standard Measures (Mass, Temperature…)	-	-	0,00%
Vacuum Pump	-	-	0,00%
Washing Machine for Glassware	-	-	0,00%
Water Bath	-	-	0,00%
Water Purification	9 000	2	50,00%
Other	-	-	0,00%
Total	18 000	7	100,00%

Field of Use	Value		%
Bacteriology	2 500		21,74%
Parasitology	9 000		78,26%
Serology/Immunology	-		0,00%
Virology Culture	-		0,00%
Molecular	-		0,00%
Clinical Pathology	-		0,00%
Anatomical Pathology	-		0,00%
Food Microbiology	-		0,00%
Toxicology	-		0,00%
Residues	-		0,00%
Feed Content	-		0,00%
Feed Safety	-		0,00%
Drug Quality	-		0,00%
Epidemiology	-		0,00%
Administration	-		0,00%
Research	-		0,00%
Mixed Laboratory Activities	-		0,00%
Other	-		0,00%
Total	11 500		100,00%

3b. Equipment Management

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

		Comments
Are there follow-up files for each item of equipment (invoices, notices, maintenance, calibration, etc.)?	Yes	

Maintenance

		Comments
Do you have preventive maintenance programmes?	No	
Do you have access to corrective maintenance service (repair) ?	No	
Do you have in-house competencies for equipment maintenance and minor repairs?	Yes	
Do you have maintenance service providers?	Yes	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Calibration / Metrology

		Comments
Do you have calibration / metrology programmes ?		
Do you have reference materials for calibration / metrology ?		
Do you have an in-house department for verification / calibration?		
Do you have calibration service providers?		

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Temperature Monitoring

			Comments
Is there a centralised system for managing temperatures?			
	Incubators	Yes	
	Refrigerators	Yes	
	Freezers	Yes	
Is there a manual system for recording temperatures?			
	Incubators	Yes	
	Refrigerators	Yes	
	Freezers	Yes	

Procurement

		Comments
How is procurement of **consummables** (e.g. reagents, sampling kits, glassware, etc.) handled?		
call for tender for each laboratory?	Yes	
call for tender for all laboratories at the national level?	Yes	
direct ordering from the laboratory to the supplier?	No	
How is procurement of **equipment** (with a value over 300€) handled?		
call for tender for each laboratory?	Yes	
call for tender for all laboratories at the national level?	Yes	
direct ordering from the laboratory to the supplier?	No	
Is procurement subject to approval?	Yes	
If yes, at which level does approval need to be obtained?		
manager or department head		
laboratory director		
provincial authority level		
district authority level	Yes	
national authority level		

3c. Transport

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Does the laboratory participate in routine sampling or annual surveys in the field?	Yes
Does the laboratory participate in outbreak or emergency investigation sampling in the field?	Yes

3d. Premises

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Surface Area	Unit of Measure: m^2 or ft^2	Total Surface Area	BSL1 Surface Area	BSL2 Surface Area	BSL3 Surface Area
Laboratory Departments					
Bacteriology		0			
Parasitology		0			
Serology/Immunology		0			
Virology Culture		0			
Molecular		0			
Clinical Pathology		0			
Anatomical Pathology		0			
Food Microbiology		0			
Toxicology		0			
Residues		0			
Feed Content		0			
Feed Safety		0			
Drug Quality		0			
Other		0			
Autopsy Room		0			
Animal Housing		0			
Storage other than cold chambers		0			
Cold Chambers		0			
Ancillary Areas (incinerator, garages, etc.)		0			
Administration offices and meeting rooms		0			
Circulation		0			
Other		0			
Total Surface Area		**0**	**0**	**0**	**0**
Value of Premises					
Unit cost of premises in €/m^2					
Total Value		**0**	**0**	**0**	**0**

Water

		Capacity in l^3
Type of water supply	Main Supply	
Is there centralised water treatme	Yes	
Distillation equipment	Yes	
Deionisation equipment	No	

Electricity

Rate of supply or total duration of power cuts	No	
Is there a back-up electricity generator?	No	Output:
Comments	Yearly there is twice shut down of power for routine maintenance	

Waste Management

Means of disposing of wastewate		
Means of disposing of biological waste		
Incinerator	No	Capacity in l^3
Means of disposing of chemical w	Direct connet to biological pit	
Comments		

Refrigeration Equipment

Cold chambers	Number	Total volume (m^3)
+ 4°C	2	
- 20°C		

Refrigerators	Number	Total volume (m^3)
+ 4°C	2	2
- 20°C		
- 45°C		
- 80°C		

Telecommunication Availability

Number of telephone lines	No
Is there access to an international telephone line ?	No
Is there access to the internet ?	Yes
Is there an intranet system ?	Yes

Office Equipment

Number of computers	1		
Number of printers	1		
Number of photocopiers			
Is there a data back-up system/ procedure ?	No		
Is there laboratory data management system ?	No	Which one ?	

4. Quality Assurance

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Is there staff dedicated to quality management?	No
Is there a quality assurance programme in place?	No
If so, what reference standard is applied?	
Are there staff trained in quality assurance?	No
Is there a quality manual?	No

Coverage of Accreditation (what diseases, fields, analyses or tests?)	None

List of Participation in Proficiency Testing Rounds

Nature of the Test	Organising Organisation	Cost / Year	Frequency	Results

Below , indicate if formal documentation exists on the following topics and, if it does, give the reference

Topics	Yes / No	Document	Comments
Document control			
Review of requests, tenders and contracts			
Subcontracting of tests and calibrations			
Purchasing services and supplies			
Services to the client	Yes		
Complaints (satisfaction assessment and internal audit)	Yes		
Test conformity and/or calibration	Yes		
Corrective action			
Preventive action	Yes		
Continual improvement			
Control of records			
Internal audits			
Management reviews			
Staff organisation and management			
Installation and environmental conditions			
Testing and calibration methods			
Method selection			
Method development			
Validation of methods			
Evaluating measurement uncertainty			
Control of computerised data			
Management of equipment			
Measurement traceability			
Sampling	Yes		
Handling samples and test items	Yes		
Quality assurance of testing and calibration results			
Reporting results	Yes		
Presentation of reports			
Interpretation and declaration of compliance			
Transmission of reports			

5a. Activities - Demand

******** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ********

A Client is the person or institution that request laboratory analysis of a sample or samples. It may be the Veterinary Services for the purpose of official programmes, other public or private institutions, private veterinarians, farmers, donor projects, etc.
A Submission (or request or dossier) consists of one or more samples registered at the same time under the same dossier number
A Sample is any biological product, organ, dead animal or food product sent to the laboratory by a client, sothat one or more tests can be conducted
A Test is a laboratory technique or method which determines the value of a specific parameterof a sample

Reference Year: 2014-2015 over a period of one year

Clients / Sources of Demand		Import Control			Export Certification			AH or VPH Programmes			Request of Client			Undetermined Purpose +			Total		
Categories	Number of Clients	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests
Veterinary Services											2158	4158					**2158**	**4158**	**0**
Other Public Administrations																	**0**	**0**	**0**
Private Veterinarians																	**0**	**0**	**0**
Farmers Organisations																	**0**	**0**	**0**
Individual Farmers / Owners																	**0**	**0**	**0**
Food Industry																	**0**	**0**	**0**
Feed Industry																	**0**	**0**	**0**
Research																	**0**	**0**	**0**
Other (please specify)																	**0**	**0**	**0**
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2158**	**4158**	**0**	**0**	**0**	**0**	**2158**	**4158**	**0**

\+ Use if you have only general or incomplete data

5b. Activities - Samples

Number of samples received, by type

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year 2014-2015

Samples from Animals	Cattle	Sheep	Goats	Pigs	Equidae	Camelidae	Carnivores	Wildlife	Birds	Humans	Undetermined	Total
Whole dead bodies	3		2	1					279			285
Organs or samples taken at autopsy	2		2	1					5			10
Aborted foetuses												0
Placenta and lochia												0
Milk	128											128
Blood or serum	24 / 72		154						226			380
Urine	10											10
Faeces	362		12	67					441			882
Sperm												0
Swab samples	591											591
Skin scrapings												0
Punctures, pus and exudates												0
Cerebrospinal fluid												0
Biopsies												0
Other	3											3
Total	**1099**	**0**	**170**	**69**	**0**	**0**	**0**	**0**	**951**	**0**	**0**	**2289**

5d. Activities - Prospects

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Population

Administrative Area Served by Laboratory	Human Population	Cattle		Sheep/Goats		Pigs		Equidae/Camelidae		Carnivores.	Rural Poultry	Intensive Poultry		Beehives	Aquatic Animals	
		Farms	Animals	Farms	Animals	Farms	Sows	Farms	Animals	Animals		Farms	Animals		Farms	Tonnes
12 Geogs	21779		12814		7123		1146		118	3929	8981		74396	22		
Total	**21779**	**0**	**12814**	**0**	**7123**	**0**	**1146**	**0**	**118**	**3929**	**8981**	**0**	**74396**	**22**	**0**	**0**

Industry

1. General Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

1. Background Details

Laboratory Name:	Dzongkhag Veterinary Laboratory,Punakha		
Address:	Dzongkhag Veterinary Hospital,Lekithang Punakha		
Manager's Name:	Dr. Sonam Jamtsho		
Telephone:	2584156	Fax:	2584602
E-mail:	sjvurung@yahoo.com		
Website:	None		
Opening Hours:	9am to 5pm(Saturday and Sunday closed except for emergency case)		
Contact in Case of Emergency:	2584156	Emergency Phone Number:	2584156

2. Contact Person for the PVS Pathway Laboratory Mission

Surname and First Name:	dorji namgay		
Position:	Laboratory technician		
Telephone:	2584156	Fax:	nil
E-mail:	sangaydorji70@yahoo.com		

3. Status

Laboratory Status:	In 9th five year plan Dzongkhag Veterinary Hospital was constructed under the funding of Government of India(
Supervisory Authority:	Dzongkhag Veterinary Hospital,Punakha

4. Documents to be prepared and supplied to the OIE PVS Expert Team		Document Availability
Laboratory Statutes:	Documents establishing the laboratory and stating its mode of governance and funding	11th FYP
Location Map:	Map/Plan with a scale of ~1/25000 indicating access roads, waterways and urbanised areas	
Site Plan:	Plan with a scale of ~1/5000 indicating laboratory buildings, access roads and fencing	
Detailed Plan:	Plan with a scale of ~1/100 mentioning for each building the various premises, dimensions and biosecurity levels	
Structural Organisation Chart:	Showing current organisational structure of the laboratory	
Functional Organisation Chart:	Showing current functional organisation of the laboratory	
Job Descriptions:	For all relevant staff	
Quality Manuals:	If quality assurance or quality management system is in place, the laboratory should be able to provide such documents	
Annual Report:	For the past three years, if possible	
Budget:	Budgets including revenues and expenditures for the past three years if possible	
List of Analyses and Prices:	Including calculation method if existent	
Invoices:	Samples of invoices for locally supplied and imported large equipment and consumables from habitual	

Departments/Institutions/Ministries or private sector)

2. Human Resources

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Number of Veterinarians :	1				
Number of Staff :	2	Total Area / Staff :	0,00	m²	% of Specialised Training : 0%
% of Women :	0%	Laboratory Area / Laboratory Technical Staff :	0	m²	Average number days CE / Staff : 0,00

Name or ID Number	Sex	Birth Year	2016 Age	Employment Status	Type of Position	Level of Education	Field of Work in the Laboratory	Relevant Specialised Training/ Continuing Education	Number of days of CE last year
Sonam Jamtsho	M	1987	29	Government Employee	Head of Laboratory Unit	Undergraduate University	Mixed Laboratory Activitie	0	0
Namgay Dorji	M	1979	37	Government Employee	Laboratory Technical W	Technical Training	Mixed Laboratory Activitie	0	0

	Age	Number
Age min	29	0
	30	0
	31	0
	32	0
	33	1
	34	0
	35	0
	36	0
Age max	37	0
	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
	13	0
	14	0
	15	0
	16	0
	17	0
	18	0
	19	0
	20	0
	21	0
	22	0
	23	0
	24	0
	25	1
	26	0
	27	0
	28	0

Status Distribution	Number	%
Government Employee	2	100,00%
Open-ended Contract	0	0,00%
Fixed-term Contract	0	0,00%
Temporary Position	0	0,00%
Total	2	

Position Distribution	Number	%
General Management	0	0,00%
Head of Laboratory Unit	1	50,00%
Laboratory Technical Work	1	50,00%
Secretary	0	0,00%
Sample Collection	0	0,00%
Total	2	

Education Distribution	Number	%
Primary/Secondary Educatio	0	0,00%
Technical Training	1	50,00%
Undergraduate University	1	50,00%
Postgraduate University	0	0,00%
Total	2	

Field Distribution	Number	%
Bacteriology	0	0,00%
Parasitology	0	0,00%
Serology/Immunology	0	0,00%
Virology Culture	0	0,00%
Molecular	0	0,00%
Clinical Pathology	0	0,00%
Anatomical Pathology	0	0,00%
Food Microbiology	0	0,00%
Toxicology	0	0,00%
Residues	0	0,00%
Feed Content	0	0,00%
Feed Safety	0	0,00%
Drug Quality	0	0,00%
Epidemiology	0	0,00%
Administration	0	0,00%
Research	0	0,00%
Mixed Laboratory Activities	2	100,00%
Other	0	0,00%
None	0	0,00%
Total	2	

3a. Equipment Inventory

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Only large laboratory equipment (with a value superior to 300€) should be included in the inventory. **Do not include kits, consummables, expendable equipment and glassware. Do not include vehicles.**

	Location	Name	Make	Model	Main Specifications	ID Number for Quality Management	Category of Equipment	Field of Use	Year Acquired	Acquisition Value	Present Day Cost (cost to replace)	Condition	Preventive Maintenance Conducted	Calibration or Metrological Verification Conducted	Comments
1	DVL	Micro Centrifuge	ELEKTROCRAFT(India) PVT.LTD	TC 4815 D	PCV size:125mmX	DVL/PU/MC-01	Centrifuge (all type	Mixed Laborat	plied by NC	1 000	unknown	Functional			
2	DVL	Centrifuge	JAINSONS(INDIA)REGD	RQ91/1330	3000 rpm	DVL/PU/CT-01	Centrifuge (all type	Mixed Laborat	plied by NC	4 500	unknown	Functional			
3	DVL	Digital Ph Meter	Jaico	12-jun		DVL/PU/PM-01	pH Meter	Mixed Laborat	plied by NC	1 000	unknown	Functional			
4	DVL,Punakha	Digital Weighing Balance	Wensar	PGB 1000	g- 1000g, d=0.01g	DVL/PU/WeB-0	Balance	Mixed Laborat	plied by NC	1 000	unknown	Functional			
5	DVL,Punakha	Microscope	LABOMED	CxL	110V-240V	DVL/PU/MS-01	Microscopy (Dark	Mixed Laborat	plied by NC	2 500	unknown	Functional			
6	DVL,Punakha	Refrigerator	SAMSUNG	RR1915CCASA/TU/20	180 Litre	DVL/PU/R-01	Refrigerator	Mixed Laborat	plied by NC	2 000	unknown	Functional			
7	DVL,Punakha	Bacteriological incubator	JAINSONS(INDIA)REGD	2000	oiled by digital PID	DVL/PU/In-01	Incubator (normal,	Bacteriology	plied by NC	2 500	unknown	Functional			
8	DVL,Punakha	Loop Auto Sterilizer	HIMEDIA	LA 001/028	Nil	DVL/PU/LAS-0	Autoclave (all type	Bacteriology	ased by DVL 2014			Functional			
9	DVL,Punakha	Hot Air Oven	XIAMEN YUDIAN AUTON	AI-208	240v	DVL/PU/HAO-0	Oven	Mixed Laborat	plied by NC	2 500	unknown	Functional			
10	DVL,Punakha	single distillation plan	BOROSIL	3362	CAP.1.5&4 ltr/hr	DVL/PU/SDP-0	Water Purification	Mixed Laborat	plied by NC	4 000		Functional			
11	DVL,Punakha	Deep Freezer	VOLTAS LID	320DD CF	320 Litres	DVL/PU/DF-01	Freezer -20°C & -4	Mixed Laborat	ed by DVH	2 500		Functional			
12	DVL,Punakha	Sterizoom Microscope	LAMOMED	7gA9	Streo zoom 2000	DVL/PU/St.MS	Microscopy (Dark	Parasitology	plied by NC	2 500		Functional			
13	DVL,Punakha	Waterbath	Labman scientific Instrur	MLMWB-08	8 hole(double rows	DVL/PU/WB-01	Water Bath	Mixed Laborat	by RLDC.W	2 000		Functional			
14	DVL,Punakha	Laminar Flow	nil	nil	UV	DVL/PU/LAF-01	Biosafety Cabinet	Mixed Laborat	by RLDC.W	8 000		Functional			
15	DVL,Punakha	Advanced Research Microsc	RADICAL Instruments	RMH-4T	3MP digital camera	DVL/PU/ARM-0	Microscopy (Dark	Mixed Laborat	sed by DV	2 500	Nu.180000	Functional			
16															

Analysis of Equipment Distribution

Equipment Value Distribution	Value	%
Total Value of Equipment	38 500	0%
Value of functional equipment	-	0,00%
Value of equipment to repair	-	0,00%
Value of equipment to renew	-	0,00%
Value of obsolete equipment	-	0,00%

Equipment Category	Value	Number	%
Agitator (Magnetic, Heater, Vortex…)	-	-	0,00%
Autoclave (all types)	-	1	0,00%
Balance	1 000	1	3,85%
Biosafety Cabinet and Chemical Hood	8 000	1	30,77%
Grinder	-	-	0,00%
Centrifuge (all types)	5 500	2	21,15%
Equipment for chemical analysis (GC, AAS, Spectrophotometry, Mass spec, HPLC)	-	-	0,00%
Equipment for Electrophoresis	-	-	0,00%
Equipement for ELISA or other immunoassay (Washer/Incubator/Reader)	-	-	0,00%
Equipment for Histology	-	-	0,00%
Equipment for HPLC with any detection system	-	-	0,00%
Equipment for PCR	-	-	0,00%
Equipment for Photometry / Spectrophotometry	-	-	0,00%
Equipment for Thin Layer Chromatography	-	-	0,00%
Freezer -20°C	-	-	0,00%
Freezer -80°C	-	-	0,00%
Incubator (normal, gas…)	-	-	0,00%
Liquid Nitrogen Container	-	-	0,00%
Lyophilizer	-	-	0,00%
Micropipette (mono, multi…)	-	-	0,00%
Microscopy (Dark Field, Fluorescent, Inverted	-	-	0,00%
Oven	2 500	1	9,62%
pH Meter	1 000	1	3,85%
Refrigerator	2 000	1	7,69%
Standard Measures (Mass, Temperature…)	-	-	0,00%
Vacuum Pump	-	-	0,00%
Washing Machine for Glassware	-	-	0,00%
Water Bath	2 000	1	7,69%
Water Purification	4 000	1	15,38%
Other	-	-	0,00%
Total	26 000	10	100,00%

Field of Use	Value		%
Bacteriology	2 500		50,00%
Parasitology	2 500		50,00%
Serology/Immunology	-		0,00%
Virology Culture	-		0,00%
Molecular	-		0,00%
Clinical Pathology	-		0,00%
Anatomical Pathology	-		0,00%
Food Microbiology	-		0,00%
Toxicology	-		0,00%
Residues	-		0,00%
Feed Content	-		0,00%
Feed Safety	-		0,00%
Drug Quality	-		0,00%
Epidemiology	-		0,00%
Administration	-		0,00%
Research	-		0,00%
Mixed Laboratory Activities	-		0,00%
Other	-		0,00%
Total	5 000		100,00%

3b. Equipment Management

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

		Comments
Are there follow-up files for each item of equipment (invoices, notices, maintenance, calibration, etc.)?	Yes	

Maintenance		Comments
Do you have preventive maintenance programmes?	No	
Do you have access to corrective maintenance service (repair) ?	Yes	(commercial firms)
Do you have in-house competencies for equipment maintenance and minor repairs?	No	
Do you have maintenance service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Calibration / Metrology		Comments
Do you have calibration / metrology programmes ?	No	
Do you have reference materials for calibration / metrology ?	No	
Do you have an in-house department for verification / calibration?	No	
Do you have calibration service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Temperature Monitoring			Comments
Is there a centralised system for managing temperatures?			
	Incubators	No	
	Refrigerators	No	
	Freezers	No	
Is there a manual system for recording temperatures?			
	Incubators	Yes	
	Refrigerators	Yes	
	Freezers	Yes	

Procurement			Comments
How is procurement of **consummables** (e.g. reagents, sampling kits, glassware, etc.) handled?			
	call for tender for each laboratory?	No	
	call for tender for all laboratories at the national level?	Yes	
	direct ordering from the laboratory to the supplier?	No	
How is procurement of **equipment** (with a value over 300€) handled?			
	call for tender for each laboratory?	Yes	
	call for tender for all laboratories at the national level?	Yes	
	direct ordering from the laboratory to the supplier?	No	
Is procurement subject to approval?		Yes	
If yes, at which level does approval need to be obtained?			
	manager or department head	Yes	
	laboratory director	No	
	provincial authority level	No	
	district authority level	No	
	national authority level	No	

3c. Transport

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Does the laboratory participate in routine sampling or annual surveys in the field?	Yes
Does the laboratory participate in outbreak or emergency investigation sampling in the field?	Yes

4. Quality Assurance

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Is there staff dedicated to quality management?	No
Is there a quality assurance programme in place?	No
If so, what reference standard is applied?	
Are there staff trained in quality assurance?	No
Is there a quality manual?	No
Coverage of Accreditation (what diseases, fields, analyses or tests?)	None

List of Participation in Proficiency Testing Rounds

Nature of the Test	Organising Organisation	Cost / Year	Frequency	Results

Below , indicate if formal documentation exists on the following topics and, if it does, give the reference

Topics	Yes / No	Document Reference	Comments
Document control			
Review of requests, tenders and contracts			
Subcontracting of tests and calibrations			
Purchasing services and supplies	Yes	(14)DAP/AH/Lab/2014-	
Services to the client			
Complaints (satisfaction assessment and internal audit)			
Test conformity and/or calibration			
Corrective action			
Preventive action			
Continual improvement			
Control of records			
Internal audits			
Management reviews			
Staff organisation and management			
Installation and environmental conditions			
Testing and calibration methods			
Method selection			
Method development			
Validation of methods			
Evaluating measurement uncertainty			
Control of computerised data			
Management of equipment	Yes	(13)DAP/AH/Lab/2014-	
Measurement traceability			
Sampling	Yes	(05)DAP/AH/Lab/2014-	
Handling samples and test items			
Quality assurance of testing and calibration results			
Reporting results	Yes	(09)DAP/AH/Lab/2014-	
Presentation of reports			
Interpretation and declaration of compliance			
Transmission of reports			

5a. Activities - Demand

******** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ********

A Client is the person or institution that request laboratory analysis of a sample or samples. It may be the Veterinary Services for the purpose of official programmes, other public or private institutions, private veterinarians, farmers, donor projects, etc.
A Submission (or request or dossier) consists of one or more samples registered at the same time under the same dossier number
A Sample is any biological product, organ, dead animal or food product sent to the laboratory by a client, sothat one or more tests can be conducted
A Test is a laboratory technique or method which determines the value of a specific parameterof a sample

Reference Year: 2014-2015 over a period of one year

Clients / Sources of Demand		Import Control			Export Certification			AH or VPH Programmes			Request of Client			Undetermined Purpose +			Total		
Categories	Number of Clients	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submission s	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Numbe r of Tests	Number of Submissions	Number of Samples	Number of Tests
Veterinary Services															660	1269	0	660	1269
Other Public Administrations																	0	0	0
Private Veterinarians																	0	0	0
Farmers Organisations																	0	0	0
Individual Farmers / Owners																	0	0	0
Food Industry																	0	0	0
Feed Industry																	0	0	0
Research																	0	0	0
Other (please specify)																	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**660**	**1269**	**0**	**660**	**1269**

+ Use if you have only general or incomplete data

5b. Activities - Samples

Number of samples received, by type

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year 2014-2015

Samples from Animals	Cattle	Sheep	Goats	Pigs	Equidae	Camelidae	Carnivores	Wildlife	Birds	Humans	Undetermined	Total
Whole dead bodies									8			8
Organs or samples taken at autopsy	4			1								5
Aborted foetuses	2											2
Placenta and lochia												0
Milk	11											11
Blood or serum	32		6				17					55
Urine												0
Faeces	203	50	34				2		13			302
Sperm												0
Swab samples							7		8			15
Skin scrapings							11					11
Punctures, pus and exudates												0
Cerebrospinal fluid												0
Biopsies												0
Other												0
Total	**252**	**50**	**40**	**1**	**0**	**0**	**37**	**0**	**29**	**0**	**0**	**409**

Food products	
Meat	
Milk and milk products	
Eggs and egg products	133
Fish and fishery products	
Fresh prepared foods	
Frozen prepared foods	
Canned products	
Animal Feed	3
Water	4
Other	
Total	**140**

5d. Activities - Prospects

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Population

Administrative Area Served by Laboratory	Human Population	Cattle		Sheep/Goats		Pigs		Equidae/Camelidae		Carnivores	Rural Poultry	Intensive Poultry		Beehives	Aquatic Animals	
		Farms	Animals	Farms	Animals	Farms	Sows	Farms	Animals	Animals		Farms	Animals		Farms	Tonnes
Punakha	21097		11044		130		378		486	2188	2523		4187			
Total	**21097**	**0**	**11044**	**0**	**130**	**0**	**378**	**0**	**486**	**2188**	**2523**	**0**	**4187**	**0**	**0**	**0**

6. Budget Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Person in charge of the budget and authorisation of payments:

Actual Expenditures	Year n-3		Year n-2		Year n-1		Comments
	Internal Budget	External Funding	Internal Budget	External Funding	Internal Budget	External Funding	
Capital Investment							
Building of new premises							
Renewal of existing premises							
Purchase of new vehicles							
Purchase of new IT, telecommunication and other equipment							
Purchase of new laboratory equipment	58 000						
Specialised training (PhD, etc.)							
Salaries and Remuneration							
Salaries including fringe benefits							
Per diem and travel allowances							
Continuing education (short courses, etc.)							
Operating Costs							

1. General Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

1. Background Details

Laboratory Name:	National Centre for Animal Health		
Address:	Serbithang, Thimphu post box 155		
Manager's Name:	Dr. Kinzang Dukpa		
Telephone:	351568	Fax:	351095
E-mail:	kinzangd@yahoo.com		
Website:	www.ncah.gov.bt		
Opening Hours:	9AM to 5 PM		
Contact in Case of Emergency:	Yes	Emergency Phone Number:	124 (toll free)

2. Contact Person for the PVS Pathway Laboratory Mission

Surname and First Name:	Gurung, Ratna Bahadur		
Position:	Laboratory head		
Telephone:	351083	Fax:	351095
E-mail:	rgur1038@uni.sydney.edu.au		

3. Status

Laboratory Status:	Department within Veterinary Services
Supervisory Authority:	Animal Health Division, Department of Livestock

4. Documents to be prepared and supplied to the OIE PVS Expert Team

		Document Availability
Laboratory Statutes:	Documents establishing the laboratory and stating its mode of governance and funding	Available
Location Map:	Map/Plan with a scale of ~1/25000 indicating access roads, waterways and urbanised areas	
Site Plan:	Plan with a scale of ~1/5000 indicating laboratory buildings, access roads and fencing	
Detailed Plan:	Plan with a scale of ~1/100 mentioning for each building the various premises, dimensions and biosecurity levels	
Structural Organisation Chart:	Showing current organisational structure of the laboratory	
Functional Organisation Chart:	Showing current functional organisation of the laboratory	
Job Descriptions:	For all relevant staff	
Quality Manuals:	If quality assurance or quality management system is in place, the laboratory should be able to provide such documents	
Annual Report:	For the past three years, if possible	
Budget:	Budgets including revenues and expenditures for the past three years if possible	
List of Analyses and Prices:	Including calculation method if existent	
Invoices:	Samples of invoices for locally supplied and imported large equipment and consumables from habitual	

Departments/Institutions/Ministries or private sector)

Name	Authority	Location	Scope of Work	Contact
National food testing laboratory	BAFRA	Yusipang	Food safety	Mr. Jamyang Dorji
Public health laboratory	MOH	JDWNRHThir	Human disease	Mr. Sonam Wangchuk
National centre for animal nutrition	DOL	Bumthang	feed analysis	Mr. Jambay Gyeltshen
National soil service Centre	DOA	Thimphu	soil analysis	Mr. Jamyang
National Plant protection centre	DOA	Thimphu	Plant diseases	Mr. Doe Doe
Institute of Traditional Medicine	MOH	Thimphu	traditional medicines	Mr. Dorji Tshering

2. Human Resources

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Number of Veterinarians :	5			% of Specialised Training :	89%
Number of Staff :	19	Total Area / Staff :	28,12 m²		
% of Women :	47%	Laboratory Area / Laboratory Technical Staff :	11 m²	Average number days CE / Staff :	0,00

Name or ID Number	Sex	Birth Year	2016 Age	Employment Status	Type of Position	Level of Education	Field of Work in the Laboratory	Relevant Specialised Training/ Continuing Education	Number of days of CE last year
Dr. Phuntsho Wangdi	M	1958	58	Government Employee	Laboratory Technical W	Postgraduate University	Parasitology	Yes	
Dr. S.B Chamling Rai	M	1964	52	Government Employee	Laboratory Technical W	Postgraduate University	Virology Culture	Yes	
Dr. N. K.Thapa	M	1967	49	Government Employee	Laboratory Technical W	Postgraduate University	Anatomical Pathology	Yes	
Dr. Ratna Bahadur Gurung	M	1967	49	Government Employee	Head of Laboratory Unit	Postgraduate University	Mixed Laboratory Activitie	Yes	
Mr. Sangay Tenzin	M	1980	36	Government Employee	Laboratory Technical W	Postgraduate University	Molecular	Yes	
Ms. Puspa Maya Sharma	F	1989	27	Government Employee	Laboratory Technical W	Postgraduate University	Bacteriology	Yes	
Ms. Sangay Lham	F	1963	53	Government Employee	Laboratory Technical W	Technical Training	Parasitology	Yes	
Mr. Purna Bdr. Rai	M	1970	46	Government Employee	Laboratory Technical W	Technical Training	Serology/Immunology	Yes	
Mr. Tenzinla	M	1976	40	Government Employee	Laboratory Technical W	Technical Training	Mixed Laboratory Activitie	Yes	
Mr. Dawa Tshering	M	1975	41	Government Employee	Laboratory Technical W	Technical Training	Molecular	Yes	
Ms.Pasang Bida	F	1981	35	Government Employee	Laboratory Technical W	Technical Training	Anatomical Pathology	Yes	
Ms. Punya Mata Sanyasi	F	1979	37	Government Employee	Laboratory Technical W	Technical Training	Toxicology	Yes	
Ms. Kelzang Lhamo	F	1985	31	Government Employee	Laboratory Technical W	Technical Training	Serology/Immunology	Yes	
Ms.Ugyen Pema	F	1979	37	Government Employee	Laboratory Technical W	Technical Training	Anatomical Pathology	Yes	
Ms. Tshewang Dema	F	1983	33	Government Employee	Laboratory Technical W	Technical Training	Clinical Pathology	Yes	
Ms. Pema Tshomo	F	1984	32	Government Employee	Laboratory Technical W	Primary/Secondary Education	Mixed Laboratory Activitie	No	
Ms. Tshering Dem Tamang	F	1985	31	Government Employee	Laboratory Technical W	Postgraduate University	Mixed Laboratory Activitie	Yes	
Mr.Tandin	M	1972	44	Government Employee	Other Support Staff	Primary/Secondary Education	Mixed Laboratory Activitie	No	
Dr.Kinzang Dukpa	M	1970	46	Government Employee	General Management	Postgraduate University	Administration	Yes	

	Age	Number
Age min	27	2
	28	1
	29	1
	30	0
	31	1
	32	1
	33	2
	34	0
	35	0
	36	1
	37	1
	38	0
	39	0
	40	1
	41	0
	42	2
	43	0
	44	0
	45	2
	46	0
	47	0
	48	1
	49	1
	50	0
	51	0
	52	0
	53	0
	54	1
	55	0
	56	0
	57	0
Age max	58	0
	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0

Status Distribution	Number	%
Government Employee	19	100,00%
Open-ended Contract	0	0,00%
Fixed-term Contract	0	0,00%
Temporary Position	0	0,00%
Total	19	

Position Distribution	Number	%
General Management	1	5,26%
Head of Laboratory Unit	1	5,26%
Laboratory Technical Work	16	84,21%
Secretary	0	0,00%
Sample Collection	0	0,00%
Total	18	

Education Distribution	Number	%
Primary/Secondary Educatio	2	10,53%
Technical Training	9	47,37%
Undergraduate University	0	0,00%
Postgraduate University	8	42,11%
Total	19	

Field Distribution	Number	%
Bacteriology	1	5,26%
Parasitology	2	10,53%
Serology/Immunology	2	10,53%
Virology Culture	1	5,26%
Molecular	2	10,53%
Clinical Pathology	1	5,26%
Anatomical Pathology	3	15,79%
Food Microbiology	0	0,00%
Toxicology	1	5,26%
Residues	0	0,00%
Feed Content	0	0,00%
Feed Safety	0	0,00%
Drug Quality	0	0,00%
Epidemiology	0	0,00%
Administration	1	5,26%
Research	0	0,00%
Mixed Laboratory Activities	5	26,32%
Other	0	0,00%
None	0	0,00%
Total	19	

3a. Equipment Inventory

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Only large laboratory equipment (with a value superior to 300€) should be included in the inventory. **Do not include kits, consummables, expendable equipment and glassware. Do not include vehicles.**

