

ウガンダ共和国  
家畜疾病診断・管理体制強化計画  
プロジェクト  
終了時評価調査(2)報告書

平成 26 年 6 月  
(2014 年)

独立行政法人国際協力機構  
農村開発部

農村
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## 序 文

独立行政法人国際協力機構は、ウガンダ共和国関係機関との討議議事録（R/D）に基づき、家畜疾病診断・管理体制強化計画プロジェクトを実施しています。

技術協力期間中の実績と実施プロセスを確認し、その情報に基づいて、評価5項目（妥当性、有効性、効率性、インパクト及び持続性）の観点から総合的な評価を行うことを目的として、2013年1月に終了時評価調査団を現地に派遣した結果、プロジェクト成果の定着をより確実なものとするため、プロジェクト期間を1年延長することを決定しました。

本調査団は、上記終了時評価による提言に基づき実施された1年間の延長期間の活動を評価報告書として取りまとめて合同調整委員会（JCC）に提出するとともに、ウガンダ共和国側政府関係者とプロジェクト終了後の方向性について協議し、ミニッツ（M/M）として署名を取り交わしました。

本報告書は、同調査団による協議結果、評価結果を取りまとめたものであり、今後広く関係者に活用され、日本国・