	Location	Name	Make	Model	Main Specifications	ID Number for Quality Management	Category of Equipment	Field of Use	Year Acquired	Acquisition Value	Present Day Cost (cost to replace)	Condition	Preventive Maintenance Conducted	Calibration or Metrological Verification Conducted	Comments
1	Para section	Microscope	Leica	1545USA/41R3175	compound	MS-01	Microscopy (Dark	Parasitology	2004	3 000	Nu. 150000	Functional	No	No	
2	Para section	Microscope	Stero	4528USA	compound	ST-01	Microscopy (Dark	Parasitology		3 000		Functional	No	No	
3	Para section	water bath	louan	39407023	20-100C	WB-01	Water Bath	Parasitology		1 000		Functional	No	No	
4	Para section	Centrifuge	Sanyo	centaur 2	1-3.5	CF-01	Centrifuge (all type	Parasitology		4 500		Functional	No	No	
5	Para section	Incubator	Jouan	39405050	10-70C	IN-01	Incubator (normal,	Parasitology		2 500		Functional	No	No	
6	Para section	Weighing balance	Gebertini	68230	1000g, dd=0.01g	WEB-01	Balance	Parasitology		1 000		Functional	No	No	
7	Haemato sectic	Blood analyzer	Clindiag	HA-vet	HA-22	BA-01	Other	Clinical Pathol	2013	8 400	550 000	Functional	Yes	Yes	
8	Haemato sectic	Centrifuge	cltek		16000RPM	CF-02	Centrifuge (all type	Clinical Pathology		4 500		Functional	No	No	
9	Haemato sectic	Microscope	Omax		binocular	MS-10	Microscopy (Dark	Clinical Pathol	2014	3 000		Functional	No	No	
10	Haemato sectic	Microscope	Leica	BME	binocular	MS-05	Microscopy (Dark	Clinical Pathology		3 000		Functional	No	No	
11	Haemato sectic	Refrigerator	LG		175L, 2-8C	R-04	Refrigerator	Clinical Pathology		2 000		Functional	No	No	
12	Haemato sectic	Incubator	Jouan	Astel EB 55	10-70C	IN-03	Incubator (normal,	Clinical Pathology		2 500		Functional	No	No	
13	Toxi/biochem	Incubator	memmert		max 90C		Incubator (normal,	Toxicology		2 500		Functional	No	No	
14	Toxi/biochem	Spectrophotometer	thermospectronic	genesys 20		SP-03	Equipment for che	Toxicology		10 000		Functional	No	No	
15	Toxi/biochem	Refrigerator	LG	GR-181RPPXS	175L, 2-8C	R-02	Refrigerator	Toxicology		2 000		Functional	No	No	
16	Toxi/biochem	ELISA plate reader	Epson	ELX800Mx	96 well reader	EPR-01	Equipment for imm	Toxicology		5 500		Functional	No	No	
17	Toxi/biochem	ELISA printer	Epson	LQ-300+II			Equipment for imm	Toxicology		1 000		Functional	No	No	
18	Toxi/biochem	water bath	indian instrument mfg.	7000012		WB-03	Water Bath	Toxicology		2 000		Functional	No	No	
19	Toxi/biochem	Weighing balance	wenser	PGB 1000	1000g, dd=0.01g	WEB-04	Balance	Toxicology		1 000		Functional	No	No	
20	Toxi/biochem	Spectrophotometer	Biochemical system	screen meter 3000		SP-01	Equipment for che	Toxicology		10 000		Functional	No	No	
21	Histopathology	Dispenser	Selecta	J.P selcta		DI-01	Equipment for histo	Anatomical Pathology				Functional	No	No	
22	Histopathology	water bath	Selecta	J.P selcta			Water Bath	Anatomical Pathology		2 000		Functional	No	No	
23	Histopathology	Microtome machine	Microtech	CUT 4060		MT-01	Equipment for histo	Anatomical Pathology		15 000		Functional	No	No	
24	Histopathology	Auto stainer	mediners instruments	MSS-E23			Equipment for histo	Anatomical Pa	2013	7 000	450 000	To Renew	No	No	
25	Histopathology	Cryostat machine	Leica	CM 1850		CR-01	Equipment for histo	Anatomical Pathology		5 000		Functional	No	No	
26	Histopathology	Microscope	Olympus	CX21i	binocular	MS-04	Equipment for histo	Anatomical Pathology		3 000		Functional	No	No	
27	Histopathology	Tissue processor	Shandon	citadel 1000		TP-01	Equipment for histo	Anatomical Pathology		1 500		Functional	No	No	
28	Histopathology	Vaccum pump				VP-01	Vacuum Pump	Anatomical Pathology		1 800		Functional	No	No	
29	Histopathology	Fume hood	ESCO	EFH-4A1		FH-01	Biosafety Cabinet	Anatomical Pathology		3 800		Functional	No	No	
30	Histopathology	Weighing balance	Wenser	PGB 1000	1000g, dd=0.01g	WEB-	Balance	Anatomical Pa	2015	1 000		Functional	No	No	
31	Histopathology	Magnetic stirrer	SPINIT				Agitator (magnetic,	Anatomical Pathology		250		Functional	No	No	
32	Histopathology	Refrigerator	LG	GR-181RPPXS	175L, 2-8C	R-03	Refrigerator	Anatomical Pathology		2 000		Functional	No	No	
33	Serology	ELISA plate reader	HEALES	HB530		EPR-03	Equipment for imm	Serology/Immunology		5 500		Functional	No	No	
34	Serology	Incubator	Jouan	EB115	10-70C	IN-07	Incubator (normal,	Serology/Immunology		2 500		Functional	No	No	old
35	Serology	Refrigerated centrifuge	ALC	PK 121R			Equipment for immuno-assays (reader, lumino			9 000		Functional	No	No	
36	Serology	Deep Freezer	Vestfrost		"-20C	R-09	Freezer -20°C & -4	Serology/Immunology		2 500		Functional	No	No	
37	Molecular diag	Biosafety cabinet	ESCO	TM 5237	Class II	BSC-03	Biosafety Cabinet and Chemical Hood			14 000	90 000	Functional	No	No	
38	Molecular diag	Biosafety cabinet	ESCO	TM 5238	Class III	BSC-02	Biosafety Cabinet and Chemical Hood			14 000	90 000	Functional	No	No	
39	Molecular diag	UPS	SANUPS	ASE 1051			Other	Molecular		600		To Repair	Not Applicable	Not Applicable	
40	Molecular diag	UPS	SANUPS	ASE 1052			Other	Molecular		600		Functional	No	No	
41	Molecular diag	PCR Machine	BIORAD	thermal cycles	real time	PCR-01	Equipment for PCR	Molecular		7 500		Functional	No	No	
42	Molecular diag	Deep Freezer	Vestfrost		"-20C	R-09	Freezer -20°C & -4	Molecular		2 500		Functional	No	No	
43	Serology	ELISA plate reader	MULTISCKAN	MK-II			Equipment for imm	Serology/Immunology		5 500		Functional	No	No	
44	Serology	ELISA plate reader	Mindray	MR 96A			Equipment for imm	Serology/Immunology		5 500		Functional	No	No	very old
45	Serology	Deep Freezer	SANYO	433V	"-80C		Equipment for imm	Serology/Immunology		13 500		Functional	No	No	
46	Serology	Biosafety cabinet	ESCO	TM 5237	Class II	BSC-04	Biosafety Cabinet	Molecular		14 000		To Repair	No	No	
47	Virology	Biosafety cabinet	ESCO	Allstream	Class III	BSC-06	Biosafety Cabinet	Serology/Immunology		14 000		Functional	No	No	
48	Serology	Centrifuge	Microtech	17TR	Centrifu		Centrifuge (all type	Serology/Immunology		4 500		Functional	No	No	
49	Serology	Biosafety cabinet	ESCO	TM 5237	Class II	BSC-01	Biosafety Cabinet	Serology/Immunology		14 000		Functional	No	No	
50	Serology	Incubator	Memmert		10-90C		Incubator (normal,	Serology/Immunology		2 500		Functional	No	No	
51	Serology	Centrifuge		ALC 4222	Centrifu	CT-06	Centrifuge (all type	Serology/Immunology		2 500		Functional	No	No	
52	Molecular diag	Thermal cycler			conventional		Equipment for PCR	Molecular		7 500		Functional	No	No	
53	Bacteriology	Refrigerator	labfreeze	MR-PR170	2-8C 175L	R-15	Refrigerator	Bacteriology	2014	2 000		Functional	No	No	
54	Bacteriology	Refrigerator	labfreeze	MR-PR120	2-8C 175L	R-16	Refrigerator	Bacteriology	2014	2 000		Functional	No	No	
55	Bacteriology	Refrigerator	Kelvinator	Corona DLX	2-8C 175L	R-05	Refrigerator	Bacteriology		2 000		Functional	No	No	
56	Bacteriology	Biosafety cabinet	ESCO	Ulfa filter 5254	Class II	BSC-05	Biosafety Cabinet	Bacteriology		14 000		Functional	Yes	Yes	annaully
57	Bacteriology	Stomacher	Seward	400 circulator	5 x 20mm	ST-01	Grinder	Bacteriology		3 000		Functional	No	No	
58	Bacteriology	Colony counter		digital	digital	CC-02	Other	Bacteriology		1 800		Functional	No	No	
59	Bacteriology	Turbidometer	HACH	2100Q	0-1000NTU	TBM-01	pH Meter	Bacteriology		1 000		Functional	No	No	
60	Bacteriology	Spectrophotometer	thermo scientific	Genesys 105	Spectrop	SP-02	Equipment for che	Bacteriology		10 000		Functional	No	No	
61	Bacteriology	Microscope	Leica	Galen III	light field, oil imm	MS-07	Microscopy (Dark	Bacteriology		3 000		Functional	No	No	
62	Bacteriology	Microscope	Zeiss	3118000226	light field, oil imm	MS-08	Microscopy (Dark	Bacteriology		3 000		Functional	No	No	
63	Bacteriology	Incubator	memmert		10-90C	IN-05	Incubator (normal,	Bacteriology		2 500		Functional	No	No	
64	Bacteriology	Incubator			Incubato	In-04	Incubator (normal,	Bacteriology		2 500		Functional	No	No	
65	Bacteriology	Refrigerator	Freshcool		175L, 2-8C	R-06	Refrigerator	Bacteriology		2 000		Functional	No	No	
66	Bacteriology	Autoclave	DAIHAN Scientific	WACS-20115	121C, 15psi	AC-01	Autoclave (all type	Bacteriology		15 000		To Repair	No	No	
67	Bacteriology	Laminar flow	Streamline	Class H3	Class H13 HEPA	LAF-01	Biosafety Cabinet	Bacteriology		14 000		Functional	No	Not Applicable	
68	Bacteriology	water bath	Jouan	Astel 53200	100C	WB-05	Water Bath	Bacteriology		1 000		Functional	No	No	
69	Bacteriology	Weighing balance	Sartorius	BP410	410g, d=0.01g	WEB-02	Balance	Bacteriology		1 000		Functional	No	No	
70	Bacteriology	Weighing balance	Wenser	PGB 600	600g, d=0.01g	WEB-03	Balance	Bacteriology		1 000		Functional	No	No	
71	Bacteriology	Colony counter	Cjemica omnia	800100	Colony counter	CC-01	Other	Bacteriology		1 800		Functional	No	No	
72	Bacteriology	Autoclave	Wise clave	WACS 1045	121C , 15psi	AC-02	Autoclave (all type	Bacteriology		15 000		Functional	No	No	
73															
74															
75															

Analysis of Equipment Distribution

Equipment Value Distribution	Value	%
Total Value of Equipment	354 550	11%
Value of functional equipment	-	0,00%
Value of equipment to repair	31 600	8,91%
Value of equipment to renew	7 000	1,97%
Value of obsolete equipment	-	0,00%

Equipment Category	Value	Number	%
Agitator (Magnetic, Heater, Vortex…)	250	1	0,12%
Autoclave (all types)	30 000	2	14,47%
Balance	5 000	5	2,41%
Biosafety Cabinet and Chemical Hood	101 800	8	49,10%
Grinder	-	-	0,00%
Centrifuge (all types)	16 000	4	7,72%
Equipment for chemical analysis (GC, AAS, Spectrophotometry, Mass spec, HPLC)	-	-	0,00%
Equipment for Electrophoresis	-	-	0,00%
Equipement for ELISA or other immunoassay (Washer/Incubator/Reader)	-	-	0,00%
Equipment for Histology	31 500	6	15,19%
Equipment for HPLC with any detection system	-	-	0,00%
Equipment for PCR	-	-	0,00%
Equipment for Photometry / Spectrophotometry	-	-	0,00%
Equipment for Thin Layer Chromatography	-	-	0,00%
Freezer -20°C	-	-	0,00%
Freezer -80°C	-	-	0,00%
Incubator (normal, gas…)	-	-	0,00%
Liquid Nitrogen Container	-	-	0,00%
Lyophilizer	-	-	0,00%
Micropipette (mono, multi…)	-	-	0,00%
Microscopy (Dark Field, Fluorescent, Invertec	-	-	0,00%
Oven	-	-	0,00%
pH Meter	1 000	1	0,48%
Refrigerator	14 000	7	6,75%
Standard Measures (Mass, Temperature…)	-	-	0,00%
Vacuum Pump	1 800	1	0,87%
Washing Machine for Glassware	-	-	0,00%
Water Bath	6 000	4	2,89%
Water Purification	-	-	0,00%
Other	-	-	0,00%
Total	207 350	39	100,00%

Field of Use	Value		%
Bacteriology	97 600		38,76%
Parasitology	15 000		5,96%
Serology/Immunology	72 500		28,79%
Virology Culture	-		0,00%
Molecular	32 700		12,99%
Clinical Pathology	-		0,00%
Anatomical Pathology	-		0,00%
Food Microbiology	-		0,00%
Toxicology	34 000		13,50%
Residues	-		0,00%
Feed Content	-		0,00%
Feed Safety	-		0,00%
Drug Quality	-		0,00%
Epidemiology	-		0,00%
Administration	-		0,00%
Research	-		0,00%
Mixed Laboratory Activities	-		0,00%
Other	-		0,00%
Total	251 800		100,00%

3b. Equipment Management

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

		Comments
Are there follow-up files for each item of equipment (invoices, notices, maintenance, calibration, etc.)?	Yes	Only log books available

Maintenance		Comments
Do you have preventive maintenance programmes?	No	
Do you have access to corrective maintenance service (repair) ?	Yes	Only for minor repairs
Do you have in-house competencies for equipment maintenance and minor repairs?	Yes	Not available for major repairs
Do you have maintenance service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Calibration / Metrology		Comments
Do you have calibration / metrology programmes ?	No	
Do you have reference materials for calibration / metrology ?	No	
Do you have an in-house department for verification / calibration?	No	
Do you have calibration service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Temperature Monitoring			Comments
Is there a centralised system for managing temperatures?			
	Incubators	No	
	Refrigerators	No	
	Freezers	No	
Is there a manual system for recording temperatures?			
	Incubators	Yes	
	Refrigerators	Yes	
	Freezers	Yes	

Procurement			Comments
How is procurement of **consummables** (e.g. reagents, sampling kits, glassware, etc.) handled?			
	call for tender for each laboratory?	Yes	
	call for tender for all laboratories at the national level?	Yes	
	direct ordering from the laboratory to the supplier?	Yes	especially kits and reagents
How is procurement of **equipment** (with a value over 300€) handled?			
	call for tender for each laboratory?	Yes	
	call for tender for all laboratories at the national level?	Yes	
	direct ordering from the laboratory to the supplier?	No	
Is procurement subject to approval?		Yes	as per the budget available
If yes, at which level does approval need to be obtained?			
	manager or department head	Yes	
	laboratory director	Yes	
	provincial authority level	No	
	district authority level	No	
	national authority level	Yes	

3c. Transport

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Does the laboratory participate in routine sampling or annual surveys in the field?	Yes
Does the laboratory participate in outbreak or emergency investigation sampling in the field?	Yes

Type of Vehicle	Age	Odometer (kms)	Specific Equipment		
			Refrigeration [1]	Biosafety [2]	Laboratory [3]
Toyota Hilux	21 years		No	No	No
Mahindra Scorpio	5years		No	No	No

[1] "No" if absent, "Autonomous" for equipment with a power supply (battery, vehicle, etc.), "Cooler" for isothermal equipment
[2] Presence of equipment (pump, sprays, etc.) and products necessary for decontamination of vehicle
[3] Is minimum equipment needed to carry out procedures in the field (microscope, centrifuge) available?

Comments

There is no specific vehicle alloted for laboratory purpose, whichever is available during the outbreak, it is alloted from the adminis

3d. Premises

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Surface Area	Unit of Measure: m^2 or ft^2	Total Surface Area	BSL1 Surface Area	BSL2 Surface Area	BSL3 Surface Area
Laboratory Departments					
Bacteriology		20		20	
Parasitology		22	22		
Serology/Immunology		34		20	14
Virology Culture		14			14
Molecular		21	21		
Clinical Pathology		22	22		
Anatomical Pathology		26	26		
Food Microbiology		0			
Toxicology		21	21		
Residues		0			
Feed Content		0			
Feed Safety		0			
Drug Quality		0			
Other		0			
Autopsy Room		27	27		
Animal Housing		249	249		
Storage other than cold chambers		0			
Cold Chambers		2	2		
Ancillary Areas (incinerator, garages, etc.)		36	36,2		
Administration offices and meeting rooms		23	23		
Circulation		0			
Other		18	18		
Total Surface Area		**534**	**466**	**40**	**28**

Value of Premises				
Unit cost of premises in €/m^2				
Total Value	**0**	**0**	**0**	**0**

Water

		Capacity in l^3
Type of water supply	Surface	
Is there centralised water treatment?	No	
Distillation equipment	No	
Deionisation equipment	No	

Electricity

Rate of supply or total duration of power cuts per week			
Is there a back-up electricity generator?	Yes	Output:	10KV
Comments	Verry rarely there is power cuts and only during annual maintenance.		

Waste Management

Means of disposing of wastewater	Biological Pit		
Means of disposing of biological waste			
Incineration	No	Capacity in l^3	
Means of disposing of chemical residues	Biological Pit		
Comments			

Refrigeration Equipment

Cold chambers	Number	Total volume (m^3)
+ 4°C	1	5,3
- 20°C		

Refrigerators	Number	Total volume (m^3)
+ 4°C	9	6,78
- 20°C	3	2,579
- 45°C		
- 80°C	5	2,946

Telecommunication Availability

Number of telephone lines	1
Is there access to an international telephone line ?	Yes
Is there access to the internet ?	Yes
Is there an intranet system ?	No

Office Equipment

Number of computers	10		
Number of printers	5		
Number of photocopiers			
Is there a data back-up system/ procedure ?	No		
Is there laboratory data management system ?	No	Which one ?	

4. Quality Assurance

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Is there staff dedicated to quality management?	No
Is there a quality assurance programme in place?	No
If so, what reference standard is applied?	
Are there staff trained in quality assurance?	No
Is there a quality manual?	No

Coverage of Accreditation (what diseases, fields, analyses or tests?)	Serology and Molecular testing - Infuelnza A, H5N1, H7N9 and FMD (LPB ELISA)

List of Participation in Proficiency Testing Rounds

Nature of the Test	Organising Organisation	Cost / Year	Frequency	Results
Serology Testing-FMD virus serotypes O, A and Asia1 LPB ELISA Assessment	Project Directorate on FMD, ICAR, India	supported by RSU, Kathmandu	Participated in May 2014	correctly identified serum antibody titre for all the samples
Molecular testing – Real-time PCR Assay for Influenza A, H7 & N9	CSIRO AUSTRALIAN ANIMAL HEALTH LABORATORY	Supported by FAO	Participated in Apr-May 2014	Correctly identified all Flu A, H7 and N9 Samples with Ct values higher than the panels
Molecular testing – Avian Influenza Virus A, H5 & N1 rRT-PCR Proficiency Testing	CEIRS, ARS, USDA	supported by St. Judes Children Hospital, TN, USA	Participated in Nov. 2012	Correctly identified all Flu A, H5 and N1 Samples

Below , indicate if formal documentation exists on the following topics and, if it does, give the reference

Topics	Yes / No	Document Reference	Comments
Document control	No		
Review of requests, tenders and contracts	Yes	NCAH/LSU 4(11) & (12)	
Subcontracting of tests and calibrations	Yes	NCAH/LSU 4(21)	
Purchasing services and supplies	Yes	NCAH/LSU 4(16), (17) &	
Services to the client	Yes	NCAH/LSU 4 (3, 4, 5, 6, 7,	
Complaints (satisfaction assessment and internal audit)	No		
Test conformity and/or calibration	No		
Corrective action	No		
Preventive action	No		
Continual improvement	Yes	NCAH/Adm 3(16)	
Control of records	Yes	NCAH/LSU All Sections	
Internal audits	Yes	NCAH/LSU 4(19)	
Management reviews	No	NCAH/LSU 4(1)	
Staff organisation and management	Yes	NCAH/LSU 4(2)	
Installation and environmental conditions	No		
Testing and calibration methods	No		
Method selection	Yes	NCAH/LSU 4(12)	
Method development	Yes	NCAH/LSU 4(20)	
Validation of methods	Yes	NCAH/LSU 4(20)	
Evaluating measurement uncertainty	No		
Control of computerised data	No		
Management of equipment	Yes	NCAH/LSU 4(24)	
Measurement traceability	No		
Sampling	Yes	LSU Register No. 5	
Handling samples and test items	Yes	NCAH/LSU 4(19)	
Quality assurance of testing and calibration results	Yes	NCAH/LSU 4(20)	
Reporting results	Yes	NCAH/LSU4(14)	
Presentation of reports	Yes	NCAH/LSU4(14)	
Interpretation and declaration of compliance	No		
Transmission of reports	Yes	NCAH/LSU4(14)	

5a. Activities - Demand

******** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ********

A Client is the person or institution that request laboratory analysis of a sample or samples. It may be the Veterinary Services for the purpose of official programmes, other public or private institutions, private veterinarians, farmers, donor projects, etc.
A Submission (or request or dossier) consists of one or more samples registered at the same time under the same dossier number
A Sample is any biological product, organ, dead animal or food product sent to the laboratory by a client, sothat one or more tests can be conducted
A Test is a laboratory technique or method which determines the value of a specific parameterof a sample

Reference Year: **2014-15** over a period of one year

Clients / Sources of Demand		Import Control			Export Certification			AH or VPH Programmes			Request of Client			Undetermined Purpose +			Total		
Categories	Number of Clients	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests
Veterinary Services	1	32	627	1194				1020	9485	13231							**1052**	**10112**	**14425**
Other Public Administrations																	**0**	**0**	**0**
Private Veterinarians																	**0**	**0**	**0**
Farmers Organisations																	**0**	**0**	**0**
Individual Farmers / Owners																	**0**	**0**	**0**
Food Industry																	**0**	**0**	**0**
Feed Industry																	**0**	**0**	**0**
Research								2743	3421	5290							**2743**	**3421**	**5290**
Other (please specify)																	**0**	**0**	**0**
Total	**1**	**32**	**627**	**1194**	**0**	**0**	**0**	**3763**	**12906**	**18521**	**0**	**0**	**0**	**0**	**0**	**0**	**3795**	**13533**	**19715**

5b. Activities - Samples

Number of samples received, by type

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year: 2014-15

Samples from Animals	Cattle	Sheep	Goats	Pigs	Equidae	Camelidae	Carnivores	Wildlife	Birds	Humans	Undetermined	Total
Whole dead bodies	13	7		128	1		9		123		2	**283**
Organs or samples taken at autopsy	294	5	272	240	9		27	7	204			**1058**
Aborted foetuses												**0**
Placenta and lochia												**0**
Milk	98											**98**
Blood or serum	4339		326		767		196	3	1461			**7092**
Urine	3			1								**4**
Faeces	1221	107	36	1	32		14		278		20	**1709**
Sperm	19											**19**
Swab samples	80	1	4	14			6		48			**153**
Skin scrapings							1					**1**
Punctures, pus and exudates				4			4		3			**11**
Cerebrospinal fluid												**0**
Biopsies												**0**
Other	30	12	16	20	36		172		42			**328**
Total	**6097**	**132**	**654**	**408**	**845**	**0**	**429**	**10**	**2159**	**0**	**22**	**10756**

Food products	
Meat	
Milk and milk products	
Eggs and egg products	
Fish and fishery products	
Fresh prepared foods	
Frozen prepared foods	
Canned products	
Animal Feed	232
Water	2
Other	
Total	**234**

5c. Activities - Tests

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ****

Reference Year: ly 14 to june15 Currency:

Agent / Disease	Test / Method	Number Tests / Year	Official Unit Price	Cost of Test	Theoretical Total Revenue
FMD (NSP)	ELISA	335			**0**
FMD (NSP)	Rapid	275			**0**
FMD serotyping	ELISA	1			**0**
CSf	ELISA	300			**0**
Brucella	ELISA	306			**0**
Brucella	RBT	415			**0**
Brucella	PCR	346			**0**
IBR	ELISA	107			**0**
Rabies	FAT	23			**0**
Rabies	Sere ELISA	196			**0**
Influenza (H5N1)	PCR	19			**0**
Influenza A	rapid test	35			**0**
IBD Gumboro	ELISA	319			**0**
IBD	rapid test	7			**0**
NDV	rapid test	12			**0**
NDV	PCR	19			**0**
PPR	antibody ELISA	147			**0**
PPR	antigen ELISA	166			**0**
PRRS	antibody ELISA	92			**0**
CBPP	antibody ELISA	240			**#VALEUR!**
Mycobacterium	ELISA	1123			**0**
					0
TOTAL		**4483**			**#VALEUR!**

5d. Activities - Prospects

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Population

Administrative Area Served by Laboratory	Human Population	Cattle		Sheep/Goats		Pigs		Equidae/Camelidae		Carnivores.	Rural Poultry	Intensive Poultry		Beehives	Aquatic Animals	
		Farms	Animals	Farms	Animals	Farms	Sows	Farms	Animals	Animals		Farms	Animals		Farms	Tonnes
National(all 20 dz)	767098		343384		49181		7506		22692	58034	143073		408112			55
Total	**767098**	**0**	**343384**	**0**	**49181**	**0**	**7506**	**0**	**22692**	**58034**	**143073**	**0**	**408112**	**0**	**0**	**55**

Industry

Only take into account facilities that are subject to food hygiene control

Administrative Area Served by Laboratory	Abattoirs and Slaughtering Floors <1000 Tonnes/Year		Abattoirs >1000 Tonnes		Other Food Processing Plants		Commercial Catering		Mass Catering Facilities and Central Kitchens		Retail Outlets	Import	Export
	Number	Tonnage	Number	Tonnage	Number	Tonnage	Number of firms	Number of meals	Number of facilities	Number of meals	Number	Tonnage	Tonnage
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Competing or Collaborating Laboratories

Name	Competing Analyses
National food testing laboratory	
Public health laboratory	Leptospirosis MAT
National centre for animal nutrition	Mycotoxin analysis
National soil service Centre	
National Plant protection centre	
Institute of Traditional Medicine	

6. Budget Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Person in charge of the budget and authorisation of payments: Mr.Tshewang Dakpa, Accountant

Actual Expenditures	Year n-3		Year n-2		Year n-1		Comments
	Internal Budget	External Funding	Internal Budget	External Funding	Internal Budget	External Funding	
Capital Investment							
Building of new premises	3 500 000	########	0	8 436 494	0	0	
Renewal of existing premises	0	0	1 801 750	0	0		
Purchase of new vehicles	0	0		0	0		
Purchase of new IT, telecommunication and other equipment	0	0	0	0	0		
Purchase of new laboratory equipment	704 380	0	1 750 671	0	0	0	
Specialised training (PhD, etc.)	0	0	0	0	0		
Salaries and Remuneration							
Salaries including fringe benefits	3 428 376		4 779 408		5 827 551		
Per diem and travel allowances	460 157		1 821 785		1 870 544	0	
Continuing education (short courses, etc.)	0	0	0	0	0	0	
Operating Costs							
Maintenance of buildings	0		2 000		0	0	
Power, water and utilities	421 827		507 890		0	0	
Maintenance of vehicles	1 170 000		883 441		0	0	
Operating costs of vehicles					0		
Other transportation (flights, etc.)					0		
Biological sample transport (freight, mail, bus, etc.)	73 440		0		36 725	0	
Maintenance of IT, telecommunication and other equipment	320 000		105 000		100 000	0	
IT and office supplies	25 450		45 799		67 278	0	
Telecommunications fees	1 500 047		2 070 913		1 000 000	0	
Personnel and safety equipment	0						
Maintenance of laboratory equipment							
Reagents and consumables							
Calibration							
Proficiency Testing							
Documentation							
Other							
Total	########	########	########	8 436 494	8 902 098	0	
Grand Total	**24 945 443**		**22 205 151**		**8 902 098**		

Real Budgetary Resources	Year n-3	Year n-2	Year n-1	
Initial budget	14 789 376	14 955 408	8 102 551	
Supplementary budget				
Exceptional allocations				
External funding	18 000 000	3 800 000		
Total	**32 789 376**	**18 755 408**	**8 102 551**	

Revenue from Activities	Year n-3	Year n-2	Year n-1	
Laboratory tests charged to private sector clients				
Laboratory tests charged to public sector clients				
Service or research contracts				
Nominal value of tests not invoiced				
Total	**0**	**0**	**0**	

Is there a system of cost accounting?	Yes
Is there a standard private-sector accounting system?	Yes
Is activity revenue incorporated into the budget for the year?	No
Can activity revenue be used directly?	No

Remuneration of Staff	Monthly Remuneration plus Fringe Benefits	*Per diem* for National Travel	*Per diem* for International Travel	
Management	43390	9600		1 Program Director
Supervision	171515	33000		3 Doctors.
Head of Department				
Head of Laboratory	44630	21500		1 Head
Technician	261545	93300		12 Technician
Laboratory Assistant	7000	2500		1 Caretaher
Custodial				
Driver				
Caretaker				
Secretary				

1. General Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

1. Background Details

Laboratory Name:	Regional Livestock Development Centre		
Address:	Rubesa, Wangdue Phodrang, Post Box no. 1291, Bhutan		
Manager's Name:	Dr. Bir Doj Rai		
Telephone:	9752481320	Fax:	9752481294
E-mail:	rldcwangduee@yahoo.com		
Website:	None		
Opening Hours:	9:00:00 AM to 5:00 PM		
Contact in Case of Emergency:	9752481320	Emergency Phone Number:	9752481320

2. Contact Person for the PVS Pathway Laboratory Mission

Surname and First Name:			
Position:			
Telephone:		Fax:	
E-mail:			

3. Status

Laboratory Status:	Regional Laboratory
Supervisory Authority:	Program Director

4. Documents to be prepared and supplied to the OIE PVS Expert Team		Document Availability
Laboratory Statutes:	Documents establishing the laboratory and stating its mode of governance and funding	11th FYP
Location Map:	Map/Plan with a scale of ~1/25000 indicating access roads, waterways and urbanised areas	
Site Plan:	Plan with a scale of ~1/5000 indicating laboratory buildings, access roads and fencing	
Detailed Plan:	Plan with a scale of ~1/100 mentioning for each building the various premises, dimensions and biosecurity levels	
Structural Organisation Chart:	Showing current organisational structure of the laboratory	
Functional Organisation Chart:	Showing current functional organisation of the laboratory	
Job Descriptions:	For all relevant staff	
Quality Manuals:	If quality assurance or quality management system is in place, the laboratory should be able to provide such documents	
Annual Report:	For the past three years, if possible	
Budget:	Budgets including revenues and expenditures for the past three years if possible	
List of Analyses and Prices:	Including calculation method if existent	
Invoices:	Samples of invoices for locally supplied and imported large equipment and consumables from habitual	

2. Human Resources

***** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE *****

Number of Veterinarians : 2
Number of Staff : 5
% of Women : 60%

Total Area / Staff : 0,00 m²
Laboratory Area / Laboratory Technical Staff : 0 m²

% of Specialised Training : 0%
Average number days CE / Staff : 1,20

Name or ID Number	Sex	Birth Year	2016 Age	Employment Status	Type of Position	Level of Education	Field of Work in the Laboratory	Relevant Specialised Training/ Continuing Education	Number of days of CE last year
Rinzin Pem	F	1980	36	Government Employee	Head of Laboratory Unit	Postgraduate University	Administration/epidemiol	2	3
Karma Tsheten	M	1969	47	Government Employee	Laboratory Technical W	Technical Training	Serology/Virology	2	3
Sangay Tenzin	M	1970	46	Government Employee	Laboratory Technical W	Technical Training	Parasitology	7	0
Sonam Peldon	F	1982	34	Government Employee	Laboratory Technical W	Technical Training	Mixed Laboratory Activitie	6	0
Deki Chhoden	F	1981	35	Government Employee	Laboratory Technical W	Technical Training	Bacteriology	5	0

Age Distribution		
	Age	Number
Age min	34	0
	35	0
	36	0
	37	0
	38	0
	39	0
	40	0
	41	0
	42	1
	43	1
	44	0
	45	0
	46	0
Age max	47	0
	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
	13	0
	14	0
	15	0
	16	0
	17	0
	18	0
	19	0
	20	0
	21	0
	22	0
	23	0
	24	0

Status Distribution	Number	%
Government Employee	5	100,00%
Open-ended Contract	0	0,00%
Fixed-term Contract	0	0,00%
Temporary Position	0	0,00%
Total	5	
Position Distribution	**Number**	**%**
General Management	0	0,00%
Head of Laboratory Unit	1	20,00%
Laboratory Technical Work	4	80,00%
Secretary	0	0,00%
Sample Collection	0	0,00%
Total	5	
Education Distribution	**Number**	**%**
Primary/Secondary Educatio	0	0,00%
Technical Training	4	80,00%
Undergraduate University	0	0,00%
Postgraduate University	1	20,00%
Total	5	
Field Distribution	**Number**	**%**
Bacteriology	1	20,00%
Parasitology	1	20,00%
Serology/Immunology	0	0,00%
Virology Culture	0	0,00%
Molecular	0	0,00%
Clinical Pathology	0	0,00%
Anatomical Pathology	0	0,00%
Food Microbiology	0	0,00%
Toxicology	0	0,00%
Residues	0	0,00%
Feed Content	0	0,00%
Feed Safety	0	0,00%
Drug Quality	0	0,00%
Epidemiology	0	0,00%
Administration	0	0,00%
Research	0	0,00%
Mixed Laboratory Activities	1	20,00%
Other	0	0,00%
None	0	0,00%
Total	3	

3a. Equipment Inventory

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Only large laboratory equipment (with a value superior to 300€) should be included in the inventory. **Do not include kits, consummables, expendable equipment and glassware. Do not include vehicles.**

	Location	Name	Make	Model	Main Specifications	ID Number for Quality Management	Category of Equipment	Field of Use	Year Acquired	Acquisition Value	Present Day Cost (cost to replace)	Condition	Preventive Maintenance Conducted	Calibration or Metrological Verification Conducted	Comments
1	Haematology	Centrifuge	Eltek	TC-4815 D	3000 rpm, micr	RLDC/WD/CI	Centrifuge	Mixed Laboratory Activities		4 500		Functional			
2	Haematology	Centrifuge	Kay & company	KC-135 D	3000 rpm	RLDC/WD/CI	Centrifuge	Mixed Laboratory Activities		4 500		Functional			
3	Haematology	Centrifuge	Hawksley	MHC	3000 rpm	RLDC/WD/CI	Centrifuge	Mixed Laboratory Activities		4 500		Functional			
4	Haematology	Blender Machine	Philips	HL 1606/03	3 Jars 500w	RLDC/WD/MI	Grinder	Toxicology		3 000		Functional			
5	Haematology	Blender Machine	Philips		3 Jars 500w	RLDC/WD/MI	Grinder	Toxicology		3 000		Functional			
6	Haematology	Digital Ph Meter	Jaico			RLDC/WD/Ph	pH meter	Toxicology		1 000		Functional			
7	Haematology	Digital Weighing Balance	Wensar	PGB 1000	g-1000g, d-0.01g	RLDC/WD/WI	Balance	Mixed Laboratory Activities		1 000		Functional			
8	Haematology	Microscope	LABOMED		Binocular	RLDC/WD/MI	Others	Mixed Laboratory Activities		2 500		Functional			
9	Haematology	Microscope	OLYMPUS		Binocular	RLDC/WD/MI	Others	Mixed Laboratory Activities		2 500		Functional			
10	Dark Room	UV Lamp	JSGW	cat no. 1179	34nm-365nm, 220v	RLDC/WD/UI	Others	Toxicology		1 000		Functional			
11	Haematology	Refrigerator	LG		180 Litre	RLDC/WD/R-	Refrigerator	Mixed Laboratory Activities		2 000		Functional			
12	Bacteriology	Vertical Autoclave	EQUITRON	#7421STWL	12 x 20"	RLDC/WD/AC	Autoclave	Bacteriology		15 000		Functional			
13	Bacteriology	Biosafety cabinet	ESCO	AC2-4E1	AC,50HZ,1 Phase	RLDC/WD/LAF	Biosafety cabinet	Bacteriology		8 000		Functional			
14	Bacteriology	Incubator	Memmert	INB 300	2A,50/60Hz,500w	RLDC/WD/In-03	Incubator	Bacteriology		2 500		Functional			
15	Bacteriology	Incubator	Memmert	UNB 300	230v,5.3A,50/60H	RLDC/WD/In-02	Incubator	Bacteriology		2 500		Functional			
16	Bacteriology	Microscopy	LABOMED	CXR3	DVCA to240 VAC	RLDC/WD/MS-	Others	Bacteriology		1 000		Functional			
17	Bacteriology	Refrigerator	Whirlpool	FF2D 255 3s/2014	219ltrs	RLDC/WD/R-02	Refrigerator	Bacteriology		2 000		Functional			
18	Bacteriology	Balance	Citizen	CG-2202	11AC1.1A	RLDC/WD/WE	Balance	Bacteriology		1 000		Functional			
19	Bacteriology	Water Bath	JOUAN	J30 BAIN UNIVERSEL	240v,50/60Hz,100	RLDC/WD/WB	Water Bath	Bacteriology		1 000		Functional			
20	Bacteriology	Loop Auto Sterilizer	HIMEDIA	Nil	Nil	RLDC/WD/LS-	Loop Auto Sterilize	Bacteriology		1 000		Functional			
21	Bacteriology	Microscopy	WEIBER	ACM-22303-J	Nil	RLDC/WD/MS-	Others	Bacteriology		2 500		Functional			
22	General Lab	Drying Oven	Labman	FCD-3000	RT+5-250degree c	RLDC/WD/DO-	Oven	Mixed Laboratory Activities		1 800		Functional			
23	General Lab	Hot Air Oven	Nil	GP100CLA0250	240v,5.5AMPS	RLDC/WD/HAC	Others	Mixed Laboratory Activities		1 800		Functional			
24	General Lab	Distillation plant	Borosil	Nil	Nil	RLDC/WD/DL-0	Distillation plant	Mixed Laboratory Activities		2 500		Functional			
25	Serology	ELISA Reader	Heales	CE2205007	Full-Automatic Mic	RLDC/WD/ER-	ELISA Reader	Serology/Immunology		5 500		Functional			Supplied by NCAH
26	Serology	Deep Freezer	Sanyo	MDF-393(T)	309 Litres	RLDC/WD/DF-0	Deep Freezer	Serology/Immunology		2 500		Functional			Supplied by NCAH
27	Serology	Deep Freezer	Coldcel	CF-400	309 Litres	RLDC/WD/DF-0	Deep Freezer	Serology/Immunology		2 500		Functional			Supplied by NCAH
28	Serology	Refrigerator	Kelvinator	RK-31-DD-A2	315 Litres	RLDC/WD/R03	Refrigerator	Serology/Immunology		2 000		Functional			Supplied by NCAH
29	Serology	Refrigerator	Whirlpool	FF-2D-255 3S2014	2019 Litres	RLDC/WD/R04	Refrigerator	Serology/Immu	2014	2 000	28	Functional			
30	Serology	Microscope	Leica	G013050751	AC 100-240V	RLDC/WD/DI-M	Others	Serology/Immu	2014	2 500	35	Functional			
31	Serology	Weighing Balance	ACCULAB	CEVIC 3101	0-3100g	RLDC/WD/WE	Balance	Serology/Immunology		1 000	14	Functional			Supplied by NCAH
32	Serology	Mini Spin	Eppendorf	AG 22331	Speed X 1000	RLDC/WD/MS-	Others	Serology/Immunology		1 000	14	Functional			Supplied by NCAH
33	Parasitology	Microscope	Olympus	CH20i BIMF	10,20, 40, 160 X	RLDC/WD/MS-	Others	Parasitology	2008	2 500	35	Functional			
34	Parasitology	Magnetic Sterrier	Spinnot	2037	10-jam	RLDC/WD/MS-	Agitator	Parasitology	2008	250	4	Functional			
35	Parasitology	Centrifuge	Lakshmi	NOVA0988	1400 RPM	RLDC/WD/CF-	Centrifuge	Parasitology	2008	4 500	63	To Repair			
36	Parasitology	Sterizoom Microscope	Leica	Z30E	Streo zoom 2000	RLDC/WD/SL-M	Others	Parasitology	2008	3 500	49	Functional			
37	Parasitology	Centrifuge	Hettich	EBA120	6000U/Min	RLDC/WD/CF-	Centrifuge	Parasitology	2008	4 500	63	To Repair			
38	Parasitology	Incubator	Labotech	2014		RLDC/WD/IN 0	Incubator	Parasitology	2008	2 500	35	Functional			
39	Parasitology	Refrigerator	Videocon	VAE243/2012	214 Ltrs	RLDC/WD/R-0	Refrigerator	Parasitology	2008	2 000	28	Functional			
40	Parasitology	Waterbath	Labman	DFD 700	0 X 325X120MM	RLDC/WD/WB	Water Bath	Bacteriology	2008	1 000	14	Functional			
41															
42															

Analysis of Equipment Distribution

Equipment Value Distribution	Value	%
Total Value of Equipment	111 850	8%
Value of functional equipment	-	0,00%
Value of equipment to repair	9 000	8,05%
Value of equipment to renew	-	0,00%
Value of obsolete equipment	-	0,00%

Equipment Category	Value	Number	%
Agitator (Magnetic, Heater, Vortex…)	-	-	0,00%
Autoclave (all types)	-	-	0,00%
Balance	3 000	3	16,85%
Biosafety Cabinet and Chemical Hood	-	-	0,00%
Grinder	-	-	0,00%
Centrifuge (all types)	-	-	0,00%
Equipment for chemical analysis (GC, AAS, Spectrophotometry, Mass spec, HPLC)	-	-	0,00%
Equipment for Electrophoresis	-	-	0,00%
Equipement for ELISA or other immunoassay (Washer/Incubator/Reader)	-	-	0,00%
Equipment for Histology	-	-	0,00%
Equipment for HPLC with any detection system	-	-	0,00%
Equipment for PCR	-	-	0,00%
Equipment for Photometry / Spectrophotometry	-	-	0,00%
Equipment for Thin Layer Chromatography	-	-	0,00%
Freezer -20°C	-	-	0,00%
Freezer -80°C	-	-	0,00%
Incubator (normal, gas…)	-	-	0,00%
Liquid Nitrogen Container	-	-	0,00%
Lyophilizer	-	-	0,00%
Micropipette (mono, multi…)	-	-	0,00%
Microscopy (Dark Field, Fluorescent, Inverted	-	-	0,00%
Oven	1 800	1	10,11%
pH Meter	1 000	1	5,62%
Refrigerator	10 000	5	56,18%
Standard Measures (Mass, Temperature…)	-	-	0,00%
Vacuum Pump	-	-	0,00%
Washing Machine for Glassware	-	-	0,00%
Water Bath	2 000	2	11,24%
Water Purification	-	-	0,00%
Other	-	-	0,00%
Total	17 800	12	100,00%

Field of Use	Value		%
Bacteriology	37 500		44,51%
Parasitology	19 750		23,44%
Serology/Immunology	19 000		22,55%
Virology Culture	-		0,00%
Molecular	-		0,00%
Clinical Pathology	-		0,00%
Anatomical Pathology	-		0,00%
Food Microbiology	-		0,00%
Toxicology	8 000		9,50%
Residues	-		0,00%
Feed Content	-		0,00%
Feed Safety	-		0,00%
Drug Quality	-		0,00%
Epidemiology	-		0,00%
Administration	-		0,00%
Research	-		0,00%
Mixed Laboratory Activities	-		0,00%
Other	-		0,00%
Total	84 250		100,00%

3b. Equipment Management

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

		Comments
Are there follow-up files for each item of equipment (invoices, notices, maintenance, calibration, etc.)?	Yes	

Maintenance		Comments
Do you have preventive maintenance programmes?	No	
Do you have access to corrective maintenance service (repair) ?	Yes	Mostly with commercial firms
Do you have in-house competencies for equipment maintenance and minor repairs?	No	
Do you have maintenance service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	
						Mostly commercial firms. Depends on type of equipment.

Calibration / Metrology		Comments
Do you have calibration / metrology programmes ?	No	
Do you have reference materials for calibration / metrology ?	No	
Do you have an in-house department for verification / calibration?	No	
Do you have calibration service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Temperature Monitoring			Comments
Is there a centralised system for managing temperatures?			
	Incubators	No	
	Refrigerators	No	
	Freezers	No	
Is there a manual system for recording temperatures?			
	Incubators	Yes	
	Refrigerators	Yes	
	Freezers	Yes	

Procurement		Comments
How is procurement of **consummables** (e.g. reagents, sampling kits, glassware, etc.) handled?		
call for tender for each laboratory?	No	
call for tender for all laboratories at the national level?	Yes	
direct ordering from the laboratory to the supplier?	No	
How is procurement of **equipment** (with a value over 300€) handled?		
call for tender for each laboratory?	Yes	
call for tender for all laboratories at the national level?	No	
direct ordering from the laboratory to the supplier?	No	
Is procurement subject to approval?	Yes	
If yes, at which level does approval need to be obtained?		
manager or department head	Yes	
laboratory director	No	
provincial authority level	No	
district authority level	No	
national authority level	No	

3c. Transport

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Does the laboratory participate in routine sampling or annual surveys in the field?	Yes
Does the laboratory participate in outbreak or emergency investigation sampling in the field?	Yes

Type of Vehicle	Age	Odometer (kms)	Specific Equipment		
			Refrigeration [1]	Biosafety [2]	Laboratory [3]
Pool vehicles (2) for the all the units under the center.	8 years	above 1500000	No	No	No

3d. Premises

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Surface Area	Unit of Measure: m² or ft²	Total Surface Area	BSL1 Surface Area	BSL2 Surface Area	BSL3 Surface Area
Laboratory Departments					
Bacteriology		0			
Parasitology		0			
Serology/Immunology		0			
Virology Culture		0			
Molecular		0			
Clinical Pathology		0			
Anatomical Pathology		0			
Food Microbiology		0			
Toxicology		0			
Residues		0			
Feed Content		0			
Feed Safety		0			
Drug Quality		0			
Other		0			
Autopsy Room		0			
Animal Housing		0			
Storage other than cold chambers		0			
Cold Chambers		0			
Ancillary Areas (incinerator, garages, etc.)		0			
Administration offices and meeting rooms		0			
Circulation		0			
Other		0			
Total Surface Area		0	0	0	0
Value of Premises					
Unit cost of premises in €/m²					
Total Value		0	0	0	0

Water		
		Capacity in l³
Type of water supply	Main Supply	
Is there centralised water treatment?	No	
Distillation equipment	Yes	
Deionisation equipment	No	

Electricity			
Rate of supply or total duration of power cuts per week	2 hours		
Is there a back-up electricity generator?	Yes	Output:	5 KV
Comments			

Waste Management			
Means of disposing of wastewater	Drainage disposal		
Means of disposing of biological waste			
Incineration	No	Capacity in l³	
Means of disposing of chemical residues	Biological pit		
Comments			

Refrigeration Equipment		
Cold chambers	Number	Total volume (m³)
+ 4°C		
- 20°C		
Refrigerators	Number	Total volume (m³)
+ 4°C		
- 20°C		
- 45°C		
- 80°C		

Telecommunication Availability	
Number of telephone lines	1
Is there access to an international telephone line ?	No
Is there access to the internet ?	Yes
Is there an intranet system ?	Yes

Office Equipment			
Number of computers	4		
Number of printers	1		
Number of photocopiers	1		
Is there a data back-up system/ procedure ?	Yes		
Is there laboratory data management system ?	No	Which one ?	

4. Quality Assurance

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Is there staff dedicated to quality management?	No
Is there a quality assurance programme in place?	No
If so, what reference standard is applied?	
Are there staff trained in quality assurance?	No
Is there a quality manual?	No
Coverage of Accreditation (what diseases, fields, analyses or tests?)	None

List of Participation in Proficiency Testing Rounds

Nature of the Test	Organising Organisation	Cost / Year	Frequency	Results
None				

Below , indicate if formal documentation exists on the following topics and, if it does, give the reference

Topics	Yes / No	Document Reference	Comments
Document control			
Review of requests, tenders and contracts			
Subcontracting of tests and calibrations			
Purchasing services and supplies	Yes	I(09)RLDC/W	
Services to the client	Yes	I(01)RLDC/W	
Complaints (satisfaction assessment and internal audit)			
Test conformity and/or calibration			
Corrective action			
Preventive action			
Continual improvement			
Control of records			
Internal audits			
Management reviews			
Staff organisation and management			
Installation and environmental conditions			
Testing and calibration methods			
Method selection			
Method development			
Validation of methods			
Evaluating measurement uncertainty			
Control of computerised data			
Management of equipment	Yes	I(09)RLDC/W	
Measurement traceability			
Sampling	Yes	III(6-12)RLDC/W	
Handling samples and test items	Yes	III(5)RLDC/W	
Quality assurance of testing and calibration results			
Reporting results	Yes	III(6-12)RLDC/W	
Presentation of reports			
Interpretation and declaration of compliance			
Transmission of reports	Yes	III(6-12)RLDC/W	

5a. Activities - Demand

******** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ********

A Client is the person or institution that request laboratory analysis of a sample or samples. It may be the Veterinary Services for the purpose of official programmes, other public or private institutions, private veterinarians, farmers, donor projects, etc.
A Submission (or request or dossier) consists of one or more samples registered at the same time under the same dossier number
A Sample is any biological product, organ, dead animal or food product sent to the laboratory by a client, sothat one or more tests can be conducted
A Test is a laboratory technique or method which determines the value of a specific parameterof a sample

Reference Year: 2014-2015 over a period of one year

Clients / Sources of Demand		Import Control			Export Certification			AH or VPH Programmes			Request of Client			Undetermined Purpose +			Total		
Categories	Number of Clients	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests
Veterinary Services															5479	7653	**0**	**5479**	**7653**
Other Public Administrations																	**0**	**0**	**0**
Private Veterinarians																	**0**	**0**	**0**
Farmers Organisations																	**0**	**0**	**0**
Individual Farmers / Owners																	**0**	**0**	**0**
Food Industry																	**0**	**0**	**0**
Feed Industry																	**0**	**0**	**0**
Research																	**0**	**0**	**0**
Other (please specify)																	**0**	**0**	**0**
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5479**	**7653**	**0**	**5479**	**7653**

+ Use if you have only general or incomplete data

5b. Activities - Samples

Number of samples received, by type

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year 2014-2015

Samples from Animals	Cattle	Sheep	Goats	Pigs	Equidae	Camelidae	Carnivores	Wildlife	Birds	Humans	Undetermined	Total
Whole dead bodies												0
Organs or samples taken at autopsy	2		8						3			13
Aborted foetuses												0
Placenta and lochia												0
Milk	326											326
Blood or serum	441			7				362	2983			3793
Urine												0
Faeces	496		53		3				342			894
Sperm												0
Swab samples				1					3			4
Skin scrapings							1					1
Punctures, pus and exudates												0
Cerebrospinal fluid												0
Biopsies												0
Other											35	35
Total	**1265**	**0**	**61**	**8**	**3**	**0**	**1**	**362**	**3331**	**0**	**35**	**5066**

5d. Activities - Prospects

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Population

Administrative Area Served by Laboratory	Human Population	Cattle		Sheep/Goats		Pigs		Equidae/Camelidae		Carnivores.	Rural Poultry	Intensive Poultry		Beehives	Aquatic Animals	
		Farms	Animals	Farms	Animals	Farms	Sows	Farms	Animals	Animals		Farms	Animals		Farms	Tonnes
Dagana	22152		16723		6195		1775		283	4693	15224		4673			1,3
Gasa	3673		6592		2		0		1515	517	51		735			
Punakha	21097		11044		130		378		486	2188	2523		4187			
Tsirang	21779		11067		6000		970		108	3929	8981		80018			5,04
Wangdue	37462		28828		2227		1106		872	2673	4967		2544			0,27
Total	**106163**	**0**	**74254**	**0**	**14554**	**0**	**4229**	**0**	**3264**	**14000**	**31746**	**0**	**92157**	**0**	**0**	**6,61**

6. Budget Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Person in charge of the budget and authorisation of payments:

Actual Expenditures	Year n-3		Year n-2		Year n-1		Comments
	Internal Budget	External Funding	Internal Budget	External Funding	Internal Budget	External Funding	
Capital Investment							
Building of new premises							Internal funding refers to funding by Government of Bhutan.
Renewal of existing premises							
Purchase of new vehicles							
Purchase of new IT, telecommunication and other equipment	50 000						
Purchase of new laboratory equipment	100 000						
Specialised training (PhD, etc.)							
Salaries and Remuneration							
Salaries including fringe benefits							
Per diem and travel allowances	937 000		577 850		551 950		
Continuing education (short courses, etc.)							
Operating Costs							
Maintenance of buildings							
Power, water and utilities	43 000		90 000		94 000		Includes operating cost
Maintenance of vehicles	644 000		542 000		492 000		
Operating costs of vehicles							
Other transportation (flights, etc.)							
Biological sample transport (freight, mail, bus, etc.)							
Maintenance of IT, telecommunication and other equipment	78 000		85 000		50 000		
IT and office supplies							
Telecommunications fees	124 000		155 000		154 000		
Personnel and safety equipment							
Maintenance of laboratory equipment							
Reagents and consumables	210 000		270 000		578 000		
Calibration							
Proficiency Testing							
Documentation							
Other							
Total	2 186 000	0	1 719 850	0	1 919 950	0	
Grand Total	**2 186 000**		**1 719 850**		**1 919 950**		

1. General Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

1. Background Details

Laboratory Name:	Regional Livestock Development Center		
Address:	Khangma, Tashigang		
Manager's Name:	Dr. Tshering Dorjee		
Telephone:	-535231	Fax:	535203
E-mail:	tsheringdoejee2002@yahoo.com		
Website:			
Opening Hours:	9 am- 5 pm		
Contact in Case of Emergency:	17172662	Emergency Phone Number:	

2. Contact Person for the PVS Pathway Laboratory Mission

Surname and First Name:	Letho Sangay		
Position:	Veterinary Officer		
Telephone:	535225	Fax:	535203
E-mail:	drsangayletho0101@gmail.com		

3. Status

Laboratory Status:	
Supervisory Authority:	

4. Documents to be prepared and supplied to the OIE PVS Expert Team		Document Availability
Laboratory Statutes:	Documents establishing the laboratory and stating its mode of governance and funding	
Location Map:	Map/Plan with a scale of ~1/25000 indicating access roads, waterways and urbanised areas	
Site Plan:	Plan with a scale of ~1/5000 indicating laboratory buildings, access roads and fencing	
Detailed Plan:	Plan with a scale of ~1/100 mentioning for each building the various premises, dimensions and biosecurity levels	
Structural Organisation Chart:	Showing current organisational structure of the laboratory	
Functional Organisation Chart:	Showing current functional organisation of the laboratory	
Job Descriptions:	For all relevant staff	
Quality Manuals:	If quality assurance or quality management system is in place, the laboratory should be able to provide such documents	
Annual Report:	For the past three years, if possible	
Budget:	Budgets including revenues and expenditures for the past three years if possible	
List of Analyses and Prices:	Including calculation method if existent	
Invoices:	Samples of invoices for locally supplied and imported large equipment and consumables from habitual	

2. Human Resources

***** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE *****

Number of Veterinarians : 2
Number of Staff : 7
% of Women : 43%

Total Area / Staff : 0,00 m²
Laboratory Area / Laboratory Technical Staff : #DIV/0! m²

% of Specialised Training : 0%
Average number days CE / Staff : 0,00

Name or ID Number	Sex	Birth Year	2016 Age	Employment Status	Type of Position	Level of Education	Field of Work in the Laboratory	Relevant Specialised Training/ Continuing Education	Number of days of CE last year
10901000155	F	1982	34	Government Employee	Laboratory Technical W	Technical Training	Bacteriology section		
11107002001	F	1976	40	Government Employee	Laboratory Technical W	Technical Training	Hematology section		
11514000649	M	1969	47	Government Employee	Laboratory Technical W	Primary/Secondary Education	Serology section		
Namgay	M	1973	43	Government Employee	Laboratory Technical W	Technical Training	Parasitology section		
	M	1985	31	Government Employee	Head of Laboratory Unit	Undergraduate University	Veterinary officer		
Pema yuden	F	1987	29	Government Employee	Other Support Staff	Primary/Secondary Education	lab attendent		
Sonam Tenzin	M	1980	36	Government Employee	Other Support Staff	Primary/Secondary Education	lab attendent		

Age Distribution		
	Age	Number
Age min	29	0
	30	1
	31	0
	32	1
	33	0
	34	0
	35	0
	36	1
	37	0
	38	0
	39	1
	40	0
	41	0
	42	0
	43	1
	44	0
	45	0
	46	0
Age max	47	0

Status Distribution	Number	%
Government Employee	7	100,00%
Open-ended Contract	0	0,00%
Fixed-term Contract	0	0,00%
Temporary Position	0	0,00%
Total	7	

Position Distribution	Number	%
General Management	0	0,00%
Head of Laboratory Unit	1	14,29%
Laboratory Technical Work	4	57,14%
Secretary	0	0,00%
Sample Collection	0	0,00%
Total	5	

Education Distribution	Number	%
Primary/Secondary Educatio	3	42,86%
Technical Training	3	42,86%
Undergraduate University	1	14,29%
Postgraduate University	0	0,00%
Total	7	

Field Distribution	Number	%
Bacteriology	0	0,00%
Parasitology	0	0,00%
Serology/Immunology	0	0,00%
Virology Culture	0	0,00%
Molecular	0	0,00%
Clinical Pathology	0	0,00%
Anatomical Pathology	0	0,00%
Food Microbiology	0	0,00%
Toxicology	0	0,00%
Residues	0	0,00%
Feed Content	0	0,00%
Feed Safety	0	0,00%
Drug Quality	0	0,00%
Epidemiology	0	0,00%
Administration	0	0,00%
Research	0	0,00%
Mixed Laboratory Activities	0	0,00%
Other	0	0,00%
None	0	0,00%
Total	0	

3a. Equipment Inventory

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Only large laboratory equipment (with a value superior to 300€) should be included in the inventory. **Do not include kits, consummables, expendable equipment and glassware. Do not include vehicles.**

	Location	Name	Make	Model	Main Specifications	ID Number for Quality Management	Category of Equipment	Field of Use	Year Acquired	Acquisition Value	Present Day Cost (cost to replace)	Condition	Preventive Maintenance Conducted	Calibration or Metrological Verification Conducted	Comments
1	Bacteriology	Microscope	Labomed	2000	Binocular	RLDC/KHMS-02	Other	Bacteriology		2 500		Functional			
2	Bacteriology	Microscope	Labomed	Labomed CXRII	Binocular	RLDC/KHMS-01	Other	Bacteriology		2 500		Functional			
3	Bacteriology	Incubator	YOMA	YOMA		RLDC/KHIN-06	Incubator (normal,	Bacteriology		2 500		Functional			
4	Bacteriology	Hot air oven	Memmer	Memmer		RLDC/KHIN-07	Oven	Bacteriology		1 800		To Repair			
5	Bacteriology	Serological water bath	Weiber	Weiber		RLDC/KHWB-0	Water Bath	Bacteriology		1 000		Functional			
6	Bacteriology	colony counter degital	Hi-media	Himedia-LA660/326/0923		RLDC/KHCC-10	Other	Bacteriology		1 800		Functional			
7	Bacteriology	Laminar flow		Micro-filt		RLDC/KHLAE-(	Biosafety Cabinet (	Bacteriology		8 000		Functional			
8	Bacteriology	Refrigerator	Godrej	ULTRA gorej	2-8C	RLDC/KHR-05	Refrigerator	Bacteriology		2 000		Functional			
9	Bacteriology	Hot air sterilizer	Key and company	Key and company		RLDC/KHHAS-(	Autoclave (all types	Bacteriology		1 500		Functional			
10	Bacteriology	Autoclave	JOMY	JOMY Es-215		RLDC/KHHAV-(	Autoclave (all types	Bacteriology		15 000		Functional			
11	Bacteriology	Distillation Plant	2012			RLDC/KHDP-15	Water Purification	Bacteriology		2 500		Functional			
12	Bacteriology	Mono Duartz Distillation unit	Borosil	borosil		RLDC/KHDP-12	Water Purification	Bacteriology		2 500		Functional			
13	Hematology	Microscope	Leitz biomed	Lietz biomed	Binocular	RLDC/KHMS-0	Other	Parasitology		2 500		Functional			
14	Hematology	Differential bllod cell counter	Equitron	Equitron		RLDC/KHCT-04	Other	Mixed Laboratory Activities				Functional			
15	Hematology	Microhematocrit centrifuge	Hawlostay	Hawlostay		RDL/C/KHCT-05	Centrifuge (all type	Mixed Laboratory Activities		2 000		Functional			
16	Hematology	Microcentrifuge	Remi	Remi		RLDC/KHTTR-0	Centrifuge (all type	Parasitology		1 000		Functional			
17	Hematology	Refractometer		2771-E02			Other	Mixed Laboratory Activities				Functional			
18	Hematology	Refrigerator	GR-181RRPSX		2-8C	RLDC/KHR-03	Refrigerator	Mixed Laboratory Activities		2 000		Functional			
19	Serology	Bio-Safety cabinet		Class II	Class II	RLDC/KHBSC-(	Biosafety Cabinet (	Serology/Immundogy		8 000		To Repair			
20	Serology	PCR Machine	BIO-RAD	BIO-RAD	conventional	RLDC/KHRT-PC	Equipment for PCR	Serology/Immundogy		7 500		Functional			
21	Serology	Refrigerator	Godrej	Godrej x 4 (2013), Kelvinator x 2 (Old)	2-8C	RLDC/KH R-11	Refrigerator	Serology/Immundogy		2 000		Functional			
22	Serology	Deep freezor	SANYO	SANYO, Imported, supplied by GOI fund	"-20C	RLDC/KHDEF-(	Freezer -20°C & -4	Serology/Immundogy		2 500		Functional			
23	Serology	Deep freezor	GRAM	GRAM (Old)	"-20C	RLDC/KHDEF-(	Freezer -20°C & -4	Serology/Immundogy		2 500		Functional			
24	Serology	Digital weighing balance				RLDC/KHWEB	Balance	Serology/Immundogy		2 000		Functional			
25	Serology	ELISA Reader	BIO-RAD	BIO-RAD	96 wells	RLDC/KHEPQ-	Equipment for imm	Serology/Immundogy		5 500		Functional			
26	Serology	Magnetic stirrer					Agitator (magnetic,	Serology/Immundogy		250		Functional			
27	Serology	Centrifuge machine		ALC-4222, Imported		RLDC/KHCT-04	Centrifuge (all type	Serology/Immundogy		4 500		Functional			
28	Serology	Mini-spin		Eppendorf (1)– Supplied by GOI fund (1)– RLDC fund (2014), Germany made		RLDC/KHSPIN-	Centrifuge (all type	Serology/Immundogy		1 000	1	Functional			
29	Serology	Microscope	Labomed		FAT	RLDC/KHFATM	Microscopy (Dark I	Serology/Immundogy		2 500		Functional			
30	Serology	Power backup		APC, 2200		RLDCPBK-12	Other	Serology/Immundogy		20 000		Functional			
31	Parasitology	Microscope	Leitz biomed	Lietz Biomed	Binocular	RLDC/KHMS-0	Other	Parasitology		2 500		Functional			
32	Parasitology	Microscope	Labomed	Labomed	Binocular	RLDC/KHMS-0	Other	Parasitology		2 500		Functional			
33	Parasitology	Microscope	Labomed	Labomed	Binocular	RLDC/KHMS-0	Other	Parasitology		2 500		Functional			
34	Parasitology	Centrifuge machine				RLDC/KHCT-05	Centrifuge (all type	Other		4 500					

Analysis of Equipment Distribution

Equipment Value Distribution	Value	%
Total Value of Equipment	121 350	8%
Value of functional equipment	-	0,00%
Value of equipment to repair	9 800	8,08%
Value of equipment to renew	-	0,00%
Value of obsolete equipment	-	0,00%

Equipment Category	Value	Number	%
Agitator (Magnetic, Heater, Vortex…)	250	1	0,41%
Autoclave (all types)	16 500	2	26,81%
Balance	2 000	1	3,25%
Biosafety Cabinet and Chemical Hood	16 000	2	26,00%
Grinder	-	-	0,00%
Centrifuge (all types)	13 000	5	21,12%
Equipment for chemical analysis (GC, AAS, Spectrophotometry, Mass spec, HPLC)	-	-	0,00%
Equipment for Electrophoresis	-	-	0,00%
Equipement for ELISA or other immunoassay (Washer/Incubator/Reader)	-	-	0,00%
Equipment for Histology	-	-	0,00%
Equipment for HPLC with any detection system	-	-	0,00%
Equipment for PCR	-	-	0,00%
Equipment for Photometry / Spectrophotometry	-	-	0,00%
Equipment for Thin Layer Chromatography	-	-	0,00%
Freezer -20°C	-	-	0,00%
Freezer -80°C	-	-	0,00%
Incubator (normal, gas…)	-	-	0,00%
Liquid Nitrogen Container	-	-	0,00%
Lyophilizer	-	-	0,00%
Micropipette (mono, multi…)	-	-	0,00%
Microscopy (Dark Field, Fluorescent, Inverted	-	-	0,00%
Oven	1 800	1	2,92%
pH Meter	-	-	0,00%
Refrigerator	6 000	3	9,75%
Standard Measures (Mass, Temperature…)	-	-	0,00%
Vacuum Pump	-	-	0,00%
Washing Machine for Glassware	-	-	0,00%
Water Bath	1 000	1	1,62%
Water Purification	5 000	2	8,12%
Other	-	-	0,00%
Total	61 550	18	100,00%

Field of Use	Value		%
Bacteriology	43 600		37,15%
Parasitology	11 000		9,37%
Serology/Immunology	58 250		49,64%
Virology Culture	-		0,00%
Molecular	-		0,00%
Clinical Pathology	-		0,00%
Anatomical Pathology	-		0,00%
Food Microbiology	-		0,00%
Toxicology	-		0,00%
Residues	-		0,00%
Feed Content	-		0,00%
Feed Safety	-		0,00%
Drug Quality	-		0,00%
Epidemiology	-		0,00%
Administration	-		0,00%
Research	-		0,00%
Mixed Laboratory Activities	-		0,00%
Other	4 500		3,83%
Total	117 350		100,00%

3b. Equipment Management

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

		Comments
Are there follow-up files for each item of equipment (invoices, notices, maintenance, calibration, etc.)?	Yes	

Maintenance

		Comments
Do you have preventive maintenance programmes?	Yes	
Do you have access to corrective maintenance service (repair) ?	No	
Do you have in-house competencies for equipment maintenance and minor repairs?	No	
Do you have maintenance service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Calibration / Metrology

		Comments
Do you have calibration / metrology programmes ?	No	
Do you have reference materials for calibration / metrology ?	No	
Do you have an in-house department for verification / calibration?	No	
Do you have calibration service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Temperature Monitoring

			Comments
Is there a centralised system for managing temperatures?			
	Incubators	Yes	
	Refrigerators	Yes	
	Freezers	Yes	
Is there a manual system for recording temperatures?			
	Incubators	No	
	Refrigerators	No	
	Freezers	No	

Procurement

			Comments
How is procurement of **consummables** (e.g. reagents, sampling kits, glassware, etc.) handled?			
	call for tender for each laboratory?		
	call for tender for all laboratories at the national level?	Yes	sometimes the consumables are supplied by Nactional Center Animal Hospital
	direct ordering from the laboratory to the supplier?		
How is procurement of **equipment** (with a value over 300€) handled?			
	call for tender for each laboratory?		
	call for tender for all laboratories at the national level?	Yes	
	direct ordering from the laboratory to the supplier?		
Is procurement subject to approval?		Yes	
If yes, at which level does approval need to be obtained?			
	manager or department head	Yes	
	laboratory director	Yes	
	provincial authority level		
	district authority level		
	national authority level		

3c. Transport

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Does the laboratory participate in routine sampling or annual surveys in the field?	Yes
Does the laboratory participate in outbreak or emergency investigation sampling in the field?	Yes

Type of Vehicle	Age	Odometer (kms)	Specific Equipment		
			Refrigeration [1]	Biosafety [2]	Laboratory [3]
Government pool vehicle			No	No	No

3d. Premises

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Surface Area	Unit of Measure: m^2 or ft^2	Total Surface Area	BSL1 Surface Area	BSL2 Surface Area	BSL3 Surface Area
Laboratory Departments					
Bacteriology		0			
Parasitology		0			
Serology/Immunology		0			
Virology Culture		0			
Molecular		0			
Clinical Pathology		0			
Anatomical Pathology		0			
Food Microbiology		0			
Toxicology		0			
Residues		0			
Feed Content		0			
Feed Safety		0			
Drug Quality		0			
Other		0			
Autopsy Room		0			
Animal Housing		0			
Storage other than cold chambers		0			
Cold Chambers		0			
Ancillary Areas (incinerator, garages, etc.)		0			
Administration offices and meeting rooms		0			
Circulation		0			
Other		0			
Total Surface Area		**0**	**0**	**0**	**0**
Value of Premises					
Unit cost of premises in €/m^2					
Total Value		**0**	**0**	**0**	**0**

Water		
		Capacity in l^3
Type of water supply	Surface	
Is there centralised water treatment?	No	
Distillation equipment	Yes	
Deionisation equipment	No	

Electricity		
Rate of supply or total duration of power cuts per week		
Is there a back-up electricity generator?	Yes	Output:
Comments	This labouratory has access to 24 hours of power supply but in case of emerge	

Waste Management		
Means of disposing of wastewater	we have proper drainage system	
Means of disposing of biological waste		
Incineration	Yes	Capacity in l^3
Means of disposing of chemical residues	we have biological pit	
Comments		

Refrigeration Equipment		
Cold chambers	**Number**	**Total volume (m^3)**
+ 4°C		
- 20°C		
Refrigerators	**Number**	**Total volume (m^3)**
+ 4°C	5	
- 20°C	1	
- 45°C		
- 80°C	1	

Telecommunication Availability	
Number of telephone lines	2
Is there access to an international telephone line ?	No
Is there access to the internet ?	yes
Is there an intranet system ?	yes

Office Equipment			
Number of computers	12		
Number of printers	8		
Number of photocopiers	1		
Is there a data back-up system/ procedure ?	No		
Is there laboratory data management system ?	yes	Which one ?	

4. Quality Assurance

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Is there staff dedicated to quality management?	Yes
Is there a quality assurance programme in place?	Yes
If so, what reference standard is applied?	SOP
Are there staff trained in quality assurance?	No
Is there a quality manual?	Yes
Coverage of Accreditation (what diseases, fields, analyses or tests?)	Avian Influenza,NCD by RT-PCR, Rabies by FAT, Brucellosis by RBT

List of Participation in Proficiency Testing Rounds

Nature of the Test	Organising Organisation	Cost / Year	Frequency	Results

Below , indicate if formal documentation exists on the following topics and, if it does, give the reference

Topics	Yes / No	Document Reference	Comments
Document control	Yes		
Review of requests, tenders and contracts	Yes		
Subcontracting of tests and calibrations	Yes		
Purchasing services and supplies	Yes		
Services to the client	Yes		
Complaints (satisfaction assessment and internal audit)	Yes		
Test conformity and/or calibration	Yes		
Corrective action	Yes		
Preventive action	Yes		
Continual improvement	Yes		
Control of records	Yes		
Internal audits	Yes		
Management reviews	Yes		
Staff organisation and management	Yes		
Installation and environmental conditions	Yes		
Testing and calibration methods			
Method selection	Yes		
Method development			
Validation of methods	No		
Evaluating measurement uncertainty	No		
Control of computerised data	Yes		
Management of equipment	Yes		
Measurement traceability	No		
Sampling	Yes		
Handling samples and test items	Yes		
Quality assurance of testing and calibration results	Yes		
Reporting results	Yes		
Presentation of reports	Yes		
Interpretation and declaration of compliance			
Transmission of reports	Yes		

5a. Activities - Demand

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

A Client is the person or institution that request laboratory analysis of a sample or samples. It may be the Veterinary Services for the purpose of official programmes, other public or private institutions, private veterinarians, farmers, donor projects, etc.
A Submission (or request or dossier) consists of one or more samples registered at the same time under the same dossier number
A Sample is any biological product, organ, dead animal or food product sent to the laboratory by a client, sothat one or more tests can be conducted
A Test is a laboratory technique or method which determines the value of a specific parameterof a sample

Reference Year: 2013-2014 over a period of one year

Clients/ Sources of Demand		Import Control			Export Certification			AH or VPH Programmes			Request of Client			Undetermined Purpose +			Total		
Categories	Number of Clients	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submission s	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Numbe r of Tests	Number of Submissions	Number of Samples	Number of Tests
Veterinary Services								9055	9541	10735							9055	9541	10735
Other Public Administrations																	0	0	0
Private Veterinarians																	0	0	0
Farmers Organisations																	0	0	0
Individual Farmers / Owners																	0	0	0
Food Industry																	0	0	0
Feed Industry																	0	0	0
Research																	0	0	0
Other (please specify)																	0	0	0
Total	0	0	0	0	0	0	0	9055	9541	10735	0	0	0	0	0	0	9055	9541	10735

5b. Activities - Samples

Number of samples received, by type

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year: 2013-2014

Samples from Animals	Cattle	Sheep	Goats	Pigs	Equidae	Camelidae	Carnivores	Wildlife	Birds	Humans	Undetermined	Total
Whole dead bodies												0
Organs or samples taken at autopsy	2											2
Aborted foetuses												0
Placenta and lochia												0
Milk	902											902
Blood or serum	604								99			703
Urine	149											149
Faeces	716				8		80		323			1127
Sperm												0
Swab samples	201								554			755
Skin scrapings	13											13
Punctures, pus and exudates												0
Cerebrospinal fluid												0
Biopsies												0
Other												0
Total	2587	0	0	0	8	0	80	0	976	0	0	3651

5c. Activities - Tests

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year: 2013-2014 Currency:

Agent / Disease	Test / Method	Number Tests / Year	Official Unit Price	Cost of Test	Theoretical Total Revenue	Minimum Budget Needed	Theoretical Net Gain
Gastro-intestinal Parasites	Flotation/Sedimentaion/stoll dilution	4255			0	0	0
Blood parasites	Giemsa staining	580			0	0	0
Black Quarter	Gram staining	36			0	0	0
HPAI	Rapid HVI Ag and HVI H5	540			0	0	0
Mastitis	CMT	1399			0	0	0
Rabies	Rapid immunodiagnostic test kit for rabies virus	27			0	0	0
FMD	Sample collections	5			0	0	0
New castle diseases	Rapid test				0	0	0
BEH	urine analysis	214			0	0	0
Salmonellosis	Salmonella plate count	7			0	0	0
Brucellosis	RBT	490			0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
TOTAL		7553			0	0	0

5d. Activities - Prospects

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Population

Administrative Area Served by Laboratory	Human Population	Cattle		Sheep/Goats		Pigs		Equidae/Camelidae		Carnivores	Rural Poultry	Intensive Poultry		Beehives	Aquatic Animals	
		Farms	Animals	Farms	Animals	Farms	Sows	Farms	Animals	Animals		Farms	Animals		Farms	Tonnes
Samdrupjongkha	48198		18332		1602		255		1307	3900	8244		7401			32,88
Pemagatshel	15709		7829		22		369		1048	1771	4957		7492			0,21
Trashigang	58545		34153		2267		294		3687	5024	9779		14432			
Trashiyangtse	20956		11020		125		225		1300	2074	1014		7638			
Lhuntshe	17627		14380		177		119		1725	2331	6808		6858			
Mongar	44247		25341		111		595		1706	3837	12819		15429			0,047
Total	205282	0	111055	0	4304	0	1857	0	10773	18937	43621	0	59250	0	0	33,137

1. General Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

1. Background Details

Laboratory Name:	Regional Livestock Development Centre		
Address:	Tsimasham, Chukha		
Manager's Name:	Dr. Basant Sharma		
Telephone:	00975-8-478779	Fax:	00975-8-478773
E-mail:	bsharma@moaf.gov.bt		
Website:			
Opening Hours:	9:00 AM		
Contact in Case of Emergency:	00975-8-478779	Emergency Phone Number:	00975-8-478779

2. Contact Person for the PVS Pathway Laboratory Mission

Surname and First Name:			
Position:			
Telephone:		Fax:	
E-mail:			

3. Status

Laboratory Status:	Regional Laboratory
Supervisory Authority:	Program Director

4. Documents to be prepared and supplied to the OIE PVS Expert Team		Document Availability
Laboratory Statutes:	Documents establishing the laboratory and stating its mode of governance and funding	th FYP docume
Location Map:	Map/Plan with a scale of ~1/25000 indicating access roads, waterways and urbanised areas	
Site Plan:	Plan with a scale of ~1/5000 indicating laboratory buildings, access roads and fencing	
Detailed Plan:	Plan with a scale of ~1/100 mentioning for each building the various premises, dimensions and biosecurity levels	
Structural Organisation Chart:	Showing current organisational structure of the laboratory	
Functional Organisation Chart:	Showing current functional organisation of the laboratory	
Job Descriptions:	For all relevant staff	
Quality Manuals:	If quality assurance or quality management system is in place, the laboratory should be able to provide such documents	
Annual Report:	For the past three years, if possible	
Budget:	Budgets including revenues and expenditures for the past three years if possible	
List of Analyses and Prices:	Including calculation method if existent	
Invoices:	Samples of invoices for locally supplied and imported large equipment and consumables from	

2. Human Resources

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Number of Veterinarians : 2
Number of Staff : 2
% of Women : 50%

Total Area / Staff : 0,00 m²
Laboratory Area / Laboratory Technical Staff : #DIV/0! m²

% of Specialised Training : 0%
Average number days CE / Staff : 1,50

Name or ID Number	Sex	Birth Year	2016 Age	Employment Status	Type of Position	Level of Education	Field of Work in the Laboratory	Relevant Specialised Training/ Continuing Education	Number of days of CE last year
Mr. Karma Tshering	M			Government Employee	Head of Laboratory Unit	Technical Training	Bacteriology, serology and virology		0
Mrs. Yangchen Dema	F			Government Employee	Laboratory Technical W	Technical Training	Parasitology, haematology, toxicology		3

Age Distribution		
	Age	Number
Age min	2016	0
	0	0
	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
	13	0
	14	0
	15	0

Status Distribution	Number	%
Government Employee	2	100,00%
Open-ended Contract	0	0,00%
Fixed-term Contract	0	0,00%
Temporary Position	0	0,00%
Total	2	

Position Distribution	Number	%
General Management	0	0,00%
Head of Laboratory Unit	1	50,00%
Laboratory Technical Work	1	50,00%
Secretary	0	0,00%
Sample Collection	0	0,00%
Total	2	

Education Distribution	Number	%
Primary/Secondary Educatio	0	0,00%
Technical Training	2	100,00%
Undergraduate University	0	0,00%
Postgraduate University	0	0,00%
Total	2	

3a. Equipment Inventory

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Only large laboratory equipment (with a value superior to 300€) should be included in the inventory. **Do not include kits, consummables, expendable equipment and glassware. Do not include vehicles.**

	Location	Name	Make	Model	Main Specifications	ID Number for Quality Management	Category of Equipment	Field of Use	Year Acquired	Acquisition Value	Present Day Cost (cost to replace)	Condition	Preventive Maintenance Conducted	Calibration or Metrological Verification Conducted	Comments
1	Parasitology	Microscope			Stereo Zoom	rldc/ts/sm/01	Others	Parasitology	2014	2 500	72 000	Functional			
2	Bacteriology	Refrigerator	Sharp		2-8C	rldc/ts/r/01	Refrigerator	Bacteriology	2014	2 000	27 000	Functional			
3	Bacteriology	Refrigerator	Sharp		2-8C	rldc/ts/r/02	Refrigerator	Bacteriology	2014	2 000	27 000	Functional			
4	Bacteriology	Liminarflow table				le/rldc/2005-200	Biosafety cabinet	Bacteriology	2006	8 000	101 400	Functional			
5	Bacteriology	Air stream Liminarflow	ESCO			rldc/ts/bsc-01	Biosafety cabinet	Bacteriology		8 000		Functional			received from ncah
6	Parasitology	Microscope			compound	rldc/ts/ms/01	Others	Parasitology		2 500	49 000	Functional			
7	Laboratory	Microscope			compound	rldc/ts/ms/02	Others	Other		2 500	49 000	Functional			
8	Bacteriology	Microscope			compound	rldc/ts/ms/03	Others	Bacteriology		2 500	49 000	Functional			
9	Bacteriology	Microscope			compound	rldc/ts/ms/04	Others	Bacteriology		2 500	49 001	Functional			
10	Laboratory	Refrigerator		LG	2-8C		Refrigerator	Other		1 000	29 000	Functional			
11	Serology	Deep Freezer				le/rldc/t/2008-09	Freezer -20C	Serology/Immunology		2 500	30 000	Functional			
12	Serology	Refrigerator			2-8C	le/rldc/t/2002-03	Refrigerator	Serology/Immunology		2 000	20 000	Functional			
13	Laboratory	Incubator				le/rldc/t/2003-04	Incubator	Other		1 800					received from NCAH
14															
15															
16															

Analysis of Equipment Distribution

Equipment Value Distribution	Value	%
Total Value of Equipment	39 800	0%
Value of functional equipment	-	0,00%
Value of equipment to repair	-	0,00%
Value of equipment to renew	-	0,00%
Value of obsolete equipment	-	0,00%

Equipment Category	Value	Number	%
Agitator (Magnetic, Heater, Vortex…)	-	-	0,00%
Autoclave (all types)	-	-	0,00%
Balance	-	-	0,00%
Biosafety Cabinet and Chemical Hood	-	-	0,00%
Grinder	-	-	0,00%
Centrifuge (all types)	-	-	0,00%
Equipment for chemical analysis (GC, AAS, Spectrophotometry, Mass spec, HPLC)	-	-	0,00%
Equipment for Electrophoresis	-	-	0,00%
Equipement for ELISA or other immunoassay (Washer/Incubator/Reader)	-	-	0,00%
Equipment for Histology	-	-	0,00%
Equipment for HPLC with any detection system	-	-	0,00%
Equipment for PCR	-	-	0,00%
Equipment for Photometry / Spectrophotometry	-	-	0,00%
Equipment for Thin Layer Chromatography	-	-	0,00%
Freezer -20°C	-	-	0,00%
Freezer -80°C	-	-	0,00%
Incubator (normal, gas…)	-	-	0,00%
Liquid Nitrogen Container	-	-	0,00%
Lyophilizer	-	-	0,00%
Micropipette (mono, multi…)	-	-	0,00%
Microscopy (Dark Field, Fluorescent, Inverted	-	-	0,00%
Oven	-	-	0,00%
pH Meter	-	-	0,00%
Refrigerator	7 000	4	100,00%
Standard Measures (Mass, Temperature…)	-	-	0,00%
Vacuum Pump	-	-	0,00%
Washing Machine for Glassware	-	-	0,00%
Water Bath	-	-	0,00%
Water Purification	-	-	0,00%
Other	-	-	0,00%
Total	7 000	4	100,00%

Field of Use	Value		%
Bacteriology	25 000		62,81%
Parasitology	5 000		12,56%
Serology/Immunology	4 500		11,31%
Virology Culture	-		0,00%
Molecular	-		0,00%
Clinical Pathology	-		0,00%
Anatomical Pathology	-		0,00%
Food Microbiology	-		0,00%
Toxicology	-		0,00%
Residues	-		0,00%
Feed Content	-		0,00%
Feed Safety	-		0,00%
Drug Quality	-		0,00%
Epidemiology	-		0,00%
Administration	-		0,00%
Research	-		0,00%
Mixed Laboratory Activities	-		0,00%
Other	5 300		13,32%
Total	39 800		100,00%

3b. Equipment Management

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

		Comments
Are there follow-up files for each item of equipment (invoices, notices, maintenance, calibration, etc.)?	No	

Maintenance

		Comments
Do you have preventive maintenance programmes?	No	
Do you have access to corrective maintenance service (repair) ?	No	
Do you have in-house competencies for equipment maintenance and minor repairs?	No	
Do you have maintenance service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Calibration / Metrology

		Comments
Do you have calibration / metrology programmes ?	No	
Do you have reference materials for calibration / metrology ?	No	
Do you have an in-house department for verification / calibration?	No	
Do you have calibration service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Temperature Monitoring

			Comments
Is there a centralised system for managing temperatures?			
	Incubators	No	
	Refrigerators	No	
	Freezers	No	
Is there a manual system for recording temperatures?			
	Incubators	No	
	Refrigerators	Yes	
	Freezers	No	

Procurement

			Comments
How is procurement of **consummables** (e.g. reagents, sampling kits, glassware, etc.) handled?			
	call for tender for each laboratory?	Yes	
	call for tender for all laboratories at the national level?		
	direct ordering from the laboratory to the supplier?		
How is procurement of **equipment** (with a value over 300€) handled?			
	call for tender for each laboratory?	Yes	
	call for tender for all laboratories at the national level?		
	direct ordering from the laboratory to the supplier?		
Is procurement subject to approval?		Yes	
If yes, at which level does approval need to be obtained?			
	manager or department head	Yes	
	laboratory director		
	provincial authority level		
	district authority level		
	national authority level		

3c. Transport

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Does the laboratory participate in routine sampling or annual surveys in the field?	Yes
Does the laboratory participate in outbreak or emergency investigation sampling in the field?	Yes

Type of Vehicle	Age	Odometer (kms)	Specific Equipment		
			Refrigeration [1]	Biosafety [2]	Laboratory [3]
Scorpio	8 years	300000 plus	No	No	No

3d. Premises

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Surface Area	Unit of Measure: m^2 or ft^2	Total Surface Area	BSL1 Surface Area	BSL2 Surface Area	BSL3 Surface Area
Laboratory Departments					
Bacteriology		0			
Parasitology		0			
Serology/Immunology		0			
Virology Culture		0			
Molecular		0			
Clinical Pathology		0			
Anatomical Pathology		0			
Food Microbiology		0			
Toxicology		0			
Residues		0			
Feed Content		0			
Feed Safety		0			
Drug Quality		0			
Other		0			
Autopsy Room		0			
Animal Housing		0			
Storage other than cold chambers		0			
Cold Chambers		0			
Ancillary Areas (incinerator, garages, etc.)		0			
Administration offices and meeting rooms		0			
Circulation		0			
Other		0			
Total Surface Area		**0**	**0**	**0**	**0**
Value of Premises					
Unit cost of premises in €/m^2					
Total Value		**0**	**0**	**0**	**0**

Water		
	Capacity in l^3	
Type of water supply	Surface	
Is there centralised water treatme	No	
Distillation equipment	Yes	
Deionisation equipment	No	

Electricity			
Rate of supply or total duration of power cuts	rarely		
Is there a back-up electricity generator?	No	Output:	
Comments	Power supply is continous and the power cuts happen rarely		

Waste Management			
Means of disposing of wastewate	Drainage		
Means of disposing of biological waste			
Incinerator	No	Capacity in l^3	
Means of disposing of chemical r	Biological pit		
Comments	incinerator isnt put to function though it is available. The laborator		

Refrigeration Equipment		
Cold chambers	**Number**	**Total volume (m^3)**
+ 4°C		
- 20°C		
Refrigerators	**Number**	**Total volume (m^3)**
+ 4°C	3	
- 20°C	1	
- 45°C		
- 80°C		

Telecommunication Availability	
Number of telephone lines	1
Is there access to an international telephone line ?	Yes
Is there access to the internet ?	Yes
Is there an intranet system ?	no

Office Equipment			
Number of computers	2		
Number of printers	1		
Number of photocopiers			
Is there a data back-up system/ procedure ?			
Is there laboratory data management system ?		Which one ?	

4. Quality Assurance

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Is there staff dedicated to quality management?	No
Is there a quality assurance programme in place?	No
If so, what reference standard is applied?	
Are there staff trained in quality assurance?	No
Is there a quality manual?	No
Coverage of Accreditation (what diseases, fields, analyses or tests?)	

List of Participation in Proficiency Testing Rounds

Nature of the Test	Organising Organisation	Cost / Year	Frequency	Results

Below, indicate if formal documentation exists on the following topics and, if it does, give the reference

Topics	Yes / No	Document	Comments
Document control			
Review of requests, tenders and contracts	Yes	File (Adm section)	
Subcontracting of tests and calibrations			
Purchasing services and supplies	Yes	File (Adm section)	
Services to the client	Yes	File (Lab section)	
Complaints (satisfaction assessment and internal audit)			
Test conformity and/or calibration			
Corrective action			
Preventive action			
Continual improvement			
Control of records			
Internal audits			
Management reviews			
Staff organisation and management	Yes	Job Responsibility	
Installation and environmental conditions			
Testing and calibration methods			
Method selection			
Method development			
Validation of methods			
Evaluating measurement uncertainty			
Control of computerised data			
Management of equipment			
Measurement traceability			
Sampling			
Handling samples and test items	Yes	SOP document	
Quality assurance of testing and calibration results			
Reporting results			
Presentation of reports			
Interpretation and declaration of compliance			
Transmission of reports			

5b. Activities - Samples

Number of samples received, by type

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year 14-15

Samples from Animals	Cattle	Sheep	Goats	Pigs	Equidae	Camelidae	Carnivores	Wildlife	Birds	Humans	Undetermined	Total
Whole dead bodies	37											**37**
Organs or samples taken at autopsy	0											**0**
Aborted foetuses	0											**0**
Placenta and lochia	0											**0**
Milk	1106											**1106**
Blood or serum	528		22						431			**981**
Urine	296											**296**
Faeces	1057	15	135	45	23				891			**2166**
Sperm												**0**
Swab samples	65		69						1154			**1288**
Skin scrapings	17		47									**64**
Punctures, pus and exudates												**0**
Cerebrospinal fluid												**0**
Biopsies												**0**
Other												**0**
Total	**3106**	**15**	**273**	**45**	**23**	**0**	**0**	**0**	**2476**	**0**	**0**	**5938**

5d. Activities - Prospects

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Population

Administrative Area Served by Laboratory	Human Population	Cattle		Sheep/Goats		Pigs		Equidae/Camelidae		Carnivores.	Rural Poultry	Intensive Poultry		Beehives	Aquatic Animals	
		Farms	Animals	Farms	Animals	Farms	Sows	Farms	Animals	Animals		Farms	Animals		Farms	Tonnes
Chhukha	88790		21669		6835		790		592	3500	10027		25623			1,79
Samtse	70994		33768		18075		663		468	7459	13304		138387			5,4
Haa	13476		15560		43		181		1289	790	2707		3358			10
Paro	43037		15691		130		279		1293	3324	1204		23465			
Thimphu	124075		14897		50		275		1303	1691	315		28333			
Total	340372	0	101585	0	25133	0	2188	0	4945	16764	27557	0	219166	0	0	17,19

6. Budget Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Person in charge of the budget and authorisation of payments:

Actual Expenditures	Year n-3		Year n-2		Year n-1		Comments
	Internal Budget	External Funding	Internal Budget	External Funding	Internal Budget	External Funding	
Capital Investment							
Building of new premises							
Renewal of existing premises							
Purchase of new vehicles							
Purchase of new IT, telecommunication and other equipment	49 000		49 000				
Purchase of new laboratory equipment	79 000		546 000				
Specialised training (PhD, etc.)							
Salaries and Remuneration							
Salaries including fringe benefits							
Per diem and travel allowances	599 000		285 900		262 800		
Continuing education (short courses, etc.)							
Operating Costs							
Maintenance of buildings							
Power, water and utilities	120 000		145 000		70 000		
Maintenance of vehicles	769 000		876 000		775 000		
Operating costs of vehicles							
Other transportation (flights, etc.)							
Biological sample transport (freight, mail, bus, etc.)							
Maintenance of IT, telecommunication and other equipment	79 000		100 000		250 000		
IT and office supplies	255 000		573 000		513 000		
Telecommunications fees	244 000		226 000		299 000		
Personnel and safety equipment							
Maintenance of laboratory equipment							
Reagents and consumables	440 000		790 000		500 000		
Calibration							
Proficiency Testing							
Documentation							
Other							
Total	2 634 000	0	3 590 900	0	2 669 800	0	
Grand Total	**2 634 000**		**3 590 900**		**2 669 800**		

1. General Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

1. Background Details

Laboratory Name:	Regional Livestock Development Centre		
Address:	RLDC, Zhemgang		
Manager's Name:	Dr. Bal bdr. Bhandari		
Telephone:	741240	Fax:	741239
E-mail:	zhemgangrldc@gmail.com		
Website:	Nil		
Opening Hours:	9am-5pm		
Contact in Case of Emergency:	Dr. B.B. Bhandari	Emergency Phone Number:	741240

2. Contact Person for the PVS Pathway Laboratory Mission

Surname and First Name:	Dr. B.B. Bhandari		
Position:	Veterinary Officer		
Telephone:	741240	Fax:	741239
E-mail:	zhemgangrldc@gmail.com		

3. Status

Laboratory Status:	Regional
Supervisory Authority:	East-central Region

4. Documents to be prepared and supplied to the OIE PVS Expert Team		Document Availability
Laboratory Statutes:	Documents establishing the laboratory and stating its mode of governance and funding	
Location Map:	Map/Plan with a scale of ~1/25000 indicating access roads, waterways and urbanised areas	
Site Plan:	Plan with a scale of ~1/5000 indicating laboratory buildings, access roads and fencing	
Detailed Plan:	Plan with a scale of ~1/100 mentioning for each building the various premises, dimensions and biosecurity levels	
Structural Organisation Chart:	Showing current organisational structure of the laboratory	
Functional Organisation Chart:	Showing current functional organisation of the laboratory	
Job Descriptions:	For all relevant staff	
Quality Manuals:	If quality assurance or quality management system is in place, the laboratory should be able to provide such documents	
Annual Report:	For the past three years, if possible	
Budget:	Budgets including revenues and expenditures for the past three years if possible	
List of Analyses and Prices:	Including calculation method if existent	
Invoices:	Samples of invoices for locally supplied and imported large equipment and consumables from habitual	

2. Human Resources

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Number of Veterinarians : 2
Number of Staff : 5
% of Women : 60%

Total Area / Staff : 0,00 m²
Laboratory Area / Laboratory Technical Staff : #DIV/0! m²

% of Specialised Training : 0%
Average number days CE / Staff : 0,00

Name or ID Number	Sex	Birth Year	2016 Age	Employment Status	Type of Position	Level of Education	Field of Work in the Laboratory	Relevant Specialised Training/ Continuing Education	Number of days of CE last year
Dr. Bal Bdr. Bhandari	M	1984	32	Government Employee	General Management	Undergraduate University	Over all supervisor	BVSc & AH	
Dr. Sonam Pelden	F	1987	29	Government Employee	Head of Laboratory Unit	Undergraduate University	Supervisor for AH & lab	BVSc & AH	
Mr. Norbula	M	1974	42	Government Employee	Laboratory Technical Wo	Technical Training	Laboratory works	Diploma	
Mrs. Pema Lhamo	F	1983	33	Government Employee	Laboratory Technical Wo	Technical Training	Laboratory works	Diploma	
Mrs. Sonam wangmo	F	1982	34	Government Employee	Laboratory Technical Wo	Technical Training	Laboratory works	Certificate	

Age Distribution		
	Age	Number
Age min	29	1
	30	1
	31	0
	32	0
	33	0
	34	0
	35	0
	36	0
	37	0
	38	1
	39	0
	40	0
	41	0
Age max	42	0
	0	0
	1	0
	2	0

Status Distribution	Number	%
Government Employee	5	100,00%
Open-ended Contract	0	0,00%
Fixed-term Contract	0	0,00%
Temporary Position	0	0,00%
Total	5	

Position Distribution	Number	%
General Management	1	20,00%
Head of Laboratory Unit	1	20,00%
Laboratory Technical Work	3	60,00%
Secretary	0	0,00%
Sample Collection	0	0,00%
Total	5	

Education Distribution	Number	%
Primary/Secondary Educatio	0	0,00%
Technical Training	3	60,00%
Undergraduate University	2	40,00%
Postgraduate University	0	0,00%
Total	5	

3a. Equipment Inventory

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Only large laboratory equipment (with a value superior to 300€) should be included in the inventory. **Do not include kits, consummables, expendable equipment and glassware. Do not include vehicles.**

	Location	Name	Make	Model	Main Specifications	ID Number for Quality Management	Category of Equipment	Field of Use	Year Acquired	Acquisition Value	Present Day Cost (cost to replace)	Condition	Preventive Maintenance Conducted	Calibration or Metrological Verification Conducted	Comments
1	Bacteriology	Horizontal Laminar Flow	Micro Flow	SP105AA	230V/50HZ	RLDC/ZG/LF-01	Biosafety Cabinet a	Bacteriology		8 000		Functional			Supplied by NCAH
2	Bacteriology	pH meter	Radiometer	PHM210	12V	RLDC/ZG/PH-0	pH Meter	Bacteriology		1 000		Functional			
3	Bacteriology	Incubator	Memmert	UNB300	30-80 DC	RLDC/ZG/In-02	Incubator (normal,	Bacteriology		1 800		Functional			Supplied by NCAH
4	Bacteriology	Refrigerator	Godrej	GF21R	160-250V/50HZ	RLDC/ZG/R-03	Refrigerator	Bacteriology		2 000		Functional			
5	Bacteriology	Lab Freez	Pharmaceutical	MR-PR120	220-240V (200lt)	RLDC/ZG/R-04	Freezer -20°C & -4	Bacteriology	2014	3 000		Functional			
6	Bacteriology	Refrigerator	LG	GL-33VE5/2011	G/volume 320 lt	RLDC/ZG/R-05	Refrigerator	Bacteriology	2012	2 000		Obsolete			
7	Bacteriology	Water bath	Jouan	J30	20-100C	RLDC/ZG/WB-0	Water Bath	Bacteriology		1 000		Functional			
8	Bacteriology	Weighing balance	Denver Instruments	MXX-2001	Max 2000g	RLDC/ZG/WeB-	Balance	Bacteriology		1 000		Functional			
9	Bacteriology	Digital colony counter	Toshbha			RLDC/ZG/CC-0	Other	Bacteriology		1 800		Functional			
10	Bacteriology	Microscope	Olympus	912600	Compound	RLDC/ZG/MS-0	Other	Bacteriology		2 000		Functional			
11	Bacteriology	Microscope	Labomed	912600	Compound	RLDC/ZG/MS-0	Other	Bacteriology		2 000		Functional			
12	Bacteriology	Auto loop sterilizer	MAC			RLDC/ZG/ALS-(	Other	Bacteriology		1 000		Functional			
13	Bacteriology	Incubator	Lab instruments & chem	202836	10-70C	RLDC/ZG/In-03	Incubator (normal,	Bacteriology		2 500		Functional			
14	Bacteriology	Anaerobic culture jar	MAC		2lb/in.sq.	RLDC/ZG/AJ-01	Other	Bacteriology		1 000		Functional			
15	Bacteriology	Anaerobic culture jar	MAC		2lb/in.sq.	RLDC/ZG/AJ-02	Other	Bacteriology		1 000		Functional			
16	Bacteriology	Centrifuge	Lakshmi	NOVA	1400RPM(220/24	RLDC/ZG/CT-02	Centrifuge (all type	Bacteriology		4 500		Functional			
17	Washing/Sterili	Autoclave	Express	ST19	160dc(60lb/in.sq.	RLDC/ZG/AC-0	Autoclave (all types	Mixed Laboratory Activities		10 000		Functional			
18	Washing/Sterili	Autoclave	L' Auto Thermos		250lb/in.sq	RLDC/ZG/AC-0	Autoclave (all types	Mixed Laboratory Activities		10 000		Functional			
19	Washing/Sterili	Autoclave			30lb/in.sq.	RLDC/ZG/AC-0	Autoclave (all types	Mixed Laboratory Activities		10 000		Functional			
20	Washing/Sterili	Autoclave	Yoma	208B.B.G.St.	220/230V	RLDC/ZG/AC-0	Autoclave (all types	Mixed Laboratory Activities		10 000		Functional			
21	Washing/Sterili	Hot air oven	Jouan	ANNEE:1994	250dc	RLDC/ZG/HAO-	Oven	Mixed Laboratory Activities		1 800		Functional			
22	Washing/Sterili	Micro wave oven	LG	MS2021CW	0.1kg	RLDC/ZG/HAO-	Oven	Mixed Laboratory Activities		300		Functional			
23	Washing/Sterili	Hot plate	Tarsons	MC-02	220V	RLDC/ZG/HP-0	Agitator (magnetic,	Mixed Laboratory Activities		400		Functional			
24	Dark Room	Microscope	Radical instruments	RFM-01	Fluorescence	RLDC/ZG/FMS-	Microscopy (Dark f	Mixed Laboratory Activities		2 500		Functional			
25	Biochemistry/T	Water bath shaker	IES	ITC-901	260 dc	RLDC/ZG/SH-0	Agitator (magnetic,	Mixed Laboratory Activities		3 000		Functional			
26	Biochemistry/T	UV Inspection Cabinet	JSGW		229V 50HZ	RLDC/ZG/UVC-	Other	Toxicology		2 000		Functional			
27	Biochemistry/T	Refrigerator	Thomson		120lt.	RLDC/ZG/R-02	Refrigerator	Toxicology		2 000		Functional			
28	Biochemistry/T	Magnetic stirrer	Falc	894Nr.7818/94	100-1100RPM	RLDC/ZG/Mgs-(	Agitator (magnetic,	Toxicology		250		Functional			
29	Biochemistry/T	Magnetic stirrer	Tarson		300V 63HZ	RLDC/ZG/Mgs-(	Agitator (magnetic,	Toxicology		250		Functional			
30	Biochemistry/T	Microscope	Labomed		240V 50/60HZ	RLDC/ZG/MS-0	Other	Toxicology		2 000		Functional			
31	Biochemistry/T	Field microscope	Labomed	Sigma	Compound	RLDC/ZG/MS-0	Other	Toxicology		2 500		Functional			
32	Biochemistry/T	Mixture Grinder	Command		230AC?DC 50HZ	RLDC/ZG/MG-0	Grinder	Toxicology		3 000		Functional			
33	Biochemistry/T	Distillation plant	Schott		230V	RLDC/ZG/DP)1-	Water Purification	Toxicology		2 500		Functional			
34	Biochemistry/T	Heat stirrer	Spinot	1627		RLDC/ZG/HS-0	Agitator (magnetic,	Toxicology		500		Functional			
35	Biochemistry/T	Genesys 10S UV-Vis Spectr	Thermo Fisher Scientifc	G.10SUV-VIS	100-240VAC 30/6	RLDC/ZG/SP-0	Equipment for cher	Toxicology		10 000		Functional			
36	Biochemistry/T	Digital Spectrophotometer	WPA cambridge UK	S104D	220/240V	RLDC/ZG/SP-0	Equipment for cher	Toxicology		10 000		Functional			
37	Haem/Serology	Digital pH meter	ME		100dc	RLDC/ZG/PH-0	pH Meter	Serology/Immunology		1 000		Functional			
38	Haem/Serology	Electronic balance	Max electronic		230V, 50HZ	RLDC/ZG/WeB-	Balance	Serology/Immunology		2 000		Functional			
39	Haem/Serology	Refractometer		SPR-Ne	0-12g/100ml	RLDC/ZG/RF-0	Equipment for cher	Serology/Immunology		1 000		Functional			
40	Haem/Serology	Microscope	LEBOMED	CX-RIII	Compound	RLDC/ZG/MS-0	Other	Serology/Immunology		2 000		Functional			
41	Haem/Serology	Microscope	LITZ		Compound	RLDC/ZG/MS-0	Other	Serology/Immunology		2 000		Functional			
42	Haem/Serology	Centifuge	Spinot		5000RPM	RLDC/ZG/CT-03	Centrifuge (all type	Serology/Immunology		4 500		Functional			
43	Haem/Serology	Heat stirrer	Spinix			RLDC/ZG/SH-0	Agitator (magnetic,	Serology/Immunology		500		Functional			
44	Haem/Serology	Minispin (microcentrifuge)	Ependrof	DC-22		RLDC/ZG/CT-03	Centrifuge (all type	Clinical Pathology		1 000		Functional			
45	Haem/Serology	Differential blood cell count				RLDC/ZG/DC-0	Other	Clinical Pathology				Functional			
46	Haem/Serology	Shaker				RLDC/ZG/SH-0	Agitator (magnetic,	Serology/Immunology		500		Functional			
47	Haem/Serology	Deep freezer	SANYO	MDF-390(T)	220/230V, 50HZ	RLDC/ZG/DF-0	Freezer -20°C & -4	Serology/Immunology		13 500		Functional			
48	Haem/Serology	Refrigerator	Godrej	RD EP190 CT/2014	2-8C	RLDC/ZG/R-07	Refrigerator	Serology/Immunology		2 000		Functional			
49	Haem/Serology	Centrifuge	ALC	MK-II	220V, 50HZ	RLDC/ZG/CT-01	Centrifuge (all type	Serology/Immunology		4 500		Functional			
50	Haem/Serology	Water bath			230/230V	RLDC/ZG/WB-0	Water Bath	Serology/Immunology		1 000		Functional			
51	Haem/Serology	HA-VET-Automatic Haemato	HA-VET	HA-VET CLINGDIAG	220V, 50HZ	RLDC/ZG/BA-0	Other	Serology/Immu	2014	4 290		Functional			
52	Haem/Serology	Deep freezer	Voltas		200lts.	RLDC/ZG/DF-02	Freezer -20°C & -4	Serology/Immunology		10 000		Functional			
53	Parasitology	Citizen precision balance	Germany	CG2202	Max: 2200g	RLDC/ZG/Web-	Balance	Parasitology		3 500		Functional			
54	Parasitology	Baermann Apparatus	RQ91/1330	ISO9001:2008		RLDC/ZG/BA-0	Other	Parasitology				Functional			
55	Parasitology	Incubator	Yorco	YSI-440	220V	RLDC/ZG/In-01	Incubator (normal,	Parasitology		1 800		Functional			
56	Parasitology	Centrifuge	Remi motors	C-854/6	500RPM	RLDC/ZG/CT-04	Centrifuge (all type	Parasitology		4 500		Functional			
57	Parasitology	Microscope	Radical	M. No. B-1793	Compound		Other	Parasitology		2 500		Functional			
58	Parasitology	Microscope	Labomed	CZM4	Compound	RLDC/ZG/MS-0	Other	Parasitology		2 500		Functional			
59	Parasitology	Water bath	India		230/230V	RLDC/ZG/WB-0	Water Bath	Parasitology		1 000		Functional			
60	Pathology	Hand Sprayers	Kojima	NS-16		RLDC/ZG/HS-0	Other	Clinical Pathology				Functional			
61	Pathology	Glass distilation units	Borosil	Cat. No.3361/3362		RLDC/ZG/DP-0	Water Purification	Clinical Pathology		2 500		Functional			
62	Pathology	Refrigerated Centrifuge	Eltek	RC 8100 F	230V	RLDC/ZG/CT-06	Centrifuge (all type	Clinical Pathology		9 000		Functional			
63	Pathology	Vaccum Pump	India	N 022 AN.18	230V	RLDC/ZG/VP-0	Vacuum Pump	Clinical Pathology				Functional			
64	Pathology	Microscope	Lobomed	Lx 400	Stereo Zoom	RLDC/ZG/MS-0	Other	Clinical Pathology		2 500		Functional			
65	Pathology	Rotary shaker	India		2400V	RLDC/ZG/SH-0	Agitator (magnetic,	Clinical Pathology		400		Functional			
66	Pathology	Water bath	India		280V	RLDC/ZG/WB-0	Water Bath	Clinical Pathology		1 000		Functional			
67	Pathology	Refrigerator	Godrej		300lts	RLDC/ZG/R-01	Refrigerator	Clinical Pathology		2 000		Functional			
68	Pathology	Refrigerator	Godrej		300lts	RLDC/ZG/R-06	Refrigerator	Clinical Pathology		2 000		Obsolete			
69															

Analysis of Equipment Distribution

Equipment Value Distribution	Value	%
Total Value of Equipment	203 590	0%
Value of functional equipment	-	0,00%
Value of equipment to repair	-	0,00%
Value of equipment to renew	-	0,00%
Value of obsolete equipment	-	0,00%

Equipment Category	Value	Number	%
Agitator (Magnetic, Heater, Vortex…)	5 800	8	5,11%
Autoclave (all types)	40 000	4	35,27%
Balance	6 500	3	5,73%
Biosafety Cabinet and Chemical Hood	8 000	1	7,05%
Grinder	-	-	0,00%
Centrifuge (all types)	28 000	6	24,69%
Equipment for chemical analysis (GC, AAS, Spectrophotometry, Mass spec, HPLC)	-	-	0,00%
Equipment for Electrophoresis	-	-	0,00%
Equipement for ELISA or other immunoassay (Washer/Incubator/Reader)	-	-	0,00%
Equipment for Histology	-	-	0,00%
Equipment for HPLC with any detection system	-	-	0,00%
Equipment for PCR	-	-	0,00%
Equipment for Photometry / Spectrophotometry	-	-	0,00%
Equipment for Thin Layer Chromatography	-	-	0,00%
Freezer -20°C	-	-	0,00%
Freezer -80°C	-	-	0,00%
Incubator (normal, gas…)	-	-	0,00%
Liquid Nitrogen Container	-	-	0,00%
Lyophilizer	-	-	0,00%
Micropipette (mono, multi…)	-	-	0,00%
Microscopy (Dark Field, Fluorescent, Inverted	-	-	0,00%
Oven	2 100	2	1,85%
pH Meter	2 000	2	1,76%
Refrigerator	12 000	6	10,58%
Standard Measures (Mass, Temperature…)	-	-	0,00%
Vacuum Pump	-	1	0,00%
Washing Machine for Glassware	-	-	0,00%
Water Bath	4 000	4	3,53%
Water Purification	5 000	2	4,41%
Other	-	-	0,00%
Total	113 400	39	100,00%

Field of Use	Value		%
Bacteriology	35 600		26,33%
Parasitology	15 800		11,69%
Serology/Immunology	48 790		36,09%
Virology Culture	-		0,00%
Molecular	-		0,00%
Clinical Pathology	-		0,00%
Anatomical Pathology	-		0,00%
Food Microbiology	-		0,00%
Toxicology	35 000		25,89%
Residues	-		0,00%
Feed Content	-		0,00%
Feed Safety	-		0,00%
Drug Quality	-		0,00%
Epidemiology	-		0,00%
Administration	-		0,00%
Research	-		0,00%
Mixed Laboratory Activities	-		0,00%
Other	-		0,00%
Total	135 190		100,00%

3b. Equipment Management

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

		Comments
Are there follow-up files for each item of equipment (invoices, notices, maintenance, calibration, etc.)?	Yes	

Maintenance		Comments
Do you have preventive maintenance programmes?	No	
Do you have access to corrective maintenance service (repair) ?	No	
Do you have in-house competencies for equipment maintenance and minor repairs?	No	
Do you have maintenance service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Calibration / Metrology		Comments
Do you have calibration / metrology programmes ?	No	
Do you have reference materials for calibration / metrology ?	No	
Do you have an in-house department for verification / calibration?	No	
Do you have calibration service providers?	No	

Name of Service Provider	City	Intervention on Request	Maintenance Contract			Comments
			Equipment Concerned	Frequency	Annual Cost	

Temperature Monitoring			Comments
Is there a centralised system for managing temperatures?			
	Incubators	No	
	Refrigerators	No	
	Freezers	No	
Is there a manual system for recording temperatures?			
	Incubators	Yes	
	Refrigerators	Yes	
	Freezers	Yes	

Procurement			Comments
How is procurement of **consummables** (e.g. reagents, sampling kits, glassware, etc.) handled?			
	call for tender for each laboratory?	No	
	call for tender for all laboratories at the national level?	Yes	
	direct ordering from the laboratory to the supplier?	No	
How is procurement of **equipment** (with a value over 300€) handled?			
	call for tender for each laboratory?	No	
	call for tender for all laboratories at the national level?	Yes	
	direct ordering from the laboratory to the supplier?	No	
Is procurement subject to approval?		Yes	
If yes, at which level does approval need to be obtained?			
	manager or department head	Yes	
	laboratory director	Yes	
	provincial authority level		
	district authority level		
	national authority level		

3c. Transport

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Does the laboratory participate in routine sampling or annual surveys in the field?	Yes
Does the laboratory participate in outbreak or emergency investigation sampling in the field?	Yes

Type of Vehicle	Age	Odometer (kms)	Specific Equipment		
			Refrigeration [1]	Biosafety [2]	Laboratory [3]
Mahindra Scorpio	8 years	1,80,000 kms	Autonomous	Yes	Yes

3d. Premises

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Surface Area	Unit of Measure: m^2 or ft^2	Total Surface Area	BSL1 Surface Area	BSL2 Surface Area	BSL3 Surface Area
Laboratory Departments					
Bacteriology		0			
Parasitology		0			
Serology/Immunology		0			
Virology Culture		0			
Molecular		0			
Clinical Pathology		0			
Anatomical Pathology		0			
Food Microbiology		0			
Toxicology		0			
Residues		0			
Feed Content		0			
Feed Safety		0			
Drug Quality		0			
Other		0			
Autopsy Room		0			
Animal Housing		0			
Storage other than cold chambers		0			
Cold Chambers		0			
Ancillary Areas (incinerator, garages, etc.)		0			
Administration offices and meeting rooms		0			
Circulation		0			
Other		0			
Total Surface Area		**0**	**0**	**0**	**0**
Value of Premises					
Unit cost of premises in €/m^2					
Total Value		**0**	**0**	**0**	**0**

Water		
		Capacity in l^3
Type of water supply	Main Supply	
Is there centralised water treatment?	No	
Distillation equipment	Yes	
Deionisation equipment	No	

Electricity		
Rate of supply or total duration of power cuts per week	Constant	
Is there a back-up electricity generator?	No	Output:
Comments		

Waste Management		
Means of disposing of wastewater	Direct outlet	
Means of disposing of biological waste		
Incineration	No	Capacity in l^3
Means of disposing of chemical residues	Direct outlet with water	
Comments		

Refrigeration Equipment		
Cold chambers	**Number**	**Total volume (m^3)**
+ 4°C		
- 20°C		
Refrigerators	**Number**	**Total volume (m^3)**
+ 4°C		
- 20°C		
- 45°C		
- 80°C		

Telecommunication Availability	
Number of telephone lines	4
Is there access to an international telephone line ?	yes
Is there access to the internet ?	yes
Is there an intranet system ?	yes

Office Equipment		
Number of computers	7	
Number of printers	7	
Number of photocopiers	2	
Is there a data back-up system/ procedure ?	yes	
Is there laboratory data management system ?	No	Which one ?

4. Quality Assurance

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Is there staff dedicated to quality management?	Yes
Is there a quality assurance programme in place?	Yes
If so, what reference standard is applied?	SOP
Are there staff trained in quality assurance?	No
Is there a quality manual?	Yes
Coverage of Accreditation (what diseases, fields, analyses or tests?)	Internat parasites, Mastitis, BQ, FMD,

List of Participation in Proficiency Testing Rounds

Nature of the Test	Organising Organisation	Cost / Year	Frequency	Results

Below , indicate if formal documentation exists on the following topics and, if it does, give the reference

Topics	Yes / No	Document Reference	Comments
Document control	No		
Review of requests, tenders and contracts	Yes		
Subcontracting of tests and calibrations	No		
Purchasing services and supplies	Yes		
Services to the client	Yes		
Complaints (satisfaction assessment and internal audit)	No		
Test conformity and/or calibration	No		
Corrective action	No		
Preventive action	No		
Continual improvement	No		
Control of records	No		
Internal audits	No		
Management reviews	No		
Staff organisation and management	Yes		
Installation and environmental conditions	Yes		
Testing and calibration methods	No		
Method selection	Yes		
Method development	No		
Validation of methods	No		
Evaluating measurement uncertainty	No		
Control of computerised data	Yes		
Management of equipment	Yes		
Measurement traceability	No		
Sampling	Yes		
Handling samples and test items	Yes		
Quality assurance of testing and calibration results	Yes		
Reporting results	Yes		
Presentation of reports	No		
Interpretation and declaration of compliance	Yes		
Transmission of reports	Yes		

5a. Activities - Demand

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

A Client is the person or institution that request laboratory analysis of a sample or samples. It may be the Veterinary Services for the purpose of official programmes, other public or private institutions, private veterinarians, farmers, donor projects, etc.
A Submission (or request or dossier) consists of one or more samples registered at the same time under the same dossier number
A Sample is any biological product, organ, dead animal or food product sent to the laboratory by a client, sothat one or more tests can be conducted
A Test is a laboratory technique or method which determines the value of a specific parameterof a sample

Reference Year: 2014-15 over a period of one year

Clients / Sources of Demand		Import Control			Export Certification			AH or VPH Programmes			Request of Client			Undetermined Purpose +			Total		
Categories	Number of Clients	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submission s	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Numbe r of Tests	Number of Submissions	Number of Samples	Number of Tests
Veterinary Services															3155	7134	0	3155	7134
Other Public Administrations																	0	0	0
Private Veterinarians																	0	0	0
Farmers Organisations																	0	0	0
Individual Farmers / Owners																	0	0	0
Food Industry																	0	0	0
Feed Industry																	0	0	0
Research																	0	0	0
Other (please specify)																	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3155**	**7134**	**0**	**3155**	**7134**

5b. Activities - Samples

Number of samples received, by type

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year: 2014-15

Samples from Animals	Cattle	Sheep	Goats	Pigs	Equidae	Camelidae	Carnivores	Wildlife	Birds	Humans	Undetermined	Total
Whole dead bodies	9			2					35			46
Organs or samples taken at autopsy	10			5					7			22
Aborted foetuses												0
Placenta and lochia												0
Milk	461											461
Blood or serum	242			1	10		10		322			585
Urine	2						18		1003			1023
Faeces	494	1	11		56							562
Sperm												0
Swab samples	2											2
Skin scrapings												0
Punctures, pus and exudates												0
Cerebrospinal fluid												0
Biopsies	22											22
Other	24								408			432
Total	1266	1	11	8	66	0	28	0	1775	0	0	3155

5c. Activities - Tests

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year: 2014-15 Currency:

Agent / Disease	Test / Method	Number Tests / Year	Official Unit Price	Cost of Test	Theoretical Total Revenue	Minimum Budget Needed	Theoretical Net Gain
Parasitology	Faecal sample analysis	4888			0	0	0
Bacteriology	Bacteriologfical test	1162			0	0	0
Virology	Virological test	38			0	0	0
Serology	Serological test	138			0	0	0
Haematology	Blood sample analysis	908			0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
TOTAL		7134			0	0	0

5d. Activities - Prospects

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Population

Administrative Area Served by Laboratory	Human Population	Cattle		Sheep/Goats		Pigs		Equidae/Camelidae		Carnivores	Rural Poultry	Intensive Poultry		Beehives	Aquatic Animals	
		Farms	Animals	Farms	Animals	Farms	Sows	Farms	Animals	Animals		Farms	Animals		Farms	Tonnes
Sarpang District	51153	3353	25291	1031	4907	96	594	310	524	4623	14886	157	149419		65	7,2
Bumthang	19033		13998		304		1		1213	1336	406					0
Trongsa	16014		11175		336		28		428	1517	2818		2645			0,13
Zhemgang	21557		11393		83		408		1496	1739	6051		6088			0,99
Total	107757	3353	61857	1031	5630	96	1031	310	3661	9215	24161	157	158152	0	65	8,32

6. Budget Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Person in charge of the budget and authorisation of payments: Tenzin Dorji , Account Asst. IV

Actual Expenditures	Year n-3		Year n-2		Year n-1		Comments
	Internal Budget	External Funding	Internal Budget	External Funding	Internal Budget	External Funding	
Capital Investment							
Building of new premises							
Renewal of existing premises					1 500 000		
Purchase of new vehicles							
Purchase of new IT, telecommunication and other equipment							
Purchase of new laboratory equipment	550 000		1 200 000		100 000		
Specialised training (PhD, etc.)							
Salaries and Remuneration							
Salaries including fringe benefits							
Per diem and travel allowances	5 798 000		3 305 000		3 934 000		
Continuing education (short courses, etc.)							
Operating Costs							
Maintenance of buildings							
Power, water and utilities	182 000		186 000		150 000		
Maintenance of vehicles	429 000		582 000		578 000		
Operating costs of vehicles							
Other transportation (flights, etc.)							
Biological sample transport (freight, mail, bus, etc.)							
Maintenance of IT, telecommunication and other equipment	251 000		174 000		150 000		
IT and office supplies	1 250 000		385 000		102 000		
Telecommunications fees			238 000		152 000		
Personnel and safety equipment							
Maintenance of laboratory equipment			30 000		152 000		
Reagents and consumables			500 000		500 000		
Calibration							
Proficiency Testing							
Documentation							
Other							
Total	8 460 000	0	6 600 000	0	7 318 000	0	
Grand Total	**8 460 000**		**6 600 000**		**7 318 000**		

1. General Information

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

1. Background Details

Laboratory Name:	Satellite Veterinary Laboratory		
Address:	Gelephu		
Manager's Name:	Dr.Tshewang Gembo		
Telephone:	06 251742	Fax:	06 251741
E-mail:	svlgelephu@gmail.com		
Website:			
Opening Hours:	Manday to Friday from 9am to 5pm		
Contact in Case of Emergency:	Yes	Emergency Phone Number:	17276400

2. Contact Person for the PVS Pathway Laboratory Mission

Surname and First Name:	Dr.Tshewang Gembo		
Position:	Veterinary Officer		
Telephone:	06 251742	Fax:	06 251741
E-mail:	gembotshewang@yahoo.com		

3. Status

Laboratory Status:	Department within Veterinary Services
Supervisory Authority:	Regional Livestock development Centre, Zhemgang

4. Documents to be prepared and supplied to the OIE PVS Expert Team		Document Availability
Laboratory Statutes:	Documents establishing the laboratory and stating its mode of governance and funding	Available
Location Map:	Map/Plan with a scale of ~1/25000 indicating access roads, waterways and urbanised areas	
Site Plan:	Plan with a scale of ~1/5000 indicating laboratory buildings, access roads and fencing	
Detailed Plan:	Plan with a scale of ~1/100 mentioning for each building the various premises, dimensions and biosecurity levels	
Structural Organisation Chart:	Showing current organisational structure of the laboratory	
Functional Organisation Chart:	Showing current functional organisation of the laboratory	
Job Descriptions:	For all relevant staff	
Quality Manuals:	If quality assurance or quality management system is in place, the laboratory should be able to provide such documents	
Annual Report:	For the past three years, if possible	
Budget:	Budgets including revenues and expenditures for the past three years if possible	
List of Analyses and Prices:	Including calculation method if existent	
Invoices:	Samples of invoices for locally supplied and imported large equipment and consumables from habitual	

2. Human Resources

***** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE *****

Number of Veterinarians : 1
Number of Staff : 0
% of Women : #DIV/0!

Laboratory Area / Laboratory Technical Staff : Total Area / Staff : #DIV/0! m²
0 m²

% of Specialised Training : #DIV/0!
Average number days CE / Staff : #DIV/0!

Name or ID Number	Sex	Birth Year	2016 Age	Employment Status	Type of Position	Level of Education	Field of Work in the Laboratory	Relevant Specialised Training/ Continuing Education	Number of days of CE last year
	M	1962	54	Government Employee	Other Support Staff	Technical Training	Mixed Laboratory Activitie	Yes	no
	M	1962	54	Government Employee	Laboratory Technical W	Technical Training	Bacteriology	Yes	
		1972	44	Government Employee	Laboratory Technical W	Technical Training	Clinical Pathology	Yes	
		1980	36	Government Employee	Laboratory Technical W	Technical Training	Parasitology	Yes	
		1976	40	Government Employee	Other Support Staff	Primary/Secondary Education	Mixed Laboratory Activitie	No	
		1975	41	Government Employee	Other Support Staff	Primary/Secondary Education	Mixed Laboratory Activitie	No	
		1986	30	Government Employee	General Management	Undergraduate University	Administration	Yes	
		1995	21	Government Employee	Other Support Staff	Technical Training	Mixed Laboratory Activitie	Yes	
		1994	22	Government Employee	Other Support Staff	Primary/Secondary Education	Mixed Laboratory Activitie	Yes	

Age Distribution		
	Age	Number
Age min	21	0
	22	0
	23	0
	24	0
	25	0
	26	1
	27	0
	28	0
	29	0
	30	0
	31	0
	32	1
	33	0
	34	0
	35	0
	36	1
	37	1
	38	0
	39	0
	40	1
	41	0
	42	0
	43	0
	44	0
	45	0
	46	0
	47	0
	48	0
	49	0
	50	2
	51	0
	52	0
	53	0
Age max	54	0
	0	0
	1	0
	2	0
	3	0
	4	0

Status Distribution	Number	%
Government Employee	9	100,00%
Open-ended Contract	0	0,00%
Fixed-term Contract	0	0,00%
Temporary Position	0	0,00%
Total	9	
Position Distribution	**Number**	**%**
General Management	1	11,11%
Head of Laboratory Unit	0	0,00%
Laboratory Technical Work	3	33,33%
Secretary	0	0,00%
Sample Collection	0	0,00%
Total	4	
Education Distribution	**Number**	**%**
Primary/Secondary Educatio	3	33,33%
Technical Training	5	55,56%
Undergraduate University	1	11,11%
Postgraduate University	0	0,00%
Total	9	
Field Distribution	**Number**	**%**
Bacteriology	1	11,11%
Parasitology	1	11,11%
Serology/Immunology	0	0,00%
Virology Culture	0	0,00%
Molecular	0	0,00%
Clinical Pathology	1	11,11%
Anatomical Pathology	0	0,00%
Food Microbiology	0	0,00%
Toxicology	0	0,00%
Residues	0	0,00%
Feed Content	0	0,00%
Feed Safety	0	0,00%
Drug Quality	0	0,00%
Epidemiology	0	0,00%
Administration	1	11,11%
Research	0	0,00%
Mixed Laboratory Activities	5	55,56%
Other	0	0,00%
None	0	0,00%
Total	9	

3a. Equipment Inventory

***** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE *****

Only large laboratory equipment (with a value superior to 300€) should be included in the inventory. **Do not include kits, consummables, expendable equipment and glassware. Do not include vehicles.**

	Location	Name	Make	Model	Main Specifications	ID Number for Quality Management	Category of Equipment	Field of Use	Year Acquired	Acquisition Value	Present Day Cost (cost to replace)	Condition	Preventive Maintenance Conducted	Calibration or Metrological Verification Conducted	Comments
1	Serology	Microscope	Labomed		Florescent		Microscopy (Dark	Serology/Immunology				Functional	No	No	
2	Bacteriology	Microscope	Labomed		Trinocular		Other	Bacteriology		3 800 000		Functional	No	No	
3	Parasitology	Compound Microscope	Labomed		Binocular		Other	Parasitology				Functional	No	No	
4	Parasitology	Cetrifuge Machine	Jaico				Centrifuge (all type	Parasitology				Obsolete	No	No	
5	Bacteriology	Hot Air Ovan	Scientech				Oven	Bacteriology				Obsolete	No	No	
6	Clinical path	Haemotocrit Centrifuge	Eltek	TC4815D			Centrifuge (all type	Clinical Pathology		2 500		Functional	No	No	
7	SVL,Gelephu	Electronic Balance	Indian				Balance	Mixed Laboratory Activities		1 000		Functional	Not Applicable		
8	SVL,Gelephu	Deep Freezer	Biogene				Freezer -20°C & -4	Mixed Laboratory Activities		2 000		Functional	No	No	
9	SVL,Gelephu	Pharmaceutical Refregerato	Lab Freeze		2-8C		Refrigerator	Mixed Laboratory Activities		1 000		Functional	No	No	
10	SVL,Gelephu	Refregerator	Kelvinator				Refrigerator	Mixed Laboratory Activities		1 000		Functional	No	No	
11	SVL,Gelephu	Refregerator	Godrej				Refrigerator	Mixed Laboratory Activities		1 000		Functional	No	No	
12	SVL,Gelephu	Distillation Plant	Indian				Water Purification	Mixed Laboratory Activities		2 500		Functional	Yes	No	
13															
14															

Analysis of Equipment Distribution

Equipment Value Distribution	Value	%
Total Value of Equipment	3 811 000	0%
Value of functional equipment	-	0,00%
Value of equipment to repair	-	0,00%
Value of equipment to renew	-	0,00%
Value of obsolete equipment	-	0,00%

Equipment Category	Value	Number	%
Agitator (Magnetic, Heater, Vortex…)	-	-	0,00%
Autoclave (all types)	-	-	0,00%
Balance	1 000	1	11,11%
Biosafety Cabinet and Chemical Hood	-	-	0,00%
Grinder	-	-	0,00%
Centrifuge (all types)	2 500	2	27,78%
Equipment for chemical analysis (GC, AAS, Spectrophotometry, Mass spec, HPLC)	-	-	0,00%
Equipment for Electrophoresis	-	-	0,00%
Equipement for ELISA or other immunoassay (Washer/Incubator/Reader)	-	-	0,00%
Equipment for Histology	-	-	0,00%
Equipment for HPLC with any detection system	-	-	0,00%
Equipment for PCR	-	-	0,00%
Equipment for Photometry / Spectrophotometry	-	-	0,00%
Equipment for Thin Layer Chromatography	-	-	0,00%
Freezer -20°C	-	-	0,00%
Freezer -80°C	-	-	0,00%
Incubator (normal, gas…)	-	-	0,00%
Liquid Nitrogen Container	-	-	0,00%
Lyophilizer	-	-	0,00%
Micropipette (mono, multi…)	-	-	0,00%
Microscopy (Dark Field, Fluorescent, Invertec	-	-	0,00%
Oven	-	1	0,00%
pH Meter	-	-	0,00%
Refrigerator	3 000	3	33,33%
Standard Measures (Mass, Temperature…)	-	-	0,00%
Vacuum Pump	-	-	0,00%
Washing Machine for Glassware	-	-	0,00%
Water Bath	-	-	0,00%
Water Purification	2 500	1	27,78%
Other	-	-	0,00%
Total	9 000	8	100,00%

Field of Use	Value		%
Bacteriology	##########		100,00%
Parasitology	-		0,00%
Serology/Immunology	-		0,00%
Virology Culture	-		0,00%
Molecular	-		0,00%
Clinical Pathology	-		0,00%
Anatomical Pathology	-		0,00%
Food Microbiology	-		0,00%
Toxicology	-		0,00%
Residues	-		0,00%
Feed Content	-		0,00%
Feed Safety	-		0,00%
Drug Quality	-		0,00%
Epidemiology	-		0,00%
Administration	-		0,00%
Research	-		0,00%
Mixed Laboratory Activities	-		0,00%
Other	-		0,00%
Total	##########		100,00%

3b. Equipment Management

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

		Comments
Are there follow-up files for each item of equipment (invoices, notices, maintenance, calibration, etc.)?	No	
Maintenance		**Comments**
Do you have preventive maintenance programmes?	No	
Do you have access to corrective maintenance service (repair) ?	Yes	for cooler and refregeration
Do you have in-house competencies for equipment maintenance and minor repairs?	No	
Do you have maintenance service providers?	Yes	for cooler and refregeration

3c. Transport

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Does the laboratory participate in routine sampling or annual surveys in the field?	Yes
Does the laboratory participate in outbreak or emergency investigation sampling in the field?	Yes

Type of Vehicle	Age	Odometer (kms)	Specific Equipment		
			Refrigeration [1]	Biosafety [2]	Laboratory [3]
Scorpio Pickup	7 years	142950	Cooler	No	No
Bajaj Bike		17100	No	No	No

3d. Premises

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Surface Area	Unit of Measure: m^2 or ft^2	Total Surface Area	BSL1 Surface Area	BSL2 Surface Area	BSL3 Surface Area
Laboratory Departments					
Bacteriology		0			
Parasitology		0			
Serology/Immunology		0			
Virology Culture		0			
Molecular		0			
Clinical Pathology		0			
Anatomical Pathology		0			
Food Microbiology		0			
Toxicology		0			
Residues		0			
Feed Content		0			
Feed Safety		0			
Drug Quality		0			
Other		0			
Autopsy Room		0			
Animal Housing		0			
Storage other than cold chambers		0			
Cold Chambers		0			
Ancillary Areas (incinerator, garages, etc.)		0			
Administration offices and meeting rooms		0			
Circulation		0			
Other		0			
Total Surface Area		**0**	**0**	**0**	**0**
Value of Premises					
Unit cost of premises in €/m^2					
Total Value		**0**	**0**	**0**	**0**

Water		
		Capacity in l^3
Type of water supply	Main Supply	
Is there centralised water treatment?	Yes	
Distillation equipment	Yes	
Deionisation equipment	No	

Electricity		
Rate of supply or total duration of power cuts per week	No	
Is there a back-up electricity generator?	No	Output:
Comments		

Waste Management		
Means of disposing of wastewater	Open Drain	
Means of disposing of biological waste		
Incineration	No	Capacity in l^3
Means of disposing of chemical residues	No	
Comments		

Refrigeration Equipment		
Cold chambers	**Number**	**Total volume (m^3)**
+ 4°C		
- 20°C		
Refrigerators	**Number**	**Total volume (m^3)**
+ 4°C		
- 20°C		
- 45°C		
- 80°C		

Telecommunication Availability	
Number of telephone lines	2
Is there access to an international telephone line ?	Yes
Is there access to the internet ?	Yes
Is there an intranet system ?	No

Office Equipment			
Number of computers	3		
Number of printers	3		
Number of photocopiers	1		
Is there a data back-up system/ procedure ?	No		
Is there laboratory data management system ?	Yes	Which one ?	Book,Computer

4. Quality Assurance

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Is there staff dedicated to quality management?	No
Is there a quality assurance programme in place?	No
If so, what reference standard is applied?	
Are there staff trained in quality assurance?	No
Is there a quality manual?	No
Coverage of Accreditation (what diseases, fields, analyses or tests?)	

List of Participation in Proficiency Testing Rounds

Nature of the Test	Organising Organisation	Cost / Year	Frequency	Results

Below , indicate if formal documentation exists on the following topics and, if it does, give the reference

Topics	Yes / No	Document Reference	Comments
Document control	No		
Review of requests, tenders and contracts	No		
Subcontracting of tests and calibrations	No		
Purchasing services and supplies	No		
Services to the client	Yes	Record registers	
Complaints (satisfaction assessment and internal audit)	No		
Test conformity and/or calibration	No		
Corrective action	Yes		
Preventive action	Yes		
Continual improvement	Yes		
Control of records	Yes		
Internal audits	No		
Management reviews	Yes		
Staff organisation and management	Yes		
Installation and environmental conditions	No		
Testing and calibration methods	No		
Method selection	Yes		
Method development	No		
Validation of methods	No		
Evaluating measurement uncertainty	No		
Control of computerised data	Yes		
Management of equipment	Yes		
Measurement traceability	No		
Sampling	Yes		
Handling samples and test items	Yes		
Quality assurance of testing and calibration results	Yes		
Reporting results	Yes		
Presentation of reports	Yes		
Interpretation and declaration of compliance	Yes		
Transmission of reports	Yes		

5a. Activities - Demand

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

A Client is the person or institution that request laboratory analysis of a sample or samples. It may be the Veterinary Services for the purpose of official programmes, other public or private institutions, private veterinarians, farmers, donor projects, etc.
A Submission (or request or dossier) consists of one or more samples registered at the same time under the same dossier number
A Sample is any biological product, organ, dead animal or food product sent to the laboratory by a client, sothat one or more tests can be conducted
A Test is a laboratory technique or method which determines the value of a specific parameterof a sample

Reference Year: 2014-15 over a period of one year

Clients / Sources of Demand		Import Control			Export Certification			AH or VPH Programmes			Request of Client			Undetermined Purpose +			Total		
Categories	Number of Clients	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Number of Tests	Number of Submission s	Number of Samples	Number of Tests	Number of Submissions	Number of Samples	Numbe r of Tests	Number of Submissions	Number of Samples	Number of Tests
Veterinary Services																	0	0	0
Other Public Administrations																	0	0	0
Private Veterinarians																	0	0	0
Farmers Organisations																	0	0	0
Individual Farmers / Owners														1405	2964	2964	1405	2964	2964
Food Industry																	0	0	0
Feed Industry																	0	0	0
Research																	0	0	0
Other (please specify)																	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1405**	**2964**	**2964**	**1405**	**2964**	**2964**

5b. Activities - Samples

Number of samples received, by type

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year: 2014-15

Samples from Animals	Cattle	Sheep	Goats	Pigs	Equidae	Camelidae	Carnivores	Wildlife	Birds	Humans	Undetermined	Total
Whole dead bodies	21		2	139			8		315			485
Organs or samples taken at autopsy	44		20	129			6		17			216
Aborted foetuses												0
Placenta and lochia												0
Milk	228											228
Blood or serum	146		24	42				8	271			491
Urine	5											5
Faeces	1906	11	95	20	22			91	189			2334
Sperm												0
Swab samples									145			145
Skin scrapings												0
Punctures, pus and exudates												0
Cerebrospinal fluid												0
Biopsies												0
Other												0
Total	**2350**	**11**	**141**	**330**	**22**	**0**	**14**	**99**	**937**	**0**	**0**	**3904**

Food products	
Meat	
Milk and milk products	
Eggs and egg products	
Fish and fishery products	
Fresh prepared foods	
Frozen prepared foods	
Canned products	
Animal Feed	3
Water	
Other	
Total	**3**

5c. Activities - Tests

****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Reference Year: 2014-15 Currency:

Agent / Disease	Test / Method	Number Tests / Year	Official Unit Price	Cost of Test	Theoretical Total Revenue	Minimum Budget Needed	Theoretical Net Gain
FMD	Rapid Test				0	0	0
Rabies	Rapid Test/FAT				0	0	0
Anthrax	(Grams and M Blue stain)				0	0	0
BQ	Staining (Grams stain)				0	0	0
Avian Influenza	Rapid Test				0	0	0
IBD	Rapid Test				0	0	0
NCD	Rapid Test				0	0	0
Mastitis	CMT and WST				0	0	0
Endo Parasitic diseases	Microscopical examination				0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
					0	0	0
TOTAL		**0**			**0**	**0**	**0**

5d. Activities - Prospects

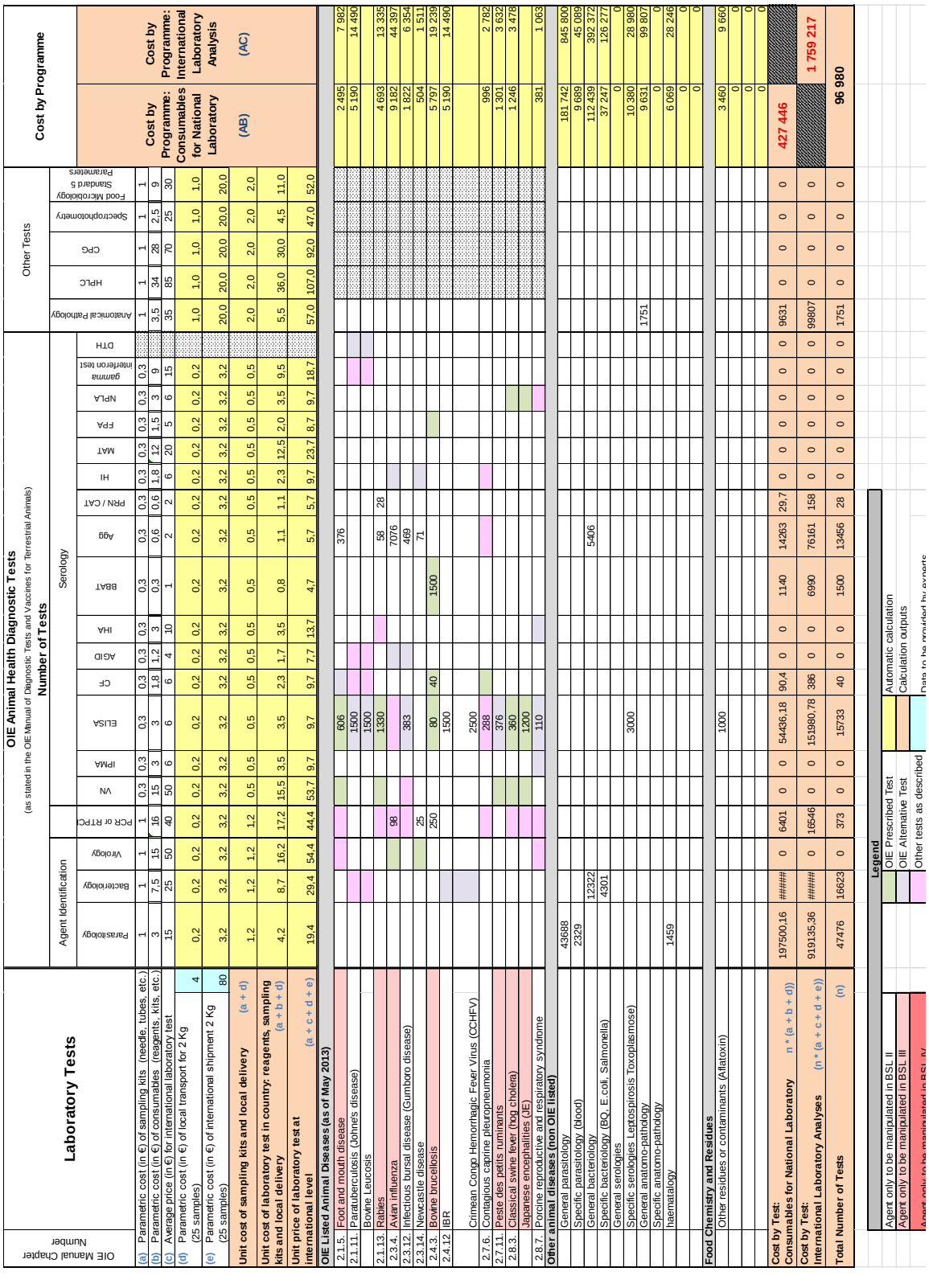
****** PLEASE USE PULL-DOWN MENUS WHERE AVAILABLE ******

Population

Administrative Area Served by Laboratory	Human Population	Cattle		Sheep/Goats		Pigs		Equidae/Camelidae		Carnivores.	Rural Poultry	Intensive Poultry		Beehives	Aquatic Animals	
		Farms	Animals	Farms	Animals	Farms	Sows	Farms	Animals	Animals		Farms	Animals		Farms	Tonnes
Sarpang District	51153	3353	25291	1031	4907	96	594	310	524	4623	14886	157	149419		65	28,596
Total	51153	3353	25291	1031	4907	96	594	310	524	4623	14886	157	149419	0	65	28,596

Annex 2 : Demand Tool

Prospective Demand Tool for Animal Diseases (Clinical Tests and Official Demand)



OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																				Other Tests				Cost by Programme	
			Agent Identification				Serology																					
			Parasitology	Bacteriology	Virology	PCR or RT-PCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	gamma interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters	Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)		1	1	1	1	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7,5	15	16	15	3	3	1,8	1,2	3	1	0,6	0,6	1,8	12	1,5	3	9	15	3,5	34	28	2,5	9		
(c)	Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15	30	35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	1,0	1,0	1,0	1,0	1,0	1,0	4 693	13 335
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	20,0	20,0	20,0	20,0	20,0	20,0	9 182	44 397
Unit cost of sampling kits and local delivery		**(a + d)**	1,2	1,2	1,2	1,2	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	2,0	2,0	2,0	2,0	2,0	2,0	1 822	6 354
Unit cost of laboratory test in country: reagents, sampling kits and local delivery		**(a + b + d)**	4,2	8,7	16,2	17,2	15,5	3,5	3,5	2,3	1,7	3,5	0,8	1,1	1,1	2,3	12,5	2,0	3,5	9,5	5,5	36,0	30,0	4,5	11,0		504	1 511
Unit price of laboratory test at international level		**(a + c + d + e)**	19,4	29,4	54,4	44,4	53,7	9,7	9,7	9,7	7,7	13,7	4,7	5,7	5,7	9,7	23,7	8,7	9,7	18,7	57,0	107,0	92,0	47,0	52,0		5 797	19 239
OIE Listed Animal Diseases (as of May 2013)																											5 190	14 490
2.1.5.	Foot and mouth disease								606					376															
2.1.11.	Paratuberculosis (Johne's disease)								1500																		996	2 782
	Bovine Leucosis								1500																		1 301	3 632
2.1.13.	Rabies								1330					58	28												1 246	3 478
2.3.4.	Avian influenza					98								7076														
2.3.12.	Infectious bursal disease (Gumboro disease)								383					469													381	1 063
2.3.14.	Newcastle disease					25								71														
2.4.3.	Bovine brucellosis					250			80	40			1500															
2.4.12.	IBR								1500																			
	Crimean Congo Hemorrhagic Fever Virus (CCHFV)								2500																			
2.7.6.	Contagious caprine pleuropneumonia								288																			
2.7.11.	Peste des petits ruminants								376																			
2.8.3.	Classical swine fever (hog cholera)								360																			
	Japanese encephalities (JE)								1200																			
2.8.7.	Porcine reproductive and respiratory syndrome								110																			
Other animal diseases (non OIE listed)																											181 742	845 800
	General parasitology		43688																								9 689	45 089
	Specific parasitology (blood)		2329																								112 439	392 372
	General bacteriology			12322										5406													37 247	126 277
	Specific bacteriology (BQ, E.coli, Salmonella)			4301																							0	0
	General serologies																										10 380	28 980
	Specific serologies Leptospirosis Toxoplasmose)								3000																		9 631	99 807
	General anatomo-pathology																					1751					0	0
	Specific anatomo-pathology																										6 069	28 246
	haematalogy		1459																								0	0
																											0	0
Food Chemistry and Residues																												
	Other residues or contaminants (Aflatoxin)								1000																		3 460	9 660
																											0	0
																											0	0
																											0	0
Cost by Test: Consumables for National Laboratory		**n * (a + b + d))**	197500,16	######	0	6401	0	0	54436,18	90,4	0	0	1140	14263	29,7	0	0	0	0	0	0	9631	0	0	0	0	**427 446**	
Cost by Test: International Laboratory Analyses		**(n * (a + c + d + e))**	919135,36	######	0	16546	0	0	151980,78	386	0	0	6990	76161	158	0	0	0	0	0	0	99807	0	0	0	0		**1 759 217**
Total Number of Tests		**(n)**	47476	16623	0	373	0	0	15733	40	0	0	1500	13456	28	0	0	0	0	0	0	1751	0	0	0	0	**96 980**	

Legend

Agent only to be manipulated in BSL II	OIE Prescribed Test	Automatic calculation	
Agent only to be manipulated in BSL III	OIE Alternative Test	Calculation outputs	
Agent only to be manipulated in BSL IV	Other tests as described	Data to be reported by experts	

Possible Estimated Prospective Demand for BAFRA Food Safety Programme With All Tests Being Performed in BAFRA Laboratory.

OIE Manual Chapter Number / Laboratory Tests	OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests – Agent Identification				Serology															Other Tests					Cost by Programme	
	Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	gamma interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters	Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
(a) Parametric cost (in €) of sampling kits (needle, tubes, etc.)	0	0	1		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	0	0	0	0		
(b) Parametric cost (in €) of consumables (reagents, kits, etc.)	3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c) Average price (in €) for international laboratory test	15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d) Parametric cost (in €) of local transport for 2 Kg (25 samples) 4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0		
(e) Parametric cost (in €) of international shipment 2 Kg (25 samples) 80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery (a + d)	0.2	0.2	1.2	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	1.0	1.0	1.0	1.0		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery (a + b + d)	3.2	7.7	16.2	16.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	35.0	29.0	3.5	10.0		
Unit price of laboratory test at international level (a + c + d + e)	18.4	28.4	54.4	43.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	106.0	91.0	46.0	51.0		
Cost by Test: Consumables for National Laboratory n * (a + b + d))	0	38300	0	32320	0	0	10380	0	0	0	0	0	0	0	0	0	0	0	0	0	350000	290000	875	0	721,875	
Cost by Test: International Laboratory Analyses (n * (a + c + d + e))	0	141800	0	86720	0	0	28980	0	0	0	0	0	0	0	0	0	0	0	0	0	1E+06	910000	11500	0		2,239,000
Total Number of Tests (n)	0	5000	0	2000	0	0	3000	0	0	0	0		0	0	0	0	0	0	0	0	10000	10000	250	0	30,250	

Prospective Demand: Cost of Reagents for Scenario 1 for Official Programmes AH Tests only

OIE Manual Chapter Number / Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																			Other Tests					Cost by Programme	
		Agent identification				Serology																					
		Parasitology	Bacteriology	Virology	PCR or RTPC	VN	FMA	ELISA	CF	AGID	HA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	gamma interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters	Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
(a) Parametric cost (in €) of sampling kits (needle, tubes, etc.)		1	1	1	1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	1	1	1	1		
(b) Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7.5	15	16	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c) Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d) Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0		
(e) Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0		
Unit cost of sampling kits and local delivery (a + d)		1.2	1.2	1.2	1.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	2.0	2.0	2.0	2.0		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery (a + b + d)		4.2	8.7	16.2	17.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	36.0	30.0	4.5	11.0		
Unit price of laboratory test at international level (a + c + d + e)		19.4	29.4	54.4	44.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	107.0	92.0	47.0	52.0		
Cost by Test: Consumables for National Laboratory n * (a + b + d))		0	34640	0	6864	0	0	53616.16	90.4	0	0	1140	8458.8	31.8	0	0	0	0	0	0	0	0	0	0	0	104,841	
Cost by Test: International Laboratory Analyses (n * (a + c + d + e))		0	117440	0	17744	0	0	149691.36	386	0	0	6990	45167	170	0	0	0	0	0	0	0	0	0	0	0		337,588
Total Number of Tests (n)		0	4000	0	400	0	0	15496	40	0	0	1500	7980	30	0	0	0	0	0	0	0	0	0	0	0	29,446	

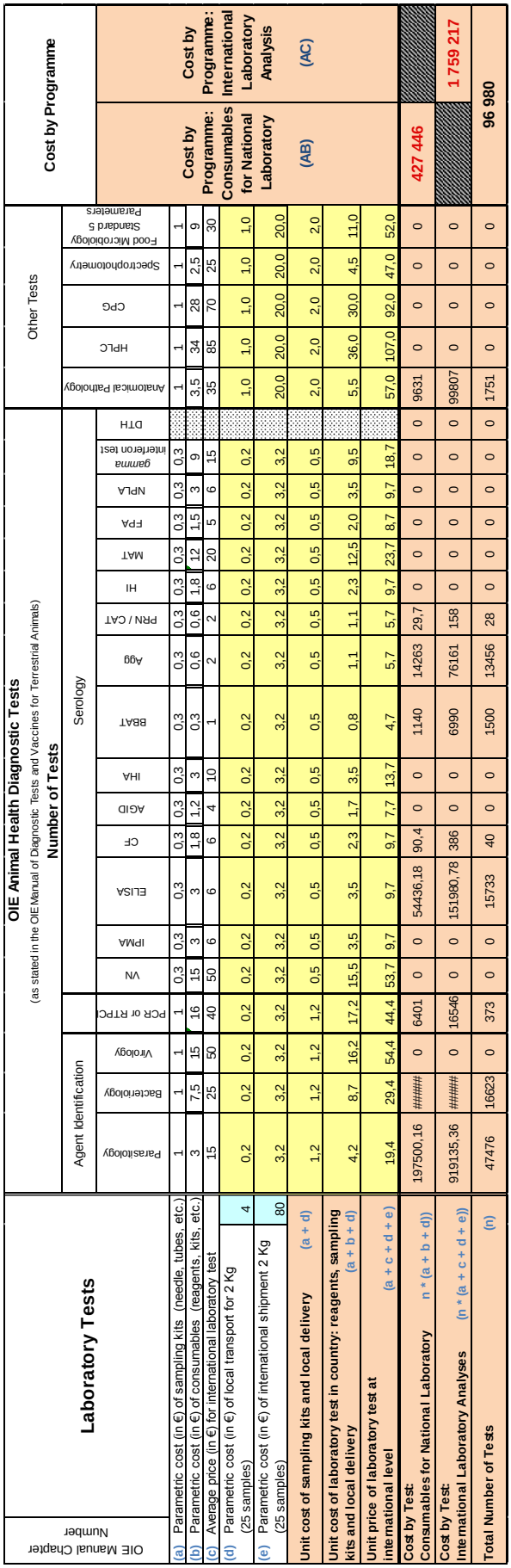
Prospective Demand: Cost of Reagents for Scenario 1 for Official Programmes AH Tests and FS molecular tests

OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																				Other Tests					Cost by Programme	
			Agent Identification				Serology																						
			Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	gamma interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters	Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)	1	1	1	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)	3	7,5	15	1	15	3	3	6	1,8	1,2	3	1	0,6	2	6	1,8	12	5	6	15	3,5	34	28	2,5	9		
(c)	Average price (in €) for international laboratory test	15	25	50	16	40	50	6	6	6	4	10	1	2	2	6	20	20	5	6	15	35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	1,0	1,0	1,0	1,0	1,0		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	20,0	20,0	20,0	20,0	20,0		
Unit cost of sampling kits and local delivery		**(a + d)**	1,2	1,2	1,2	1,2	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	2,0	2,0	2,0	2,0	2,0	589	1 727
Unit cost of laboratory test in country: reagents, sampling kits and local delivery		**(a + b + d)**	4,2	8,7	16,2	17,2	15,5	3,5	3,5	2,3	1,7	3,5	0,8	1,1	1,1	2,3	9,7	12,5	2,0	3,5	9,5	5,5	36,0	30,0	4,5	11,0	5 797	19 239
Unit price of laboratory test at international level		**(a + c + d + e)**	19,4	29,4	54,4	44,4	53,7	9,7	9,7	9,7	7,7	13,7	4,7	5,7	5,7	9,7	23,7	8,7	9,7	18,7		57,0	107,0	92,0	47,0	52,0	5 190	14 490
OIE Listed Animal Diseases (as of May 2013)																											2 468	7 835
2.1.5.	Foot and mouth disease								606					350														5 190	14 490
2.1.11.	Paratuberculosis (Johne's disease)								1500																			
	Bovine Leucosis								1500																		4 766	13 550
2.1.13.	Rabies								1350					60	30												9 479	44 943
2.3.4.	Avian influenza					120								7000													1 776	6 308
2.3.12.	Infectious bursal disease (Gumboro disease)								360					500													589	1 727
2.3.14.	Newcastle disease					30								70													5 797	19 239
2.4.3.	Bovine brucellosis					250			80	40			1500														5 190	14 490
2.4.12	IBR								1500																			
	Crimean Congo Hemorrhagic Fever Virus (CCHFV)								2500																		1 038	2 898
2.7.6.	Contagious caprine pleuropneumonia								300																		1 246	3 478
2.7.11.	Peste des petits ruminants								360																		1 246	3 478
2.8.3.	Classical swine fever (hog cholera)								360																			
	Japanese encephalities (JE)								1200																		450	1 256
2.8.7.	Porcine reproductive and respiratory syndrome								130																			
Other animal diseases (non OIE listed)																											0	0
	General parasitology																										5 190	14 490
	Specific parasitology								1500																		0	0
	General bacteriology																										39 830	131 930
	Specific bacteriology		4000						1500																		0	0
	General serologies																										0	0
	Specific serologies																										0	0
	General anatomo-pathology																										0	0
	Specific anatomo-pathology																										0	0
	haematology																										0	0
																											0	0
Food Chemistry and Residues																											0	0
	Other residues or contaminants								750																		2 595	7 245
																											0	0
																											0	0
																											0	0
Cost by Test: Consumables for National Laboratory		**n * (a + b + d))**	0	34640	0	40721	0	0	63996,16	90,4	0	0	1140	8458,8	31,8	0	0	0	0	0	0	0	0	0	0	0	**149 078**	
Cost by Test: International Laboratory Analyses		**(n * (a + c + d + e))**	0	117440	0	#####	0	0	178671,36	386	0	0	6990	45167	170	0	0	0	0	0	0	0	0	0	0	0	0		**454 091**
Total Number of Tests		**(n)**	0	4000	0	2373	0	0	18496	40	0	0	1500	7980	30	0	0	0	0	0	0	0	0	0	0	0		**34 419**

Legend

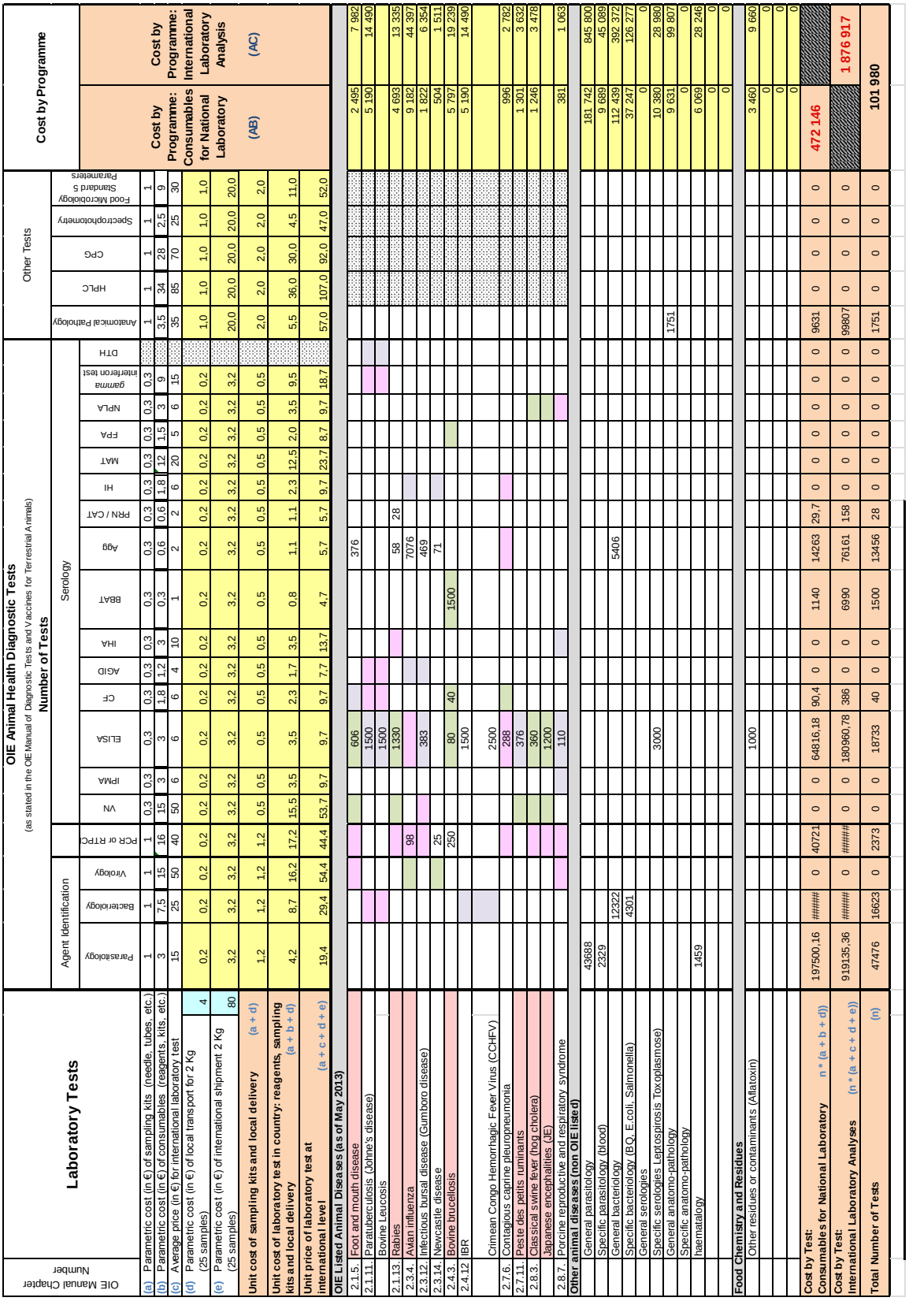
Agent only to be manipulated in BSL II
Agent only to be manipulated in BSL III
OIE Prescribed Test
OIE Alternative Test
Automatic calculation
Calculation outputs

Prospective Demand: Cost of Reagents for Scenario 2 (all animal tests)



OIE Manual Chapter Number	Laboratory Tests	OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																						Other Tests								Cost by Programme	
		Agent Identification				Serology																											
		Parasitology	Bacteriology	Virology	PCR or RT-PCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	*gamma* interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters	Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)	1	1	1	1	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)	3	7,5	15	16	15	3	3	3	1,8	1,2	3	0,3	0,6	1,8	12	1,5	3	9		3,5	34	28	2,5	9		
(c)	Average price (in €) for international laboratory test	15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2		1,0	1,0	1,0	1,0	1,0	1,0	
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2		20,0	20,0	20,0	20,0	20,0	20,0	
	Unit cost of sampling kits and local delivery (a + d)	1,2	1,2	1,2	1,2	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5		2,0	2,0	2,0	2,0	2,0	2,0	
	Unit cost of laboratory test in country: reagents, sampling kits and local delivery (a + b + d)	4,2	8,7	16,2	17,2	15,5	3,5	3,5	2,3	1,7	3,5	0,8	1,1	1,1	2,3	12,5	2,0	3,5	9,5		5,5	36,0	30,0	4,5	11,0	427 446	1 759 217
	Unit price of laboratory test at international level (a + c + d + e)	19,4	29,4	54,4	44,4	53,7	9,7	9,7	9,7	7,7	13,7	4,7	5,7	5,7	9,7	23,7	8,7	9,7	18,7		57,0	107,0	92,0	47,0	52,0		
	Cost by Test: Consumables for National Laboratory n * (a + b + d))	197500,16	######	0	6401	0	0	54436,18	90,4	0	0	1140	14263	29,7	0	0	0	0	0	0	9631	0	0	0	0		
	Cost by Test: International Laboratory Analyses (n * (a + c + d + e))	919135,36	######	0	16546	0	0	151980,78	386	0	0	6990	76161	158	0	0	0	0	0	0	99807	0	0	0	0		
	Total Number of Tests (n)	47476	16623	0	373	0	0	15733	40	0	0	1500	13456	28	0	0	0	0	0	0	1751	0	0	0	0	96 980	

Prospective Demand: Cost of Reagents for Scenario 2 (all animal tests and FS molecular tests)



OIE Manual Chapter Number	Laboratory Tests		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																					Other Tests					Cost by Programme	
			Agent Identification				Serology																						
			Parasitology	Bacteriology	Virology	PCR or RT-PCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	gamma interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters	Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)	1	1	1	1	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)	3	7,5	15	16	15	3	3	3	1,8	1,2	3	0,3	0,6	0,6	1,8	12	1,5	3	9		3,5	34	28	2,5	9		
(c)	Average price (in €) for international laboratory test	15	25	50	40	50	6	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2		1,0	1,0	1,0	1,0	1,0	472 146	
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2		20,0	20,0	20,0	20,0	20,0		1 876 917
	Unit cost of sampling kits and local delivery (a + d)		1,2	1,2	1,2	1,2	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5		2,0	2,0	2,0	2,0	2,0	101 980	
	Unit cost of laboratory test in country: reagents, sampling kits and local delivery (a + b + d)		4,2	8,7	16,2	17,2	15,5	3,5	3,5	2,3	1,7	3,5	0,8	1,1	1,1	2,3	12,5	2,0	3,5	9,5		5,5	36,0	30,0	4,5	11,0		
	Unit price of laboratory test at international level (a + c + d + e)		19,4	29,4	54,4	44,4	53,7	9,7	9,7	9,7	7,7	13,7	4,7	5,7	5,7	9,7	23,7	8,7	9,7	18,7		57,0	107,0	92,0	47,0	52,0		
	OIE Listed Animal Diseases (as of May 2013)																											
2.1.5.	Foot and mouth disease								606				376														2 495	7 982
2.1.11.	Paratuberculosis (Johne's disease)								1500																		5 190	14 490
	Bovine Leucosis								1500																			
2.1.13.	Rabies								1330				58	28													4 693	13 335
2.3.4.	Avian influenza					98							7076														9 182	44 397
2.3.12.	Infectious bursal disease (Gumboro disease)								383				469														1 822	6 354
2.3.14.	Newcastle disease					25							71														504	1 511
2.4.3.	Bovine brucellosis					250			80	40			1500														5 797	19 239
2.4.12.	IBR								1500																		5 190	14 490
	Crimean Congo Hemorrhagic Fever Virus (CCHFV)								2500																		996	2 782
2.7.6.	Contagious caprine pleuropneumonia								288																		1 301	3 632
2.7.11.	Peste des petits ruminants								376																		1 246	3 478
2.8.3.	Classical swine fever (hog cholera)								360																			
	Japanese encephalities (JE)								1200																		381	1 063
2.8.7.	Porcine reproductive and respiratory syndrome								110																			
	Other animal diseases (non OIE listed)																											
	General parasitology		43688																				181 742	845 800				
	Specific parasitology (blood)		2329																				9 689	45 089				
	General bacteriology			12322										5406									112 439	392 372				
	Specific bacteriology (BQ, E.coli, Salmonella)			4301																			37 247	126 277				
	General serologies																						0	0				
	Specific serologies Leptospirosis Toxoplasmose)								3000														10 380	28 980				
	General anatomo-pathology																					1751	9 631	99 807				
	Specific anatomo-pathology																						0	0				
	haematalogy		1459																				6 069	28 246				
																							0	0				
																							0	0				
	Food Chemistry and Residues																											
	Other residues or contaminants (Aflatoxin)								1000														3 460	9 660				
																							0	0				
																							0	0				
																							0	0				
	Cost by Test: Consumables for National Laboratory n * (a + b + d))		197500,16	######	0	40721	0	0	64816,18	90,4	0	0	1140	14263	29,7	0	0	0	0	0	0	9631	0	0	0	0		
	Cost by Test: International Laboratory Analyses (n * (a + c + d + e))		919135,36	######	0	######	0	0	180960,78	386	0	0	6990	76161	158	0	0	0	0	0	0	99807	0	0	0	0		
	Total Number of Tests (n)		47476	16623	0	2373	0	0	18733	40	0	0	1500	13456	28	0	0	0	0	0	0	1751	0	0	0	0		

Prospective Demand FS Programme Entirely done in BAFRA laboratory

OIE Manual Chapter Number	Laboratory Tests	OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																						Other Tests						Cost by Programme	
		Agent Identification				Serology																									
		Parasitology	Bacteriology	Virology	PCR or RT-PCR	VN	IPMA	ELISA	CF	AGID	IHA	EBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	*gamma* interferon test	DTH	Anatomical Pathology	HPLC	CPC	Spectrophotometry	Food Microbiology Standard 5 Parameters	Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)	0	0.2	1	16	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		1	0	0	0	0		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)	3	7.5	15	40	15	3	3	1.8	1.2	3	0.3	0.6	0.6	1.8	12	1.5	3	9		3.5	34	28	2.5	9		
(c)	Average price (in €) for international laboratory test	15	25	50	50	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		1.0	1.0	1.0	1.0	1.0	1.0	
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		20.0	20.0	20.0	20.0	20.0	20.0	
Unit cost of sampling kits and local delivery	(a + d)	0.2	0.4	1.2	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		2.0	1.0	1.0	1.0	1.0	1.0	
Unit cost of laboratory test in country: reagents, sampling kits and local delivery	(a + b + d)	3.2	7.9	16.2	16.2	15.5	3.5	3.5	2.3	1.7	3.5	0.8	1.1	1.1	2.3	12.5	2.0	3.5	9.5		5.5	35.0	29.0	3.5	10.0		
Unit price of laboratory test at international level	(a + c + d + e)	18.4	28.6	54.4	43.4	53.7	9.7	9.7	9.7	7.7	13.7	4.7	5.7	5.7	9.7	23.7	8.7	9.7	18.7		57.0	106.0	91.0	46.0	51.0		
Cost by Test: Consumables for National Laboratory	n * (a + b + d))	0	39300	0	32320	0	0	10380	0	0	0	0	0	0	0	0	0	0	0	0	0	350000	290000	875	0	722,875	
Cost by Test: International Laboratory Analyses	(n * (a + c + d + e))	0	142800	0	86720	0	0	28980	0	0	0	0	0	0	0	0	0	0	0	0	0	1E+06	910000	11500	0		2,240,000
Total Number of Tests	(n)	0	5000	0	2000	0	0	3000	0	0	0	0		0	0	0	0	0	0	0	0	10000	10000	250	0	30,250	

Prospective Demand FS Programme without Molecular Tests done in BAFRA laboratory

OIE Manual Chapter Number	Laboratory Tests	OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests																								Cost by Programme		
		Agent Identification				Serology																		Other Tests			Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
		Parasitology	Bacteriology	Virology	PCR or RT-PCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	*gamma* interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters		
(a)	Parametric cost (in €) of sampling kits (needle, tubes, etc.)	1	1	1		0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3		1	1	1	1	1		
(b)	Parametric cost (in €) of consumables (reagents, kits, etc.)	3	7,5	15	16	15	3	3	1,8	1,2	3	1	2	2	6	12	5	6	9		3,5	34	28	2,5			
(c)	Average price (in €) for international laboratory test	15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d)	Parametric cost (in €) of local transport for 2 Kg (25 samples)	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2		0,2	0,2	0,2	0,2	0,2		
(e)	Parametric cost (in €) of international shipment 2 Kg (25 samples)	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2		20,0	20,0	20,0	20,0	20,0		
4	**Unit cost of sampling kits and local delivery** (a + d)	1,2	1,2	1,2	0,2	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5		1,2	1,2	1,2	1,2	1,2		
80	**Unit cost of laboratory test in country: reagents, sampling kits and local delivery** (a + b + d)	4,2	8,7	16,2	16,2	15,5	3,5	3,5	2,3	1,7	3,5	0,8	1,1	1,1	2,3	12,5	2,0	3,5	9,5		4,7	35,2	29,2	3,7	10,2		
	Unit price of laboratory test at international level (a + c + d + e)	19,4	29,4	54,4	43,4	53,7	9,7	9,7	9,7	7,7	13,7	4,7	5,7	5,7	9,7	23,7	8,7	9,7	18,7		56,2	106,2	91,2	46,2	51,2		
	Cost by Test: Consumables for National Laboratory n * (a + b + d))	0	43300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	352000	292000	925	0	**688 225**	
	Cost by Test: International Laboratory Analyses (n * (a + c + d + e))	0	146800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	1E+06	912000	11550	0		**2 132 350**
	Total Number of Tests (n)	0	5000	0		0	0		0	0	0	0		0	0	0	0	0	0	0	0	10000	10000	250	0	**25 250**	

Prospective Demand FS Programme without the Molecular Tests and HPLC/GC in BAFRA laboratory

OIE Manual Chapter Number / Laboratory Tests		Parasitology	Bacteriology	Virology	PCR or RTPCR	VN	IPMA	ELISA	CF	AGID	IHA	BBAT	Agg	PRN / CAT	HI	MAT	FPA	NPLA	*gamma* interferon test	DTH	Anatomical Pathology	HPLC	CPG	Spectrophotometry	Food Microbiology Standard 5 Parameters	Cost by Programme: Consumables for National Laboratory (AB)	Cost by Programme: International Laboratory Analysis (AC)
		OIE Animal Health Diagnostic Tests (as stated in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals) Number of Tests – Agent Identification				Serology															Other Tests					Cost by Programme	
(a) Parametric cost (in €) of sampling kits (needle, tubes, etc.)		1	1	1		0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3		1	1	1	1	1		
(b) Parametric cost (in €) of consumables (reagents, kits, etc.)		3	7,5	15	16	15	3	3	1,8	1,2	3	0,3	0,6	0,6	1,8	12	1,5	3	9		3,5	34	28	2,5	9		
(c) Average price (in €) for international laboratory test		15	25	50	40	50	6	6	6	4	10	1	2	2	6	20	5	6	15		35	85	70	25	30		
(d) Parametric cost (in €) of local transport for 2 Kg (25 samples)	4	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2		0,2	0,2	0,2	0,2	0,2		
(e) Parametric cost (in €) of international shipment 2 Kg (25 samples)	80	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2	3,2		20,0	20,0	20,0	20,0	20,0		
Unit cost of sampling kits and local delivery (a + d)		1,2	1,2	1,2	0,2	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5		1,2	1,2	1,2	1,2	1,2		
Unit cost of laboratory test in country: reagents, sampling kits and local delivery (a + b + d)		4,2	8,7	16,2	16,2	15,5	3,5	3,5	2,3	1,7	3,5	0,8	1,1	1,1	2,3	12,5	2,0	3,5	9,5		4,7	35,2	29,2	3,7	10,2		
Unit price of laboratory test at international level (a + c + d + e)		19,4	29,4	54,4	43,4	53,7	9,7	9,7	9,7	7,7	13,7	4,7	5,7	5,7	9,7	23,7	8,7	9,7	18,7		56,2	106,2	91,2	46,2	51,2		
Cost by Test: Consumables for National Laboratory n * (a + b + d))		0	43300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	925	0	44 225	
Cost by Test: International Laboratory Analyses (n * (a + c + d + e))		0	146800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11550	0		158 350
Total Number of Tests (n)		0	5000	0		0	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0	250	0	5 250	

Annex 3 : Calculation Tool

Budget for AH official programmes only and 3 options for FS tests

Official AH Programmes Only

Proposed Budget for NCAH lab for the Prospective Demand for official AH programs only	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				98 800	28,90%
Buildings and Premises	273 000		0,05	13 650	3,99%
Vehicles	28 000	2	0,2	11 200	3,28%
IT and Office Equipment	1 500	10	0,33	4 950	1,45%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators			0,1	-	0,00%
Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	345 000	1	0,2	69 000	20,18%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				92 251	26,99%
Veterinarians and Other Professionals	4 541	1		4 541	1,33%
Laboratory Technicians	2 571	10		25 710	7,52%
Support Staff	1 000	2		2 000	0,59%
Per diem and travel allowance in the country	60 000	1		60 000	17,55%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				150 788	44,11%
Continuing Education (short courses, etc.)	Salaries	5%		1 613	0,47%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		9 675	2,83%
Reagents and Consumables	105 000	1		105 000	30,72%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		34 500	10,09%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**341 839**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a) Monthly salary of laboratory staff in a reference country in €	214
(b) Monthly salary of similar laboratory staff in the country in €	4 000

(c) Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1,00	16,00		4,64	203,70		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,00	26,00		11,59	252,23		0,00		-
Virology	25	50	15	0,30	0,25	0,45	1,00	51,00		23,18	459,74		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,00	41,00		24,73	264,43		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,30	50,30		23,18	459,04		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,30	6,30	5,00	5	40,38		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,30	4,30		1,85	47,49		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,30	10,30		4,64	100,80		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,30	1,30	0,10	0,1	11,73		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,30	20,30		18,55	98,42		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,30	5,30		2,32	50,55		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,30	15,30		11,59	125,84		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	1,00	36,00		5,41	533,97		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,30	1,00	86,00		26,27	565,11		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		21,64	465,56		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		3,86	206,78		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		37,09	303,52		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	98 800
Staff	92 251
Other Costs (Excluding Reagents & External Services)	45 788
Annual Budget (Excluding Reagents & External Services)	**236 839**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	2,09

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	4,64	1,00	16,00	0	0	21,29	-	0,00%	0,00%
Bacteriology	12,5	11,59	1,00	26,00	4 000	50 000	38,67	154 676	39,62%	44,05%
Virology	25	23,18	1,00	51,00	0	0	76,34	-	0,00%	0,00%
PCR or RTPCR	20	24,73	1,00	41,00	400	8 000	67,46	26 983	6,91%	7,05%
Serology										
VN	25	23,18	0,30	50,30	0	0	75,64	-	0,00%	0,00%
IPMA	3	4,64	0,30	6,30	0	0	11,20	-	0,00%	0,00%
ELISA	3	5	0,30	6,30	15 500	46 500	11,56	179 164	45,90%	40,96%
CF	3	2,78	0,30	6,30	40	120	9,34	374	0,10%	0,11%
AGID	2	1,85	0,30	4,30	0	0	6,32	-	0,00%	0,00%
IFA	5	4,64	0,30	10,30	30	150	15,37	461	0,12%	0,13%
BBAT	0,5	0,1	0,30	1,30	1 500	750	1,44	2 165	0,55%	0,66%
Agg	1	0,93	0,30	2,30	8 000	8 000	3,32	26 531	6,80%	7,05%
PRN/CAT	1	0,93	0,30	2,30	0	0	3,32	-	0,00%	0,00%
HI	3	2,78	0,30	6,30	0	0	9,34	-	0,00%	0,00%
MAT	10	18,55	0,30	20,30	0	0	39,71	-	0,00%	0,00%
FPA	2,5	2,32	0,30	5,30	0	0	7,84	-	0,00%	0,00%
NPLA	3	4,64	0,30	6,30	0	0	11,20	-	0,00%	0,00%
gamma interferon test	7,5	11,59	0,30	15,30	0	0	27,54	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	5,41	1,00	36,00	0	0	42,92	-	0,00%	0,00%
HPLC	42,5	26,27	1,00	86,00	0	0	115,94	-	0,00%	0,00%
CPG	35	21,64	1,00	71,00	0	0	95,66	-	0,00%	0,00%
Spectrophotometry	12,5	3,86	1,00	26,00	0	0	30,94	-	0,00%	0,00%
Food Microbiology Standard 5 Parameters	15	37,09	1,00	31,00	0	0	69,38	-	0,00%	0,00%
Totals					29 470	113 520		390 352	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	375 000	0	12,50	2,50	3,33	21,29	16,00	0	- 21,29	-
Bacteriology	12,5	50 000	4 000	1,67	0,33	0,44	38,67	26,00	0	- 38,67	- 154 676
Virology	25	0	0	0,00	0,00	0,00	76,34	51,00	0	- 76,34	-
PCR or RTPCR	20	8 000	400	0,27	0,05	0,07	67,46	41,00	0	- 67,46	- 26 983
Serology											
VN	25	0	0	0,00	0,00	0,00	75,64	50,30	0	- 75,64	-
IPMA	3	0	0	0,00	0,00	0,00	11,20	6,30	0	- 11,20	-
ELISA	3	46 500	15 500	1,55	0,31	0,41	11,56	6,30	0	- 11,56	- 179 164
CF	3	120	40	0,00	0,00	0,00	9,34	6,30	0	- 9,34	- 374
AGID	2	0	0	0,00	0,00	0,00	6,32	4,30	0	- 6,32	-
IFA	5	150	30	0,01	0,00	0,00	15,37	10,30	0	- 15,37	- 461
BBAT	0,5	750	1 500	0,03	0,01	0,01	1,44	1,30	0	- 1,44	- 2 165
Agg	1	8 000	8 000	0,27	0,05	0,07	3,32	2,30	0	- 3,32	- 26 531
PRN/CAT	1	0	0	0,00	0,00	0,00	3,32	2,30	0	- 3,32	-
HI	3	0	0	0,00	0,00	0,00	9,34	6,30	0	- 9,34	-
MAT	10	0	0	0,00	0,00	0,00	39,71	20,30	0	- 39,71	-
FPA	2,5	0	0	0,00	0,00	0,00	7,84	5,30	0	- 7,84	-
NPLA	3	0	0	0,00	0,00	0,00	11,20	6,30	0	- 11,20	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	27,54	15,30	0	- 27,54	-
Other Tests											
Anatomical Pathology	17,5	0	0	0,00	0,00	0,00	42,92	36,00	0	- 42,92	-
HPLC	42,5	0	0	0,00	0,00	0,00	115,94	86,00	0	- 115,94	-
CPG	35	0	0	0,00	0,00	0,00	95,66	71,00	0	- 95,66	-
Spectrophotometry	12,5	0	0	0,00	0,00	0,00	30,94	26,00	0	- 30,94	-
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	69,38	31,00	0	- 69,38	-
Totals		113 520	29 470	**3,78**	**0,76**	**1,01**					**- 390 352**

Official Programmes for AH with FS Molecular Tests

Proposed Budget for NCAH lab for the Prospective Demand for VS programs only and GMO+ Food ELISA tests	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				106 800	26,64%
Buildings and Premises	273 000		0,05	13 650	3,40%
Vehicles	28 000	2	0,2	11 200	2,79%
IT and Office Equipment	1 500	10	0,33	4 950	1,23%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators			0,1	-	0,00%
Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	385 000	1	0,2	77 000	19,20%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				92 251	23,01%
Veterinarians and Other Professionals	4 541	1		4 541	1,13%
Laboratory Technicians	2 571	10		25 710	6,41%
Support Staff	1 000	2		2 000	0,50%
Per diem and travel allowance in the country	60 000	1		60 000	14,96%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				201 924	50,36%
Continuing Education (short courses, etc.)	Salaries	5%		1 613	0,40%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		9 675	2,41%
Reagents and Consumables	152 136	1		152 136	37,94%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		38 500	9,60%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**400 975**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a)	Monthly salary of laboratory staff in a reference country in €	214
(b)	Monthly salary of similar laboratory staff in the country in €	4 000

(c)	Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1,00	16,00		4,64	203,70		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,00	26,00		11,59	252,23		0,00		-
Virology	25	50	15	0,30	0,25	0,45	1,00	51,00		23,18	459,74		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,00	41,00		24,73	264,43		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,30	50,30		23,18	459,04		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,30	6,30	5,00	5	40,38		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,30	4,30		1,85	47,49		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,30	10,30		4,64	100,80		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,30	1,30	0,10	0,1	11,73		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,30	20,30		18,55	98,42		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,30	5,30		2,32	50,55		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,30	15,30		11,59	125,84		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	1,00	36,00		5,41	533,97		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,30	1,00	86,00		26,27	565,11		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		21,64	465,56		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		3,86	206,78		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		37,09	303,52		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	106 800
Staff	92 251
Other Costs (Excluding Reagents & External Services)	49 788
Annual Budget (Excluding Reagents & External Services)	**248 839**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	1,53

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	4,64	1,00	16,00	0	0	17,12	-	0,00%	0,00%
Bacteriology	12,5	11,59	1,00	26,00	4 000	50 000	31,73	126 916	27,02%	30,77%
Virology	25	23,18	1,00	51,00	0	0	62,46	-	0,00%	0,00%
PCR or RTPCR	20	24,73	1,00	41,00	2 400	48 000	56,35	135 246	28,79%	29,53%
Serology										
VN	25	23,18	0,30	50,30	0	0	61,76	-	0,00%	0,00%
IPMA	3	4,64	0,30	6,30	0	0	9,53	-	0,00%	0,00%
ELISA	3	5	0,30	6,30	18 500	55 500	9,89	183 028	38,97%	34,15%
CF	3	2,78	0,30	6,30	40	120	7,67	307	0,07%	0,07%
AGID	2	1,85	0,30	4,30	0	0	5,21	-	0,00%	0,00%
IFA	5	4,64	0,30	10,30	30	150	12,60	378	0,08%	0,09%
BBAT	0,5	0,1	0,30	1,30	1 500	750	1,17	1 748	0,37%	0,46%
Agg	1	0,93	0,30	2,30	8 000	8 000	2,76	22 089	4,70%	4,92%
PRN/CAT	1	0,93	0,30	2,30	0	0	2,76	-	0,00%	0,00%
HI	3	2,78	0,30	6,30	0	0	7,67	-	0,00%	0,00%
MAT	10	18,55	0,30	20,30	0	0	34,16	-	0,00%	0,00%
FPA	2,5	2,32	0,30	5,30	0	0	6,45	-	0,00%	0,00%
NPLA	3	4,64	0,30	6,30	0	0	9,53	-	0,00%	0,00%
gamma interferon test	7,5	11,59	0,30	15,30	0	0	23,37	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	5,41	1,00	36,00	0	0	33,20	-	0,00%	0,00%
HPLC	42,5	26,27	1,00	86,00	0	0	92,34	-	0,00%	0,00%
CPG	35	21,64	1,00	71,00	0	0	76,23	-	0,00%	0,00%
Spectrophotometry	12,5	3,86	1,00	26,00	0	0	24,00	-	0,00%	0,00%
Food Microbiology Standard 5 Parameters	15	37,09	1,00	31,00	0	0	61,06	-	0,00%	0,00%
Totals					34 470	162 520		469 712	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	375 000	0	12,50	2,50	3,33	17,12	16,00	0	- 17,12	-
Bacteriology	12,5	50 000	4 000	1,67	0,33	0,44	31,73	26,00	0	- 31,73	- 126 916
Virology	25	0	0	0,00	0,00	0,00	62,46	51,00	0	- 62,46	-
PCR or RTPCR	20	48 000	2 400	1,60	0,32	0,43	56,35	41,00	0	- 56,35	- 135 246
Serology											
VN	25	0	0	0,00	0,00	0,00	61,76	50,30	0	- 61,76	-
IPMA	3	0	0	0,00	0,00	0,00	9,53	6,30	0	- 9,53	-
ELISA	3	55 500	18 500	1,85	0,37	0,49	9,89	6,30	0	- 9,89	- 183 028
CF	3	120	40	0,00	0,00	0,00	7,67	6,30	0	- 7,67	- 307
AGID	2	0	0	0,00	0,00	0,00	5,21	4,30	0	- 5,21	-
IFA	5	150	30	0,01	0,00	0,00	12,60	10,30	0	- 12,60	- 378
BBAT	0,5	750	1 500	0,03	0,01	0,01	1,17	1,30	0	- 1,17	- 1 748
Agg	1	8 000	8 000	0,27	0,05	0,07	2,76	2,30	0	- 2,76	- 22 089
PRN/CAT	1	0	0	0,00	0,00	0,00	2,76	2,30	0	- 2,76	-
HI	3	0	0	0,00	0,00	0,00	7,67	6,30	0	- 7,67	-
MAT	10	0	0	0,00	0,00	0,00	34,16	20,30	0	- 34,16	-
FPA	2,5	0	0	0,00	0,00	0,00	6,45	5,30	0	- 6,45	-
NPLA	3	0	0	0,00	0,00	0,00	9,53	6,30	0	- 9,53	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	23,37	15,30	0	- 23,37	-
Other Tests											
Anatomical Pathology	17,5	0	0	0,00	0,00	0,00	33,20	36,00	0	- 33,20	-
HPLC	42,5	0	0	0,00	0,00	0,00	92,34	86,00	0	- 92,34	-
CPG	35	0	0	0,00	0,00	0,00	76,23	71,00	0	- 76,23	-
Spectrophotometry	12,5	0	0	0,00	0,00	0,00	24,00	26,00	0	- 24,00	-
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	61,06	31,00	0	- 61,06	-
Totals		162 520	34 470	**5,42**	**1,08**	**1,44**					**- 469 712**

Budget for BAFRA Performing all FS Tests

BAFRA budget for possible prospective estimated demand for all FS tests	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				124 370	11,28%
Buildings and Premises	568 000		0,05	28 400	2,58%
Vehicles			0,2	-	0,00%
IT and Office Equipment	1 500	6	0,33	2 970	0,27%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators & Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	465 000	1	0,2	93 000	8,43%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				114 300	10,37%
Veterinarians and Other Professionals	4 550	6		27 300	2,48%
Laboratory Technicians	2 580	30		77 400	7,02%
Support Staff	1 200	8		9 600	0,87%
Per diem and travel allowance in the country				-	0,00%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				864 005	78,36%
Continuing Education (short courses, etc.)	Salaries	5%		5 715	0,52%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		34 290	3,11%
Reagents and Consumables	731 000	1		731 000	66,29%
Maintenance, Calibration and Metrology	Laboratory Equipment	20%		93 000	8,43%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**1 102 675**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a) Monthly salary of laboratory staff in a reference country in €	214
(b) Monthly salary of similar laboratory staff in the country in €	4 000

(c) Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1,00	16,00		0	199,06		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,00	26,00		0	240,64		0,00		-
Virology	25	50	15	0,30	0,25	0,45	1,00	51,00		0	436,56		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,00	41,00		0	239,70		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,30	50,30		0	435,86		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,30	6,30		0	35,38		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,30	6,30		0	35,38		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,30	6,30		0	68,31		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,30	4,30		0	45,64		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,30	10,30		0	96,16		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,30	1,30		0	11,63		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0	22,97		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0	22,97		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,30	6,30		0	68,31		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,30	20,30		0	79,87		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,30	5,30		0	48,23		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,30	6,30		0	35,38		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,30	15,30		0	114,25		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	1,00	36,00		0	528,56		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,20	1,00	86,00		0	379,96		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		0	443,92		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		0	202,92		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		0	284,97		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	124 370
Staff	114 300
Other Costs (Excluding Reagents & External Services)	133 005
Annual Budget (Excluding Reagents & External Services)	**371 675**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	0,42

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	0	1,00	16,00		0	4,13	-	0,00%	0,00%
Bacteriology	12,5	0	1,00	26,00	5 000	62 500	6,22	31 112	7,78%	7,03%
Virology	25	0	1,00	51,00		0	11,44	-	0,00%	0,00%
PCR or RTPCR	20	0	1,00	41,00	2 000	40 000	9,36	18 712	4,68%	4,50%
Serology										
VN	25	0	0,30	50,30		0	10,74	-	0,00%	0,00%
IPMA	3	0	0,30	6,30		0	1,55	-	0,00%	0,00%
ELISA	3	0	0,30	6,30	3 000	9 000	1,55	4 660	1,17%	1,01%
CF	3	0	0,30	6,30		0	1,55	-	0,00%	0,00%
AGID	2	0	0,30	4,30		0	1,14	-	0,00%	0,00%
IFA	5	0	0,30	10,30		0	2,39	-	0,00%	0,00%
BBAT	0,5	0	0,30	1,30		0	0,51	-	0,00%	0,00%
Agg	1	0	0,30	2,30		0	0,72	-	0,00%	0,00%
PRN/CAT	1	0	0,30	2,30		0	0,72	-	0,00%	0,00%
HI	3	0	0,30	6,30		0	1,55	-	0,00%	0,00%
MAT	10	0	0,30	20,30		0	4,48	-	0,00%	0,00%
FPA	2,5	0	0,30	5,30		0	1,34	-	0,00%	0,00%
NPLA	3	0	0,30	6,30		0	1,55	-	0,00%	0,00%
gamma interferon test	7,5	0	0,30	15,30		0	3,43	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	0	1,00	36,00		0	8,31	-	0,00%	0,00%
HPLC	42,5	0	1,00	86,00	10 000	425 000	18,76	187 560	46,91%	47,77%
CPG	35	0	1,00	71,00	10 000	350 000	15,62	156 226	39,07%	39,34%
Spectrophotometry	12,5	0	1,00	26,00	250	3 125	6,22	1 556	0,39%	0,35%
Food Microbiology Standard 5 Parameters	15	0	1,00	31,00		0	7,27	-	0,00%	0,00%
Totals					30 250	889 625		399 825	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	0	0	0,00	0,00	0,00	4,13	16,00	0	- 4,13	-
Bacteriology	12,5	62 500	5 000	2,08	0,42	0,56	6,22	26,00	0	- 6,22	- 31 112
Virology	25	0	0	0,00	0,00	0,00	11,44	51,00	0	- 11,44	-
PCR or RTPCR	20	40 000	2 000	1,33	0,27	0,36	9,36	41,00	0	- 9,36	- 18 712
Serology											
VN	25	0	0	0,00	0,00	0,00	10,74	50,30	0	- 10,74	-
IPMA	3	0	0	0,00	0,00	0,00	1,55	6,30	0	- 1,55	-
ELISA	3	9 000	3 000	0,30	0,06	0,08	1,55	6,30	0	- 1,55	- 4 660
CF	3	0	0	0,00	0,00	0,00	1,55	6,30	0	- 1,55	-
AGID	2	0	0	0,00	0,00	0,00	1,14	4,30	0	- 1,14	-
IFA	5	0	0	0,00	0,00	0,00	2,39	10,30	0	- 2,39	-
BBAT	0,5	0	0	0,00	0,00	0,00	0,51	1,30	0	- 0,51	-
Agg	1	0	0	0,00	0,00	0,00	0,72	2,30	0	- 0,72	-
PRN/CAT	1	0	0	0,00	0,00	0,00	0,72	2,30	0	- 0,72	-
HI	3	0	0	0,00	0,00	0,00	1,55	6,30	0	- 1,55	-
MAT	10	0	0	0,00	0,00	0,00	4,48	20,30	0	- 4,48	-
FPA	2,5	0	0	0,00	0,00	0,00	1,34	5,30	0	- 1,34	-
NPLA	3	0	0	0,00	0,00	0,00	1,55	6,30	0	- 1,55	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	3,43	15,30	0	- 3,43	-
Other Tests											
Anatomical Pathology	17,5	0	0	0,00	0,00	0,00	8,31	36,00	0	- 8,31	-
HPLC	42,5	425 000	10 000	14,17	2,83	3,78	18,76	86,00	0	- 18,76	- 187 560
CPG	35	350 000	10 000	11,67	2,33	3,11	15,62	71,00	0	- 15,62	- 156 226
Spectrophotometry	12,5	3 125	250	0,10	0,02	0,03	6,22	26,00	0	- 6,22	- 1 556
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	7,27	31,00	0	- 7,27	-
Totals		889 625	30 250	**29,65**	**5,93**	**7,91**					**- 399 825**

BAFRA Performing Bacteriological Tests and HPLC/GC (Molecular outsourced to NCAH)

BAFRA budget for possible prospective estimated demand for BAFRA outsourcing ELISA and PCR	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				112 370	10,85%
Buildings and Premises	568 000		0,05	28 400	2,74%
Vehicles			0,2	-	0,00%
IT and Office Equipment	1 500	6	0,33	2 970	0,29%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators & Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	405 000	1	0,2	81 000	7,82%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				114 300	11,04%
Veterinarians and Other Professionals	4 550	6		27 300	2,64%
Laboratory Technicians	2 580	30		77 400	7,47%
Support Staff	1 200	8		9 600	0,93%
Per diem and travel allowance in the country				-	0,00%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				809 005	78,11%
Continuing Education (short courses, etc.)	Salaries	5%		5 715	0,55%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		34 290	3,31%
Reagents and Consumables	688 000	1		688 000	66,43%
Maintenance, Calibration and Metrology	Laboratory Equipment	20%		81 000	7,82%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**1 035 675**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a) Monthly salary of laboratory staff in a reference country in €	214
(b) Monthly salary of similar laboratory staff in the country in €	4 000

(c) Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70		15,00		4,64	202,70		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	0,00	25,00		11,59	251,23		0,00		-
Virology	25	50	15	0,30	0,25	0,45	0,20	50,20		23,18	458,94		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	0,20	40,20		24,73	263,63		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,20	50,20		23,18	458,94		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,20	6,20		4,64	39,92		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,20	6,20	5,00	5	40,28		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,20	6,20		2,78	70,99		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,20	4,20		1,85	47,39		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,20	10,20		4,64	100,70		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,20	1,20	0,10	0,1	11,63		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,20	2,20		0,93	23,80		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,20	2,20		0,93	23,80		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,20	6,20		2,78	70,99		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,20	20,20		18,55	98,32		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,20	5,20		2,32	50,45		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,20	6,20		4,64	39,92		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,20	15,20		11,59	125,74		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	1,00	36,00		5,41	533,97		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,20	1,00	86,00		26,27	406,23		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		21,64	465,56		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		3,86	206,78		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		37,09	303,52		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	112 370
Staff	114 300
Other Costs (Excluding Reagents & External Services)	121 005
Annual Budget (Excluding Reagents & External Services)	**347 675**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	0,41

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	4,64	0,00	15,00		0	7,74	-	0,00%	0,00%
Bacteriology	12,5	11,59	0,00	25,00	5 000	62 500	16,76	83 799	9,25%	7,43%
Virology	25	23,18	0,20	50,20		0	33,72	-	0,00%	0,00%
PCR or RTPCR	20	24,73	0,20	40,20		0	33,20	-	0,00%	0,00%
Serology										
VN	25	23,18	0,20	50,20		0	33,72	-	0,00%	0,00%
IPMA	3	4,64	0,20	6,20		0	6,08	-	0,00%	0,00%
ELISA	3	5	0,20	6,20		0	6,44	-	0,00%	0,00%
CF	3	2,78	0,20	6,20		0	4,22	-	0,00%	0,00%
AGID	2	1,85	0,20	4,20		0	2,88	-	0,00%	0,00%
IFA	5	4,64	0,20	10,20		0	6,91	-	0,00%	0,00%
BBAT	0,5	0,1	0,20	1,20		0	0,51	-	0,00%	0,00%
Agg	1	0,93	0,20	2,20		0	1,54	-	0,00%	0,00%
PRN/CAT	1	0,93	0,20	2,20		0	1,54	-	0,00%	0,00%
HI	3	2,78	0,20	6,20		0	4,22	-	0,00%	0,00%
MAT	10	18,55	0,20	20,20		0	22,89	-	0,00%	0,00%
FPA	2,5	2,32	0,20	5,20		0	3,55	-	0,00%	0,00%
NPLA	3	4,64	0,20	6,20		0	6,08	-	0,00%	0,00%
gamma interferon test	7,5	11,59	0,20	15,20		0	14,89	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	5,41	1,00	36,00		0	13,65	-	0,00%	0,00%
HPLC	42,5	26,27	1,00	86,00	10 000	425 000	44,85	448 476	49,50%	50,56%
CPG	35	21,64	1,00	71,00	10 000	350 000	37,12	371 157	40,97%	41,64%
Spectrophotometry	12,5	3,86	1,00	26,00	250	3 125	10,03	2 507	0,28%	0,37%
Food Microbiology Standard 5 Parameters	15	37,09	1,00	31,00		0	44,29	-	0,00%	0,00%
Totals					25 250	840 625		905 940	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	0	0	0,00	0,00	0,00	7,74	15,00	0	- 7,74	-
Bacteriology	12,5	62 500	5 000	2,08	0,42	0,56	16,76	25,00	0	- 16,76	- 83 799
Virology	25	0	0	0,00	0,00	0,00	33,72	50,20	0	- 33,72	-
PCR or RTPCR	20	0	0	0,00	0,00	0,00	33,20	40,20	0	- 33,20	-
Serology											
VN	25	0	0	0,00	0,00	0,00	33,72	50,20	0	- 33,72	-
IPMA	3	0	0	0,00	0,00	0,00	6,08	6,20	0	- 6,08	-
ELISA	3	0	0	0,00	0,00	0,00	6,44	6,20	0	- 6,44	-
CF	3	0	0	0,00	0,00	0,00	4,22	6,20	0	- 4,22	-
AGID	2	0	0	0,00	0,00	0,00	2,88	4,20	0	- 2,88	-
IFA	5	0	0	0,00	0,00	0,00	6,91	10,20	0	- 6,91	-
BBAT	0,5	0	0	0,00	0,00	0,00	0,51	1,20	0	- 0,51	-
Agg	1	0	0	0,00	0,00	0,00	1,54	2,20	0	- 1,54	-
PRN/CAT	1	0	0	0,00	0,00	0,00	1,54	2,20	0	- 1,54	-
HI	3	0	0	0,00	0,00	0,00	4,22	6,20	0	- 4,22	-
MAT	10	0	0	0,00	0,00	0,00	22,89	20,20	0	- 22,89	-
FPA	2,5	0	0	0,00	0,00	0,00	3,55	5,20	0	- 3,55	-
NPLA	3	0	0	0,00	0,00	0,00	6,08	6,20	0	- 6,08	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	14,89	15,20	0	- 14,89	-
Other Tests											
Anatomical Pathology	17,5	0	0	0,00	0,00	0,00	13,65	36,00	0	- 13,65	-
HPLC	42,5	425 000	10 000	14,17	2,83	3,78	44,85	86,00	0	- 44,85	- 448 476
CPG	35	350 000	10 000	11,67	2,33	3,11	37,12	71,00	0	- 37,12	- 371 157
Spectrophotometry	12,5	3 125	250	0,10	0,02	0,03	10,03	26,00	0	- 10,03	- 2 507
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	44,29	31,00	0	- 44,29	-
Totals		840 625	25 250	**28,02**	**5,60**	**7,47**					**- 905 940**

BAFRA Outsourcing Molecular Tests to NCAH and HPLC/GC to International Laboratories
(low cost for international services)

BAFRA possible prospective estimated demand for Microbiological and AAS tests only	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				59 390	14,82%
Buildings and Premises	568 000		0,05	28 400	7,09%
Vehicles			0,2	-	0,00%
IT and Office Equipment	1 500	2	0,33	990	0,25%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators & Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	150 000	1	0,2	30 000	7,49%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				12 880	3,21%
Veterinarians and Other Professionals	4 550	2		9 100	2,27%
Laboratory Technicians	2 580	1		2 580	0,64%
Support Staff	1 200	1		1 200	0,30%
Per diem and travel allowance in the country				-	0,00%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				313 508	78,22%
Continuing Education (short courses, etc.)	Salaries	5%		644	0,16%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		3 864	0,96%
Reagents and Consumables	44 000	1		44 000	10,98%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		15 000	3,74%
External Services (Reference Laboratory, External Analysis, Transport, etc.)	250 000			250 000	62,38%
Other				-	0,00%
Total				**400 778**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a) Monthly salary of laboratory staff in a reference country in €	214	
(b) Monthly salary of similar laboratory staff in the country in €	4 000	

(c) Exchange rate of 1 € to national or chosen currency	70	

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1	16,00		0,45	199,51		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,00	26,00		1,13	241,77		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,00	41,00		2,41	242,11		0,00		-
Serology															
ELISA	3	6	3	0,50	0,20	0,30	0,30	6,30	5,00	5	40,38		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,30	6,30		0,27	68,58		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,30	10,30		0,45	96,61		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,30	1,30	0,10	0,1	11,73		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,09	23,06		0,00		-
Other Tests															
HPLC	42,5	85	17	0,20	0,60	0,20	1,00	86,00		2,56	382,52		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		2,11	446,03		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		0,38	203,30		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		3,61	286,78		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	59 390
Staff	12 880
Other Costs (Excluding Reagents & External Services)	19 508
Annual Budget (Excluding Reagents & External Services)	**91 778**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	1,40

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	0,45	1,00	16,00		0	11,94	-	0,00%	0,00%
Bacteriology	12,5	1,13	1,00	26,00	5 000	62 500	19,61	98 058	95,41%	95,24%
Virology	25	2,26	0,20	50,20		0	37,42	-	0,00%	0,00%
PCR or RTPCR	20	2,41	0,20	41,00		0	30,58	-	0,00%	0,00%
Serology										
VN	25	0,2	0,20	50,20		0	35,36	-	0,00%	0,00%
IPMA	3	0,2	0,20	6,20		0	4,60	-	0,00%	0,00%
ELISA	3	5	0,30	6,30		0	9,50	-	0,00%	0,00%
CF	3	0,27	0,30	6,30		0	4,77	-	0,00%	0,00%
AGID	2	0,18	0,30	4,30		0	3,28	-	0,00%	0,00%
IFA	5	0,45	0,30	10,30		0	7,74	-	0,00%	0,00%
BBAT	0,5	0,1	0,30	1,30		0	1,10	-	0,00%	0,00%
Agg	1	0,09	0,30	2,30		0	1,79	-	0,00%	0,00%
PRN/CAT	1	0,2	0,20	2,20		0	1,80	-	0,00%	0,00%
HI	3	0,2	0,20	6,20		0	4,60	-	0,00%	0,00%
MAT	10	0,2	0,20	20,20		0	14,39	-	0,00%	0,00%
FPA	2,5	0,2	0,20	5,20		0	3,90	-	0,00%	0,00%
NPLA	3	0,2	0,20	6,20		0	4,60	-	0,00%	0,00%
gamma interferon test	7,5	0,2	0,20	15,20		0	10,89	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	1	1,00	36,00		0	26,47	-	0,00%	0,00%
HPLC	42,5	2,56	1,00	86,00		0	63,00	-	0,00%	0,00%
CPG	35	2,11	1,00	71,00		0	52,06	-	0,00%	0,00%
Spectrophotometry	12,5	0,38	1,00	26,00	250	3 125	18,86	4 715	4,59%	4,76%
Food Microbiology Standard 5 Parameters	15	3,61	1,00	31,00		0	25,59	-	0,00%	0,00%
Totals					5 250	65 625		102 773	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	0	0	0,00	0,00	0,00	11,94	16,00	0	- 11,94	-
Bacteriology	12,5	62 500	5 000	2,08	0,42	0,56	19,61	26,00	0	- 19,61	- 98 058
Virology	25	0	0	0,00	0,00	0,00	37,42	50,20	0	- 37,42	-
PCR or RTPCR	20	0	0	0,00	0,00	0,00	30,58	41,00	0	- 30,58	-
Serology											
VN	25	0	0	0,00	0,00	0,00	35,36	50,20	0	- 35,36	-
IPMA	3	0	0	0,00	0,00	0,00	4,60	6,20	0	- 4,60	-
ELISA	3	0	0	0,00	0,00	0,00	9,50	6,30	0	- 9,50	-
CF	3	0	0	0,00	0,00	0,00	4,77	6,30	0	- 4,77	-
AGID	2	0	0	0,00	0,00	0,00	3,28	4,30	0	- 3,28	-
IFA	5	0	0	0,00	0,00	0,00	7,74	10,30	0	- 7,74	-
BBAT	0,5	0	0	0,00	0,00	0,00	1,10	1,30	0	- 1,10	-
Agg	1	0	0	0,00	0,00	0,00	1,79	2,30	0	- 1,79	-
PRN/CAT	1	0	0	0,00	0,00	0,00	1,80	2,20	0	- 1,80	-
HI	3	0	0	0,00	0,00	0,00	4,60	6,20	0	- 4,60	-
MAT	10	0	0	0,00	0,00	0,00	14,39	20,20	0	- 14,39	-
FPA	2,5	0	0	0,00	0,00	0,00	3,90	5,20	0	- 3,90	-
NPLA	3	0	0	0,00	0,00	0,00	4,60	6,20	0	- 4,60	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	10,89	15,20	0	- 10,89	-
Other Tests											
Anatomical Pathology	17,5	0	0	0,00	0,00	0,00	26,47	36,00	0	- 26,47	-
HPLC	42,5	0	0	0,00	0,00	0,00	63,00	86,00	0	- 63,00	-
CPG	35	0	0	0,00	0,00	0,00	52,06	71,00	0	- 52,06	-
Spectrophotometry	12,5	3 125	250	0,10	0,02	0,03	18,86	26,00	0	- 18,86	- 4 715
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	25,59	31,00	0	- 25,59	-
Totals		65 625	5 250	**2,19**	**0,44**	**0,58**					**- 102 773**

BAFRA Outsourcing Molecular Tests to NCAH and HPLC/GC to International Laboratories
(high cost for international services)

BAFRA possible prospective estimated demand for Microbiological and AAS tests only	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				59 390	6,98%
Buildings and Premises	568 000		0,05	28 400	3,34%
Vehicles			0,2	-	0,00%
IT and Office Equipment	1 500	2	0,33	990	0,12%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators & Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	150 000	1	0,2	30 000	3,53%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				12 880	1,51%
Veterinarians and Other Professionals	4 550	2		9 100	1,07%
Laboratory Technicians	2 580	1		2 580	0,30%
Support Staff	1 200	1		1 200	0,14%
Per diem and travel allowance in the country				-	0,00%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				763 508	89,74%
Continuing Education (short courses, etc.)	Salaries	5%		644	0,08%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		3 864	0,45%
Reagents and Consumables	44 000	1		44 000	5,17%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		15 000	1,76%
External Services (Reference Laboratory, External Analysis, Transport, etc.)	700 000			700 000	82,28%
Other				-	0,00%
Total				**850 778**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a)	Monthly salary of laboratory staff in a reference country in €	214
(b)	Monthly salary of similar laboratory staff in the country in €	6 000

(c)	Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	0,2	15,20		0,45	296,84		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	0,20	25,20		1,13	357,80		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	0,20	40,20		2,41	353,46		0,00		-
Serology															
ELISA	3	6	3	0,50	0,20	0,30	0,20	6,20	5,00	5	57,11		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,20	6,20		0,27	102,12		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,20	10,20		0,45	143,24		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,20	1,20	0,10	0,1	17,24		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,20	2,20		0,09	34,17		0,00		-
Other Tests															
HPLC	42,5	85	17	0,20	0,60	0,20	1,00	86,00		2,56	541,40		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		2,11	642,30		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		0,38	296,75		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		3,61	426,97		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	59 390
Staff	12 880
Other Costs (Excluding Reagents & External Services)	19 508
Annual Budget (Excluding Reagents & External Services)	**91 778**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	1,40

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	0,45	0,20	15,20		0	11,14	-	0,00%	0,00%
Bacteriology	12,5	1,13	0,20	25,20	5 000	62 500	18,81	94 058	95,23%	95,24%
Virology	25	2,26	0,20	50,20		0	37,42	-	0,00%	0,00%
PCR or RTPCR	20	2,41	0,20	40,20		0	30,58	-	0,00%	0,00%
Serology										
VN	25	0,2	0,20	50,20		0	35,36	-	0,00%	0,00%
IPMA	3	0,2	0,20	6,20		0	4,60	-	0,00%	0,00%
ELISA	3	5	0,20	6,20		0	9,40	-	0,00%	0,00%
CF	3	0,27	0,20	6,20		0	4,67	-	0,00%	0,00%
AGID	2	0,18	0,20	4,20		0	3,18	-	0,00%	0,00%
IFA	5	0,45	0,20	10,20		0	7,64	-	0,00%	0,00%
BBAT	0,5	0,1	0,20	1,20		0	1,00	-	0,00%	0,00%
Agg	1	0,09	0,20	2,20		0	1,69	-	0,00%	0,00%
PRN/CAT	1	0,2	0,20	2,20		0	1,80	-	0,00%	0,00%
HI	3	0,2	0,20	6,20		0	4,60	-	0,00%	0,00%
MAT	10	0,2	0,20	20,20		0	14,39	-	0,00%	0,00%
FPA	2,5	0,2	0,20	5,20		0	3,90	-	0,00%	0,00%
NPLA	3	0,2	0,20	6,20		0	4,60	-	0,00%	0,00%
gamma interferon test	7,5	0,2	0,20	15,20		0	10,89	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	1	1,00	36,00		0	26,47	-	0,00%	0,00%
HPLC	42,5	2,56	1,00	86,00		0	63,00	-	0,00%	0,00%
CPG	35	2,11	1,00	71,00		0	52,06	-	0,00%	0,00%
Spectrophotometry	12,5	0,38	1,00	26,00	250	3 125	18,86	4 715	4,77%	4,76%
Food Microbiology Standard 5 Parameters	15	3,61	1,00	31,00		0	25,59	-	0,00%	0,00%
Totals					5 250	65 625		98 773	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	0	0	0,00	0,00	0,00	11,14	15,20	0	- 11,14	-
Bacteriology	12,5	62 500	5 000	2,08	0,42	0,56	18,81	25,20	0	- 18,81	- 94 058
Virology	25	0	0	0,00	0,00	0,00	37,42	50,20	0	- 37,42	-
PCR or RTPCR	20	0	0	0,00	0,00	0,00	30,58	40,20	0	- 30,58	-
Serology											
VN	25	0	0	0,00	0,00	0,00	35,36	50,20	0	- 35,36	-
IPMA	3	0	0	0,00	0,00	0,00	4,60	6,20	0	- 4,60	-
ELISA	3	0	0	0,00	0,00	0,00	9,40	6,20	0	- 9,40	-
CF	3	0	0	0,00	0,00	0,00	4,67	6,20	0	- 4,67	-
AGID	2	0	0	0,00	0,00	0,00	3,18	4,20	0	- 3,18	-
IFA	5	0	0	0,00	0,00	0,00	7,64	10,20	0	- 7,64	-
BBAT	0,5	0	0	0,00	0,00	0,00	1,00	1,20	0	- 1,00	-
Agg	1	0	0	0,00	0,00	0,00	1,69	2,20	0	- 1,69	-
PRN/CAT	1	0	0	0,00	0,00	0,00	1,80	2,20	0	- 1,80	-
HI	3	0	0	0,00	0,00	0,00	4,60	6,20	0	- 4,60	-
MAT	10	0	0	0,00	0,00	0,00	14,39	20,20	0	- 14,39	-
FPA	2,5	0	0	0,00	0,00	0,00	3,90	5,20	0	- 3,90	-
NPLA	3	0	0	0,00	0,00	0,00	4,60	6,20	0	- 4,60	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	10,89	15,20	0	- 10,89	-
Other Tests											
Anatomical Pathology	17,5	0	0	0,00	0,00	0,00	26,47	36,00	0	- 26,47	-
HPLC	42,5	0	0	0,00	0,00	0,00	63,00	86,00	0	- 63,00	-
CPG	35	0	0	0,00	0,00	0,00	52,06	71,00	0	- 52,06	-
Spectrophotometry	12,5	3 125	250	0,10	0,02	0,03	18,86	26,00	0	- 18,86	- 4 715
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	25,59	31,00	0	- 25,59	-
Totals		65 625	5 250	**2,19**	**0,44**	**0,58**					**- 98 773**

NCAH Performing all AH Tests

Budget for NCAH in Scenario 2 NCAH performing all tests	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				106 800	14,40%
Buildings and Premises	273 000		0,05	13 650	1,84%
Vehicles	28 000	2	0,2	11 200	1,51%
IT and Office Equipment	1 500	10	0,33	4 950	0,67%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators			0,1	-	0,00%
Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	385 000	1	0,2	77 000	10,38%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				140 726	18,97%
Veterinarians and Other Professionals	4 541	4		18 164	2,45%
Laboratory Technicians	2 571	22		56 562	7,63%
Support Staff	1 000	6		6 000	0,81%
Per diem and travel allowance in the country	60 000	1		60 000	8,09%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				494 254	66,63%
Continuing Education (short courses, etc.)	Salaries	5%		4 036	0,54%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		24 218	3,26%
Reagents and Consumables	427 500	1		427 500	57,63%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		38 500	5,19%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**741 780**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a) Monthly salary of laboratory staff in a reference country in €	214
(b) Monthly salary of similar laboratory staff in the country in €	4 000

(c) Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1,00	16,00		4,64	203,70		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,00	26,00		11,59	252,23		0,00		-
Virology	25	50	15	0,30	0,25	0,45	1,00	51,00		23,18	459,74		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,00	41,00		24,73	264,43		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,30	50,30		23,18	459,04		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,30	6,30	5,00	5	40,38		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,30	4,30		1,85	47,49		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,30	10,30		4,64	100,80		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,30	1,30	0,10	0,1	11,73		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,30	20,30		18,55	98,42		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,30	5,30		2,32	50,55		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,30	15,30		11,59	125,84		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	1,00	36,00		5,41	533,97		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,30	1,00	86,00		26,27	565,11		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		21,64	465,56		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		3,86	206,78		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		37,09	303,52		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	106 800
Staff	140 726
Other Costs (Excluding Reagents & External Services)	66 754
Annual Budget (Excluding Reagents & External Services)	**314 280**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	0,46

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	4,64	1,00	16,00	49 500	371 250	9,12	451 264	48,61%	54,76%
Bacteriology	12,5	11,59	1,00	26,00	17 200	215 000	18,38	316 206	34,06%	31,71%
Virology	25	23,18	1,00	51,00	0	0	35,77	-	0,00%	0,00%
PCR or RTPCR	20	24,73	1,00	41,00	400	8 000	35,00	14 000	1,51%	1,18%
Serology										
VN	25	23,18	0,30	50,30	0	0	35,07	-	0,00%	0,00%
IPMA	3	4,64	0,30	6,30	0	0	6,33	-	0,00%	0,00%
ELISA	3	5	0,30	6,30	15 500	46 500	6,69	103 704	11,17%	6,86%
CF	3	2,78	0,30	6,30	40	120	4,47	179	0,02%	0,02%
AGID	2	1,85	0,30	4,30	0	0	3,08	-	0,00%	0,00%
IFA	5	4,64	0,30	10,30	30	150	7,26	218	0,02%	0,02%
BBAT	0,5	0,1	0,30	1,30	1 500	750	0,63	948	0,10%	0,11%
Agg	1	0,93	0,30	2,30	13 500	13 500	1,69	22 863	2,46%	1,99%
PRN/CAT	1	0,93	0,30	2,30	0	0	1,69	-	0,00%	0,00%
HI	3	2,78	0,30	6,30	0	0	4,47	-	0,00%	0,00%
MAT	10	18,55	0,30	20,30	0	0	23,49	-	0,00%	0,00%
FPA	2,5	2,32	0,30	5,30	0	0	3,78	-	0,00%	0,00%
NPLA	3	4,64	0,30	6,30	0	0	6,33	-	0,00%	0,00%
gamma interferon test	7,5	11,59	0,30	15,30	0	0	15,37	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	5,41	1,00	36,00	1 300	22 750	14,52	18 878	2,03%	3,36%
HPLC	42,5	26,27	1,00	86,00	0	0	46,97	-	0,00%	0,00%
CPG	35	21,64	1,00	71,00	0	0	38,86	-	0,00%	0,00%
Spectrophotometry	12,5	3,86	1,00	26,00	0	0	10,65	-	0,00%	0,00%
Food Microbiology Standard 5 Parameters	15	37,09	1,00	31,00	0	0	45,04	-	0,00%	0,00%
Totals					98 970	678 020		928 260	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	**Estimated Number of Laboratory Technicians** (z) = w / 30000	**Estimated Number of Laboratory Managers** (aa) = z / 5	**Estimated Number of Support Staff** (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	**Benefit (+) or Subsidies (-) per Test** (cc) = s - x	**Total Benefit (+) or Subsidies (-)** (dd) = cc * v
Agent Identification											
Parasitology	7,5	375 000	49 500	12,50	2,50	3,33	9,12	16,00	0	- 9,12	- 451 264
Bacteriology	12,5	215 000	17 200	7,17	1,43	1,91	18,38	26,00	0	- 18,38	- 316 206
Virology	25	0	0	0,00	0,00	0,00	35,77	51,00	0	- 35,77	-
PCR or RTPCR	20	8 000	400	0,27	0,05	0,07	35,00	41,00	0	- 35,00	- 14 000
Serology											
VN	25	0	0	0,00	0,00	0,00	35,07	50,30	0	- 35,07	-
IPMA	3	0	0	0,00	0,00	0,00	6,33	6,30	0	- 6,33	-
ELISA	3	46 500	15 500	1,55	0,31	0,41	6,69	6,30	0	- 6,69	- 103 704
CF	3	120	40	0,00	0,00	0,00	4,47	6,30	0	- 4,47	- 179
AGID	2	0	0	0,00	0,00	0,00	3,08	4,30	0	- 3,08	-
IFA	5	150	30	0,01	0,00	0,00	7,26	10,30	0	- 7,26	- 218
BBAT	0,5	750	1 500	0,03	0,01	0,01	0,63	1,30	0	- 0,63	- 948
Agg	1	13 500	13 500	0,45	0,09	0,12	1,69	2,30	0	- 1,69	- 22 863
PRN/CAT	1	0	0	0,00	0,00	0,00	1,69	2,30	0	- 1,69	-
HI	3	0	0	0,00	0,00	0,00	4,47	6,30	0	- 4,47	-
MAT	10	0	0	0,00	0,00	0,00	23,49	20,30	0	- 23,49	-
FPA	2,5	0	0	0,00	0,00	0,00	3,78	5,30	0	- 3,78	-
NPLA	3	0	0	0,00	0,00	0,00	6,33	6,30	0	- 6,33	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	15,37	15,30	0	- 15,37	-
Other Tests											
Anatomical Pathology	17,5	22 750	1 300	0,76	0,15	0,20	14,52	36,00	0	- 14,52	- 18 878
HPLC	42,5	0	0	0,00	0,00	0,00	46,97	86,00	0	- 46,97	-
CPG	35	0	0	0,00	0,00	0,00	38,86	71,00	0	- 38,86	-
Spectrophotometry	12,5	0	0	0,00	0,00	0,00	10,65	26,00	0	- 10,65	-
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	45,04	31,00	0	- 45,04	-
Totals		678 020	98 970	**22,60**	**4,52**	**6,03**					**- 928 260**

All AH Tests Performed in the Current Context of 29 Laboratories

Scenario 2 Proposed Budget for prospective demand AH only in existing structure total 29 labs	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				505 977	35,99%
Buildings and Premises	2 100 535		0,05	105 027	7,47%
Vehicles	28 000	7	0,2	39 200	2,79%
IT and Office Equipment	1 500	50	0,33	24 750	1,76%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators			0,1	-	0,00%
Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	1 685 000	1	0,2	337 000	23,97%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				240 788	17,13%
Veterinarians and Other Professionals	4 541	11		49 951	3,55%
Laboratory Technicians	2 571	47		120 837	8,59%
Support Staff	1 000	10		10 000	0,71%
Per diem and travel allowance in the country	60 000	1		60 000	4,27%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				659 276	46,89%
Continuing Education (short courses, etc.)	Salaries	5%		9 039	0,64%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		54 236	3,86%
Reagents and Consumables	427 500	1		427 500	30,40%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		168 500	11,98%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**1 406 041**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a) Monthly salary of laboratory staff in a reference country in €	214
(b) Monthly salary of similar laboratory staff in the country in €	6 000

(c) Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1,20	16,20		4,64	302,03		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,20	26,20		11,59	369,26		0,00		-
Virology	25	50	15	0,30	0,25	0,45	1,20	51,20		23,18	670,22		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,20	41,20		24,73	376,78		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,50	50,50		23,18	669,52		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,50	6,50		4,64	57,05		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,50	6,50	5,00	5	57,41		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,50	6,50		2,78	104,93		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,50	4,50		1,85	70,12		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,50	10,50		4,64	147,73		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,50	1,50	0,10	0,1	17,54		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,50	2,50		0,93	35,31		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,50	2,50		0,93	35,31		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,50	6,50		2,78	104,93		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,50	20,50		18,55	136,00		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,50	5,50		2,32	74,11		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,50	6,50		4,64	57,05		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,50	15,50		11,59	182,11		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	2,00	37,00		5,41	796,66		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,30	2,00	87,00		26,27	804,42		0,00		-
CPG	35	70	14	0,20	0,60	0,30	2,00	72,00		21,64	662,83		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	2,00	27,00		3,86	301,23		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	2,00	32,00		37,09	444,71		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	505 977
Staff	240 788
Other Costs (Excluding Reagents & External Services)	231 776
Annual Budget (Excluding Reagents & External Services)	**978 541**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	1,44

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	4,64	1,20	16,20	49 500	371 250	16,66	824 880	51,13%	54,76%
Bacteriology	12,5	11,59	1,20	26,20	17 200	215 000	30,83	530 283	32,87%	31,71%
Virology	25	23,18	1,20	51,20	0	0	60,46	-	0,00%	0,00%
PCR or RTPCR	20	24,73	1,20	41,20	400	8 000	54,79	21 918	1,36%	1,18%
Serology										
VN	25	23,18	0,50	50,50	0	0	59,76	-	0,00%	0,00%
IPMA	3	4,64	0,50	6,50	0	0	9,47	-	0,00%	0,00%
ELISA	3	5	0,50	6,50	15 500	46 500	9,83	152 360	9,44%	6,86%
CF	3	2,78	0,50	6,50	40	120	7,61	304	0,02%	0,02%
AGID	2	1,85	0,50	4,50	0	0	5,24	-	0,00%	0,00%
IFA	5	4,64	0,50	10,50	30	150	12,36	371	0,02%	0,02%
BBAT	0,5	0,1	0,50	1,50	1 500	750	1,32	1 982	0,12%	0,11%
Agg	1	0,93	0,50	2,50	13 500	13 500	2,87	38 789	2,40%	1,99%
PRN/CAT	1	0,93	0,50	2,50	0	0	2,87	-	0,00%	0,00%
HI	3	2,78	0,50	6,50	0	0	7,61	-	0,00%	0,00%
MAT	10	18,55	0,50	20,50	0	0	33,48	-	0,00%	0,00%
FPA	2,5	2,32	0,50	5,50	0	0	6,43	-	0,00%	0,00%
NPLA	3	4,64	0,50	6,50	0	0	9,47	-	0,00%	0,00%
gamma interferon test	7,5	11,59	0,50	15,50	0	0	22,91	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	5,41	2,00	37,00	1 300	22 750	32,67	42 467	2,63%	3,36%
HPLC	42,5	26,27	2,00	87,00	0	0	89,61	-	0,00%	0,00%
CPG	35	21,64	2,00	72,00	0	0	74,15	-	0,00%	0,00%
Spectrophotometry	12,5	3,86	2,00	27,00	0	0	23,90	-	0,00%	0,00%
Food Microbiology Standard 5 Parameters	15	37,09	2,00	32,00	0	0	60,74	-	0,00%	0,00%
Totals					98 970	678 020		1 613 354	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	375 000	49 500	12,50	2,50	3,33	16,66	16,20	0	- 16,66	- 824 880
Bacteriology	12,5	215 000	17 200	7,17	1,43	1,91	30,83	26,20	0	- 30,83	- 530 283
Virology	25	0	0	0,00	0,00	0,00	60,46	51,20	0	- 60,46	-
PCR or RTPCR	20	8 000	400	0,27	0,05	0,07	54,79	41,20	0	- 54,79	- 21 918
Serology											
VN	25	0	0	0,00	0,00	0,00	59,76	50,50	0	- 59,76	-
IPMA	3	0	0	0,00	0,00	0,00	9,47	6,50	0	- 9,47	-
ELISA	3	46 500	15 500	1,55	0,31	0,41	9,83	6,50	0	- 9,83	- 152 360
CF	3	120	40	0,00	0,00	0,00	7,61	6,50	0	- 7,61	- 304
AGID	2	0	0	0,00	0,00	0,00	5,24	4,50	0	- 5,24	-
IFA	5	150	30	0,01	0,00	0,00	12,36	10,50	0	- 12,36	- 371
BBAT	0,5	750	1 500	0,03	0,01	0,01	1,32	1,50	0	- 1,32	- 1 982
Agg	1	13 500	13 500	0,45	0,09	0,12	2,87	2,50	0	- 2,87	- 38 789
PRN/CAT	1	0	0	0,00	0,00	0,00	2,87	2,50	0	- 2,87	-
HI	3	0	0	0,00	0,00	0,00	7,61	6,50	0	- 7,61	-
MAT	10	0	0	0,00	0,00	0,00	33,48	20,50	0	- 33,48	-
FPA	2,5	0	0	0,00	0,00	0,00	6,43	5,50	0	- 6,43	-
NPLA	3	0	0	0,00	0,00	0,00	9,47	6,50	0	- 9,47	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	22,91	15,50	0	- 22,91	-
Other Tests											
Anatomical Pathology	17,5	22 750	1 300	0,76	0,15	0,20	32,67	37,00	0	- 32,67	- 42 467
HPLC	42,5	0	0	0,00	0,00	0,00	89,61	87,00	0	- 89,61	-
CPG	35	0	0	0,00	0,00	0,00	74,15	72,00	0	- 74,15	-
Spectrophotometry	12,5	0	0	0,00	0,00	0,00	23,90	27,00	0	- 23,90	-
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	60,74	32,00	0	- 60,74	-
Totals		678 020	98 970	**22,60**	**4,52**	**6,03**					**- 1 613 354**

All AH Tests Performed in a New Optimised Structure of 1 Central Laboratory and 20 Remote Laboratories

Scenario 2 Proposed Budget for Prospective Demand with tests in NCAH and 20 remote labs	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				260 400	26,45%
Buildings and Premises	643 000		0,05	32 150	3,27%
Vehicles	28 000	4	0,2	22 400	2,27%
IT and Office Equipment	1 500	30	0,33	14 850	1,51%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators			0,1	-	0,00%
Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	955 000	1	0,2	191 000	19,40%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				164 621	16,72%
Veterinarians and Other Professionals	4 541	6		29 062	2,95%
Laboratory Technicians	2 571	29		74 559	7,57%
Support Staff	1 000	1		1 000	0,10%
Per diem and travel allowance in the country	60 000	1		60 000	6,09%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				559 617	56,83%
Continuing Education (short courses, etc.)	Salaries	5%		5 231	0,53%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		31 386	3,19%
Reagents and Consumables	427 500	1		427 500	43,42%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		95 500	9,70%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**984 639**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a) Monthly salary of laboratory staff in a reference country in €	214
(b) Monthly salary of similar laboratory staff in the country in €	4 000

(c) Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1,20	16,20		4,64	203,90		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,20	26,20		11,59	252,43		0,00		-
Virology	25	50	15	0,30	0,25	0,45	1,20	51,20		23,18	459,94		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,20	41,20		24,73	264,63		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,50	50,50		23,18	459,24		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,50	6,50		4,64	40,22		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,50	6,50	5,00	5	40,58		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,50	6,50		2,78	71,29		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,50	4,50		1,85	47,69		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,50	10,50		4,64	101,00		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,50	1,50	0,10	0,1	11,93		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,50	2,50		0,93	24,10		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,50	2,50		0,93	24,10		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,50	6,50		2,78	71,29		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,50	20,50		18,55	98,62		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,50	5,50		2,32	50,75		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,50	6,50		4,64	40,22		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,50	15,50		11,59	126,04		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	2,00	37,00		5,41	534,97		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,30	2,00	87,00		26,27	566,11		0,00		-
CPG	35	70	14	0,20	0,60	0,30	2,00	72,00		21,64	466,56		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	2,00	27,00		3,86	207,78		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	2,00	32,00		37,09	304,52		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	260 400
Staff	164 621
Other Costs (Excluding Reagents & External Services)	132 117
Annual Budget (Excluding Reagents & External Services)	**557 139**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	0,82

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	4,64	1,20	16,20	49 500	371 250	12,00	594 142	49,85%	54,76%
Bacteriology	12,5	11,59	1,20	26,20	17 200	215 000	23,06	396 657	33,28%	31,71%
Virology	25	23,18	1,20	51,20	0	0	44,92	-	0,00%	0,00%
PCR or RTPCR	20	24,73	1,20	41,20	400	8 000	42,36	16 946	1,42%	1,18%
Serology										
VN	25	23,18	0,50	50,50	0	0	44,22	-	0,00%	0,00%
IPMA	3	4,64	0,50	6,50	0	0	7,61	-	0,00%	0,00%
ELISA	3	5	0,50	6,50	15 500	46 500	7,97	123 460	10,36%	6,86%
CF	3	2,78	0,50	6,50	40	120	5,75	230	0,02%	0,02%
AGID	2	1,85	0,50	4,50	0	0	3,99	-	0,00%	0,00%
IFA	5	4,64	0,50	10,50	30	150	9,25	277	0,02%	0,02%
BBAT	0,5	0,1	0,50	1,50	1 500	750	1,01	1 516	0,13%	0,11%
Agg	1	0,93	0,50	2,50	13 500	13 500	2,25	30 398	2,55%	1,99%
PRN/CAT	1	0,93	0,50	2,50	0	0	2,25	-	0,00%	0,00%
HI	3	2,78	0,50	6,50	0	0	5,75	-	0,00%	0,00%
MAT	10	18,55	0,50	20,50	0	0	27,27	-	0,00%	0,00%
FPA	2,5	2,32	0,50	5,50	0	0	4,87	-	0,00%	0,00%
NPLA	3	4,64	0,50	6,50	0	0	7,61	-	0,00%	0,00%
gamma interferon test	7,5	11,59	0,50	15,50	0	0	18,25	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	5,41	2,00	37,00	1 300	22 750	21,79	28 327	2,38%	3,36%
HPLC	42,5	26,27	2,00	87,00	0	0	63,19	-	0,00%	0,00%
CPG	35	21,64	2,00	72,00	0	0	52,40	-	0,00%	0,00%
Spectrophotometry	12,5	3,86	2,00	27,00	0	0	16,13	-	0,00%	0,00%
Food Microbiology Standard 5 Parameters	15	37,09	2,00	32,00	0	0	51,42	-	0,00%	0,00%
Totals					98 970	678 020		1 191 952	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	375 000	49 500	12,50	2,50	3,33	12,00	16,20	0	- 12,00	- 594 142
Bacteriology	12,5	215 000	17 200	7,17	1,43	1,91	23,06	26,20	0	- 23,06	- 396 657
Virology	25	0	0	0,00	0,00	0,00	44,92	51,20	0	- 44,92	-
PCR or RTPCR	20	8 000	400	0,27	0,05	0,07	42,36	41,20	0	- 42,36	- 16 946
Serology											
VN	25	0	0	0,00	0,00	0,00	44,22	50,50	0	- 44,22	-
IPMA	3	0	0	0,00	0,00	0,00	7,61	6,50	0	- 7,61	-
ELISA	3	46 500	15 500	1,55	0,31	0,41	7,97	6,50	0	- 7,97	- 123 460
CF	3	120	40	0,00	0,00	0,00	5,75	6,50	0	- 5,75	- 230
AGID	2	0	0	0,00	0,00	0,00	3,99	4,50	0	- 3,99	-
IFA	5	150	30	0,01	0,00	0,00	9,25	10,50	0	- 9,25	- 277
BBAT	0,5	750	1 500	0,03	0,01	0,01	1,01	1,50	0	- 1,01	- 1 516
Agg	1	13 500	13 500	0,45	0,09	0,12	2,25	2,50	0	- 2,25	- 30 398
PRN/CAT	1	0	0	0,00	0,00	0,00	2,25	2,50	0	- 2,25	-
HI	3	0	0	0,00	0,00	0,00	5,75	6,50	0	- 5,75	-
MAT	10	0	0	0,00	0,00	0,00	27,27	20,50	0	- 27,27	-
FPA	2,5	0	0	0,00	0,00	0,00	4,87	5,50	0	- 4,87	-
NPLA	3	0	0	0,00	0,00	0,00	7,61	6,50	0	- 7,61	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	18,25	15,50	0	- 18,25	-
Other Tests											
Anatomical Pathology	17,5	22 750	1 300	0,76	0,15	0,20	21,79	37,00	0	- 21,79	- 28 327
HPLC	42,5	0	0	0,00	0,00	0,00	63,19	87,00	0	- 63,19	-
CPG	35	0	0	0,00	0,00	0,00	52,40	72,00	0	- 52,40	-
Spectrophotometry	12,5	0	0	0,00	0,00	0,00	16,13	27,00	0	- 16,13	-
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	51,42	32,00	0	- 51,42	-
Totals		678 020	98 970	**22,60**	**4,52**	**6,03**					**- 1 191 952**

Annex 4 : Analytical Line Tool

General Equipment		Number	Unit Price	Total Cost in €
Refrigerator		2	2 000	4 000
Freezer		2	2 000	4 000
General purpose centrifuge		1	4 500	4 500
Autoclave (waste)		1	6 000	6 000
Balance (0,01)		1	1 000	1 000
Balance (0,001)		1	2 000	2 000
Pure and Ultrapure Water Purification System		1	4 000	4 000
Distillator		1	2 500	2 500
Standard measures (mass, temperature)		10	90	900
Standard measures (mass, temperature)	Certified thermometer	1	500	500
pH meter		1	1 000	1 000
serology ELISA (Aflatoxin)				
Automatic pipettes - monochannel		2	270	
Automatic pipettes - multichannel		2	650	
Microplate reader & dedicated computer		1	5 500	
Plate shaker		1	1 000	
General Microbiology				
Balance (0,01)		1	1 000	1 000
Balance (0,001)		1	2 000	2 000
Water filtration system		1	200	200
Orbital shaker		1	800	800
Rotative shaker		1	800	800
pH meter		1	1 000	1 000
Incubators		1	9 500	9 500
Safety cabinet	Class II	1	8 000	8 000
Autoclave (80 L)		1	6 000	6 000
Oven (150L)		1	1 800	1 800
Refrigerator (for additive)		1	2 000	2 000
Water bath	Basic	1	1 000	1 000
Food and Water Microbiology				
Refrigerator		2	2 000	4 000
Safety cabinet	Class II	1	8 000	8 000
Incubator (28, 30, 37, 44, 55°C)		5	2 500	12 500
Colony counter		1	1 800	
Molecular Biology (GMO)				
Pipettes		10	270	
Safety cabinet	Class II	1	8 000	
Real time PCR		1	35 000	
Electrophoresis machine/power supply		1	600	
Gel Documentation system		1	15 000	
Dry bath incubators		2	800	
Freezer		1	2 500	
Refrigerator		1	2 000	
Residues				
Spectrophotometry AAS		1	70 000	70 000
HPLC		1	70 000	
GC-MS		1	150 000	
Total				€ 159 000,00

General Equipment		Number	Unit Price	Total Cost in €
Refrigerator		2	2 000	4 000
Freezer		2	2 000	4 000
General purpose centrifuge		1	4 500	4 500
Autoclave (waste)		1	6 000	6 000
Balance (0,01)		1	1 000	1 000
Balance (0,001)		1	2 000	2 000
Pure and Ultrapure Water Purification System		1	4 000	4 000
Distillator		1	2 500	2 500
Standard measures (mass, temperature)		10	90	900
Standard measures (mass, temperature)	Certified thermometer	1	500	500
pH meter		1	1 000	1 000
serology ELISA (Aflatoxin)				
Automatic pipettes - monochannel		2	270	540
Automatic pipettes - multichannel		2	650	1 300
Microplate reader & dedicated computer		1	5 500	5 500
Plate shaker		1	1 000	1 000
General Microbiology				
Balance (0,01)		1	1 000	1 000
Balance (0,001)		1	2 000	2 000
Water filtration system		1	200	200
Orbital shaker		1	800	800
Rotative shaker		1	800	800
pH meter		1	1 000	1 000
Incubators		1	9 500	9 500
Safety cabinet	Class II	1	8 000	8 000
Autoclave (80 L)		1	6 000	6 000
Oven (150L)		1	1 800	1 800
Refrigerator (for additive)		1	2 000	2 000
Water bath	Basic	1	1 000	1 000
Food and Water Microbiology				
Refrigerator		2	2 000	4 000
Safety cabinet	Class II	2	8 000	16 000
Incubator (28, 30, 37, 44, 55°C)		5	2 500	12 500
Colony counter		1	1 800	1 800
Molecular Biology (GMO)				
Pipettes		10	270	2 700
Safety cabinet	Class II	1	8 000	8 000
Real time PCR		1	35 000	35 000
Electrophoresis machine/power supply		1	600	600
Gel Documentation system		1	15 000	15 000
Dry bath incubators		2	800	1 600
Freezer		1	2 500	2 500
Refrigerator		1	2 000	2 000
Residues				
Spectrophotometry AAS		1	70 000	70 000
HPLC		1	70 000	70 000
GC-MS		1	150 000	150 000
Total				€ 464 540,00

Annex 5: Calculation Tool for all AH tests including FS molecular tests

Proposed Budget Prospective Demand for NCAH performing all AH and BAFRA molecular tests

Proposed Budget Prospective Demand for NCAH performing all AH and BAFRA molecular	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				106 800	13,58%
Buildings and Premises	273 000		0,05	13 650	1,74%
Vehicles	28 000	2	0,2	11 200	1,42%
IT and Office Equipment	1 500	10	0,33	4 950	0,63%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators			0,1	-	0,00%
Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	385 000	1	0,2	77 000	9,79%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				140 726	17,90%
Veterinarians and Other Professionals	4 541	4		18 164	2,31%
Laboratory Technicians	2 571	22		56 562	7,19%
Support Staff	1 000	6		6 000	0,76%
Per diem and travel allowance in the country	60 000	1		60 000	7,63%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				538 754	68,52%
Continuing Education (short courses, etc.)	Salaries	5%		4 036	0,51%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		24 218	3,08%
Reagents and Consumables	472 000	1		472 000	60,03%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		38 500	4,90%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**786 280**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a)	Monthly salary of laboratory staff in a reference country in €	214
(b)	Monthly salary of similar laboratory staff in the country in €	4 000

(c)	Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1,00	16,00		4,64	203,70		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,00	26,00		11,59	252,23		0,00		-
Virology	25	50	15	0,30	0,25	0,45	1,00	51,00		23,18	459,74		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,00	41,00		24,73	264,43		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,30	50,30		23,18	459,04		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,30	6,30	5,00	5	40,38		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,30	4,30		1,85	47,49		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,30	10,30		4,64	100,80		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,30	1,30	0,10	0,1	11,73		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,30	20,30		18,55	98,42		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,30	5,30		2,32	50,55		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,30	15,30		11,59	125,84		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	1,00	36,00		5,41	533,97		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,30	1,00	86,00		26,27	565,11		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		21,64	465,56		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		3,86	206,78		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		37,09	303,52		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	106 800
Staff	140 726
Other Costs (Excluding Reagents & External Services)	66 754
Annual Budget (Excluding Reagents & External Services)	**314 280**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	0,43

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	4,64	1,00	16,00	49 500	371 250	8,88	439 666	44,16%	51,06%
Bacteriology	12,5	11,59	1,00	26,00	17 200	215 000	17,99	309 489	31,09%	29,57%
Virology	25	23,18	1,00	51,00	0	0	34,99	-	0,00%	0,00%
PCR or RTPCR	20	24,73	1,00	41,00	2 400	48 000	34,38	82 502	8,29%	6,60%
Serology										
VN	25	23,18	0,30	50,30	0	0	34,29	-	0,00%	0,00%
IPMA	3	4,64	0,30	6,30	0	0	6,24	-	0,00%	0,00%
ELISA	3	5	0,30	6,30	18 500	55 500	6,60	122 042	12,26%	7,63%
CF	3	2,78	0,30	6,30	40	120	4,38	175	0,02%	0,02%
AGID	2	1,85	0,30	4,30	0	0	3,01	-	0,00%	0,00%
IFA	5	4,64	0,30	10,30	30	150	7,10	213	0,02%	0,02%
BBAT	0,5	0,1	0,30	1,30	1 500	750	0,62	924	0,09%	0,10%
Agg	1	0,93	0,30	2,30	13 500	13 500	1,66	22 441	2,25%	1,86%
PRN/CAT	1	0,93	0,30	2,30	0	0	1,66	-	0,00%	0,00%
HI	3	2,78	0,30	6,30	0	0	4,38	-	0,00%	0,00%
MAT	10	18,55	0,30	20,30	0	0	23,17	-	0,00%	0,00%
FPA	2,5	2,32	0,30	5,30	0	0	3,70	-	0,00%	0,00%
NPLA	3	4,64	0,30	6,30	0	0	6,24	-	0,00%	0,00%
gamma interferon test	7,5	11,59	0,30	15,30	0	0	15,13	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	5,41	1,00	36,00	1 300	22 750	13,97	18 167	1,82%	3,13%
HPLC	42,5	26,27	1,00	86,00	0	0	45,64	-	0,00%	0,00%
CPG	35	21,64	1,00	71,00	0	0	37,77	-	0,00%	0,00%
Spectrophotometry	12,5	3,86	1,00	26,00	0	0	10,26	-	0,00%	0,00%
Food Microbiology Standard 5 Parameters	15	37,09	1,00	31,00	0	0	44,57	-	0,00%	0,00%
Totals					103 970	727 020		995 620	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	375 000	49 500	12,50	2,50	3,33	8,88	16,00	0	- 8,88	- 439 666
Bacteriology	12,5	215 000	17 200	7,17	1,43	1,91	17,99	26,00	0	- 17,99	- 309 489
Virology	25	0	0	0,00	0,00	0,00	34,99	51,00	0	- 34,99	-
PCR or RTPCR	20	48 000	2 400	1,60	0,32	0,43	34,38	41,00	0	- 34,38	- 82 502
Serology											
VN	25	0	0	0,00	0,00	0,00	34,29	50,30	0	- 34,29	-
IPMA	3	0	0	0,00	0,00	0,00	6,24	6,30	0	- 6,24	-
ELISA	3	55 500	18 500	1,85	0,37	0,49	6,60	6,30	0	- 6,60	- 122 042
CF	3	120	40	0,00	0,00	0,00	4,38	6,30	0	- 4,38	- 175
AGID	2	0	0	0,00	0,00	0,00	3,01	4,30	0	- 3,01	-
IFA	5	150	30	0,01	0,00	0,00	7,10	10,30	0	- 7,10	- 213
BBAT	0,5	750	1 500	0,03	0,01	0,01	0,62	1,30	0	- 0,62	- 924
Agg	1	13 500	13 500	0,45	0,09	0,12	1,66	2,30	0	- 1,66	- 22 441
PRN/CAT	1	0	0	0,00	0,00	0,00	1,66	2,30	0	- 1,66	-
HI	3	0	0	0,00	0,00	0,00	4,38	6,30	0	- 4,38	-
MAT	10	0	0	0,00	0,00	0,00	23,17	20,30	0	- 23,17	-
FPA	2,5	0	0	0,00	0,00	0,00	3,70	5,30	0	- 3,70	-
NPLA	3	0	0	0,00	0,00	0,00	6,24	6,30	0	- 6,24	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	15,13	15,30	0	- 15,13	-
Other Tests											
Anatomical Pathology	17,5	22 750	1 300	0,76	0,15	0,20	13,97	36,00	0	- 13,97	- 18 167
HPLC	42,5	0	0	0,00	0,00	0,00	45,64	86,00	0	- 45,64	-
CPG	35	0	0	0,00	0,00	0,00	37,77	71,00	0	- 37,77	-
Spectrophotometry	12,5	0	0	0,00	0,00	0,00	10,26	26,00	0	- 10,26	-
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	44,57	31,00	0	- 44,57	-
Totals		727 020	103 970	**24,23**	**4,85**	**6,46**					**- 995 620**

Scenario 2 Proposed Budget for prospective demand AH tests and BAFRA molecular tests in existing structure total 29 labs

Scenario 2 Proposed Budget for prospective demand AH tests and BAFRA molecular tests in existing structure total 29 labs	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				505 977	34,88%
Buildings and Premises	2 100 535		0,05	105 027	7,24%
Vehicles	28 000	7	0,2	39 200	2,70%
IT and Office Equipment	1 500	50	0,33	24 750	1,71%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators			0,1	-	0,00%
Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	1 685 000	1	0,2	337 000	23,23%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				240 788	16,60%
Veterinarians and Other Professionals	4 541	11		49 951	3,44%
Laboratory Technicians	2 571	47		120 837	8,33%
Support Staff	1 000	10		10 000	0,69%
Per diem and travel allowance in the country	60 000	1		60 000	4,14%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				703 776	48,52%
Continuing Education (short courses, etc.)	Salaries	5%		9 039	0,62%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		54 236	3,74%
Reagents and Consumables	472 000	1		472 000	32,54%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		168 500	11,62%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**1 450 541**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a) Monthly salary of laboratory staff in a reference country in €	214
(b) Monthly salary of similar laboratory staff in the country in €	4 000

(c) Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1,00	16,00		4,64	203,70		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,00	26,00		11,59	252,23		0,00		-
Virology	25	50	15	0,30	0,25	0,45	1,00	51,00		23,18	459,74		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,00	41,00		24,73	264,43		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,30	50,30		23,18	459,04		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,30	6,30	5,00	5	40,38		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,30	4,30		1,85	47,49		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,30	10,30		4,64	100,80		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,30	1,30	0,10	0,1	11,73		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,30	20,30		18,55	98,42		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,30	5,30		2,32	50,55		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,30	15,30		11,59	125,84		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	1,00	36,00		5,41	533,97		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,30	1,00	86,00		26,27	565,11		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		21,64	465,56		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		3,86	206,78		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		37,09	303,52		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	505 977
Staff	240 788
Other Costs (Excluding Reagents & External Services)	231 776
Annual Budget (Excluding Reagents & External Services)	**978 541**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	1,35

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	4,64	1,00	16,00	49 500	371 250	15,73	778 868	46,92%	51,06%
Bacteriology	12,5	11,59	1,00	26,00	17 200	215 000	29,41	505 930	30,48%	29,57%
Virology	25	23,18	1,00	51,00	0	0	57,83	-	0,00%	0,00%
PCR or RTPCR	20	24,73	1,00	41,00	2 400	48 000	52,65	126 358	7,61%	6,60%
Serology										
VN	25	23,18	0,30	50,30	0	0	57,13	-	0,00%	0,00%
IPMA	3	4,64	0,30	6,30	0	0	8,98	-	0,00%	0,00%
ELISA	3	5	0,30	6,30	18 500	55 500	9,34	172 751	10,41%	7,63%
CF	3	2,78	0,30	6,30	40	120	7,12	285	0,02%	0,02%
AGID	2	1,85	0,30	4,30	0	0	4,84	-	0,00%	0,00%
IFA	5	4,64	0,30	10,30	30	150	11,67	350	0,02%	0,02%
BBAT	0,5	0,1	0,30	1,30	1 500	750	1,07	1 609	0,10%	0,10%
Agg	1	0,93	0,30	2,30	13 500	13 500	2,58	34 775	2,10%	1,86%
PRN/CAT	1	0,93	0,30	2,30	0	0	2,58	-	0,00%	0,00%
HI	3	2,78	0,30	6,30	0	0	7,12	-	0,00%	0,00%
MAT	10	18,55	0,30	20,30	0	0	32,31	-	0,00%	0,00%
FPA	2,5	2,32	0,30	5,30	0	0	5,98	-	0,00%	0,00%
NPLA	3	4,64	0,30	6,30	0	0	8,98	-	0,00%	0,00%
gamma interferon test	7,5	11,59	0,30	15,30	0	0	21,98	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	5,41	1,00	36,00	1 300	22 750	29,96	38 954	2,35%	3,13%
HPLC	42,5	26,27	1,00	86,00	0	0	84,47	-	0,00%	0,00%
CPG	35	21,64	1,00	71,00	0	0	69,75	-	0,00%	0,00%
Spectrophotometry	12,5	3,86	1,00	26,00	0	0	21,68	-	0,00%	0,00%
Food Microbiology Standard 5 Parameters	15	37,09	1,00	31,00	0	0	58,28	-	0,00%	0,00%
Totals					103 970	727 020		1 659 880	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	375 000	49 500	12,50	2,50	3,33	15,73	16,00	0	- 15,73	- 778 868
Bacteriology	12,5	215 000	17 200	7,17	1,43	1,91	29,41	26,00	0	- 29,41	- 505 930
Virology	25	0	0	0,00	0,00	0,00	57,83	51,00	0	- 57,83	-
PCR or RTPCR	20	48 000	2 400	1,60	0,32	0,43	52,65	41,00	0	- 52,65	- 126 358
Serology											
VN	25	0	0	0,00	0,00	0,00	57,13	50,30	0	- 57,13	-
IPMA	3	0	0	0,00	0,00	0,00	8,98	6,30	0	- 8,98	-
ELISA	3	55 500	18 500	1,85	0,37	0,49	9,34	6,30	0	- 9,34	- 172 751
CF	3	120	40	0,00	0,00	0,00	7,12	6,30	0	- 7,12	- 285
AGID	2	0	0	0,00	0,00	0,00	4,84	4,30	0	- 4,84	-
IFA	5	150	30	0,01	0,00	0,00	11,67	10,30	0	- 11,67	- 350
BBAT	0,5	750	1 500	0,03	0,01	0,01	1,07	1,30	0	- 1,07	- 1 609
Agg	1	13 500	13 500	0,45	0,09	0,12	2,58	2,30	0	- 2,58	- 34 775
PRN/CAT	1	0	0	0,00	0,00	0,00	2,58	2,30	0	- 2,58	-
HI	3	0	0	0,00	0,00	0,00	7,12	6,30	0	- 7,12	-
MAT	10	0	0	0,00	0,00	0,00	32,31	20,30	0	- 32,31	-
FPA	2,5	0	0	0,00	0,00	0,00	5,98	5,30	0	- 5,98	-
NPLA	3	0	0	0,00	0,00	0,00	8,98	6,30	0	- 8,98	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	21,98	15,30	0	- 21,98	-
Other Tests											
Anatomical Pathology	17,5	22 750	1 300	0,76	0,15	0,20	29,96	36,00	0	- 29,96	- 38 954
HPLC	42,5	0	0	0,00	0,00	0,00	84,47	86,00	0	- 84,47	-
CPG	35	0	0	0,00	0,00	0,00	69,75	71,00	0	- 69,75	-
Spectrophotometry	12,5	0	0	0,00	0,00	0,00	21,68	26,00	0	- 21,68	-
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	58,28	31,00	0	- 58,28	-
Totals		727 020	103 970	**24,23**	**4,85**	**6,46**					**- 1 659 880**

Proposed Budget for Prospective Demand with tests in NCAH and 20 remote labs and BAFRA molecular tests at NCAH

Proposed Budget for Prospective Demand with tests in NCAH and 20 remote labs and BAFRA molecular tests at NCAH	Unit Cost	Number	Renewal Rate	Annual Budget	%
Capital Investment				270 400	25,90%
Buildings and Premises	643 000		0,05	32 150	3,08%
Vehicles	28 000	4	0,2	22 400	2,15%
IT and Office Equipment	1 500	30	0,33	14 850	1,42%
Telecommunication Equipment			0,2	-	0,00%
Refrigerators			0,1	-	0,00%
Deep Freezers (-20°C & -80°C)			0,1	-	0,00%
Laboratory Equipment	1 005 000	1	0,2	201 000	19,25%
Other Equipment			0,2	-	0,00%
Salaries and Remuneration				164 621	15,77%
Veterinarians and Other Professionals	4 541	6		29 062	2,78%
Laboratory Technicians	2 571	29		74 559	7,14%
Support Staff	1 000	1		1 000	0,10%
Per diem and travel allowance in the country	60 000	1		60 000	5,75%
Per diem and travel allowance abroad				-	0,00%
Operating Costs				609 117	58,34%
Continuing Education (short courses, etc.)	Salaries	5%		5 231	0,50%
Administrative Expenditures (office supplies, etc.)	Salaries	30%		31 386	3,01%
Reagents and Consumables	472 000	1		472 000	45,20%
Maintenance, Calibration and Metrology	Laboratory Equipment	10%		100 500	9,63%
External Services (Reference Laboratory, External Analysis, Transport, etc.)				-	0,00%
Other				-	0,00%
Total				**1 044 139**	100,00%

2. Tariff Estimation for Analysis in the National Veterinary Laboratory

(a) Monthly salary of laboratory staff in a reference country in €	214
(b) Monthly salary of similar laboratory staff in the country in €	4 000

(c) Exchange rate of 1 € to national or chosen currency	70

Example of comparative cost of laboratory equipment	100	(d) F.O.B
	120	(e) C.I.F.

Type of Analysis	Proposed Standard Relative Value in points (f)	Proposed International Reference Price in € (g)	Proposed Standard Reagent Cost in € (h)	Proposed Standard Share of Cost: Reagents (i)	Proposed Standard Share of Cost: Equipment (j)	Proposed Standard Share of Cost: Staff (k)	Costs of Sampling Kits & Local Transport (l)	Total Estimated International Reference Price in € (m) = g + l	Examples of Reagent Costs in the country in € (n)	Estimated Reagent Cost in the country in € (o)	Proposed Tariff in € (p)	Examples of Tariffs in other Laboratories in € or points (q)	Proposed Tariff in € (r)	Chosen National Tariff for Tests in € (s)	National Tariff to apply in national or chosen currency (t) = c * s
Agent Identification															
Parasitology	7,5	15	3	0,20	0,10	0,70	1,00	16,00		4,64	203,70		0,00		-
Bacteriology	12,5	25	7,5	0,30	0,20	0,50	1,00	26,00		11,59	252,23		0,00		-
Virology	25	50	15	0,30	0,25	0,45	1,00	51,00		23,18	459,74		0,00		-
PCR or RTPCR	20	40	16	0,40	0,30	0,30	1,00	41,00		24,73	264,43		0,00		-
Serology															
VN	25	50	15	0,30	0,25	0,45	0,30	50,30		23,18	459,04		0,00		-
IPMA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
ELISA	3	6	3	0,50	0,20	0,30	0,30	6,30	5,00	5	40,38		0,00		-
CF	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
AGID	2	4	1,2	0,30	0,10	0,60	0,30	4,30		1,85	47,49		0,00		-
IFA	5	10	3	0,30	0,20	0,50	0,30	10,30		4,64	100,80		0,00		-
BBAT	0,5	1	0,3	0,30	0,10	0,60	0,30	1,30	0,10	0,1	11,73		0,00		-
Agg	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
PRN/CAT	1	2	0,6	0,30	0,10	0,60	0,30	2,30		0,93	23,90		0,00		-
HI	3	6	1,8	0,30	0,10	0,60	0,30	6,30		2,78	71,09		0,00		-
MAT	10	20	12	0,60	0,20	0,20	0,30	20,30		18,55	98,42		0,00		-
FPA	2,5	5	1,5	0,30	0,20	0,50	0,30	5,30		2,32	50,55		0,00		-
NPLA	3	6	3	0,50	0,20	0,30	0,30	6,30		4,64	40,02		0,00		-
gamma interferon test	7,5	15	7,5	0,50	0,10	0,40	0,30	15,30		11,59	125,84		0,00		-
Other Tests															
Anatomical Pathology	17,5	35	3,5	0,10	0,10	0,80	1,00	36,00		5,41	533,97		0,00		-
HPLC	42,5	85	17	0,20	0,60	0,30	1,00	86,00		26,27	565,11		0,00		-
CPG	35	70	14	0,20	0,60	0,30	1,00	71,00		21,64	465,56		0,00		-
Spectrophotometry	12,5	25	2,5	0,10	0,50	0,40	1,00	26,00		3,86	206,78		0,00		-
Food Microbiology Standard 5 Parameters	15	30	24	0,40	0,10	0,50	1,00	31,00		37,09	303,52		0,00		-

3. Estimated Cost of Veterinary Laboratory Analysis

Capital Investment	270 400
Staff	164 621
Other Costs (Excluding Reagents & External Services)	137 117
Annual Budget (Excluding Reagents & External Services)	**572 139**
(u) = H6 / G36 Value of 1 Point (Excluding Reagents)	0,79

Type of Analysis	Proposed Standard Relative Value in points (f)	Estimated Reagent Cost in the country in € (o)	Cost of Sampling Kits & Local Transport in € (l)	Total Estimated Reference International Price in € (m)	Number of Tests (v)	Number of Points (w) = v * f	Estimated Test Cost in € (x) = o + l + (f * u)	Possible Income Generated under Full Cost Recovery (y) = v * x	% of Economic Activity J	% of Volume of Activity K
Agent Identification										
Parasitology	7,5	4,64	1,00	16,00	49 500	371 250	11,54	571 341	45,58%	51,06%
Bacteriology	12,5	11,59	1,00	26,00	17 200	215 000	22,43	385 745	30,77%	29,57%
Virology	25	23,18	1,00	51,00	0	0	43,85	-	0,00%	0,00%
PCR or RTPCR	20	24,73	1,00	41,00	2 400	48 000	41,47	99 526	7,94%	6,60%
Serology										
VN	25	23,18	0,30	50,30	0	0	43,15	-	0,00%	0,00%
IPMA	3	4,64	0,30	6,30	0	0	7,30	-	0,00%	0,00%
ELISA	3	5	0,30	6,30	18 500	55 500	7,66	141 727	11,31%	7,63%
CF	3	2,78	0,30	6,30	40	120	5,44	218	0,02%	0,02%
AGID	2	1,85	0,30	4,30	0	0	3,72	-	0,00%	0,00%
IFA	5	4,64	0,30	10,30	30	150	8,87	266	0,02%	0,02%
BBAT	0,5	0,1	0,30	1,30	1 500	750	0,79	1 190	0,09%	0,10%
Agg	1	0,93	0,30	2,30	13 500	13 500	2,02	27 229	2,17%	1,86%
PRN/CAT	1	0,93	0,30	2,30	0	0	2,02	-	0,00%	0,00%
HI	3	2,78	0,30	6,30	0	0	5,44	-	0,00%	0,00%
MAT	10	18,55	0,30	20,30	0	0	26,72	-	0,00%	0,00%
FPA	2,5	2,32	0,30	5,30	0	0	4,59	-	0,00%	0,00%
NPLA	3	4,64	0,30	6,30	0	0	7,30	-	0,00%	0,00%
gamma interferon test	7,5	11,59	0,30	15,30	0	0	17,79	-	0,00%	0,00%
Other Tests										
Anatomical Pathology	17,5	5,41	1,00	36,00	1 300	22 750	20,18	26 236	2,09%	3,13%
HPLC	42,5	26,27	1,00	86,00	0	0	60,72	-	0,00%	0,00%
CPG	35	21,64	1,00	71,00	0	0	50,18	-	0,00%	0,00%
Spectrophotometry	12,5	3,86	1,00	26,00	0	0	14,70	-	0,00%	0,00%
Food Microbiology Standard 5 Parameters	15	37,09	1,00	31,00	0	0	49,89	-	0,00%	0,00%
Totals					103 970	727 020		1 253 478	100,00%	100,00%

4. Estimated Staff & Finances

Laboratory Tests	Proposed Standard Relative Value in points (f)	Number of Points (Standard Relative Value) (w)	Number of Tests (v)	Estimated Number of Laboratory Technicians (z) = w / 30000	Estimated Number of Laboratory Managers (aa) = z / 5	Estimated Number of Support Staff (bb) = (z / 5) + (aa / 3)	Estimated Test Cost in € (x)	Total Estimated Reference International Price in € (m)	Chosen National Tariff for Tests in € (s)	Benefit (+) or Subsidies (-) per Test (cc) = s - x	Total Benefit (+) or Subsidies (-) (dd) = cc * v
Agent Identification											
Parasitology	7,5	375 000	49 500	12,50	2,50	3,33	11,54	16,00	0	- 11,54	- 571 341
Bacteriology	12,5	215 000	17 200	7,17	1,43	1,91	22,43	26,00	0	- 22,43	- 385 745
Virology	25	0	0	0,00	0,00	0,00	43,85	51,00	0	- 43,85	-
PCR or RTPCR	20	48 000	2 400	1,60	0,32	0,43	41,47	41,00	0	- 41,47	- 99 526
Serology											
VN	25	0	0	0,00	0,00	0,00	43,15	50,30	0	- 43,15	-
IPMA	3	0	0	0,00	0,00	0,00	7,30	6,30	0	- 7,30	-
ELISA	3	55 500	18 500	1,85	0,37	0,49	7,66	6,30	0	- 7,66	- 141 727
CF	3	120	40	0,00	0,00	0,00	5,44	6,30	0	- 5,44	- 218
AGID	2	0	0	0,00	0,00	0,00	3,72	4,30	0	- 3,72	-
IFA	5	150	30	0,01	0,00	0,00	8,87	10,30	0	- 8,87	- 266
BBAT	0,5	750	1 500	0,03	0,01	0,01	0,79	1,30	0	- 0,79	- 1 190
Agg	1	13 500	13 500	0,45	0,09	0,12	2,02	2,30	0	- 2,02	- 27 229
PRN/CAT	1	0	0	0,00	0,00	0,00	2,02	2,30	0	- 2,02	-
HI	3	0	0	0,00	0,00	0,00	5,44	6,30	0	- 5,44	-
MAT	10	0	0	0,00	0,00	0,00	26,72	20,30	0	- 26,72	-
FPA	2,5	0	0	0,00	0,00	0,00	4,59	5,30	0	- 4,59	-
NPLA	3	0	0	0,00	0,00	0,00	7,30	6,30	0	- 7,30	-
gamma interferon test	7,5	0	0	0,00	0,00	0,00	17,79	15,30	0	- 17,79	-
Other Tests											
Anatomical Pathology	17,5	22 750	1 300	0,76	0,15	0,20	20,18	36,00	0	- 20,18	- 26 236
HPLC	42,5	0	0	0,00	0,00	0,00	60,72	86,00	0	- 60,72	-
CPG	35	0	0	0,00	0,00	0,00	50,18	71,00	0	- 50,18	-
Spectrophotometry	12,5	0	0	0,00	0,00	0,00	14,70	26,00	0	- 14,70	-
Food Microbiology Standard 5 Parameters	15	0	0	0,00	0,00	0,00	49,89	31,00	0	- 49,89	-
Totals		727 020	103 970	**24,23**	**4,85**	**6,46**					**- 1 253 478**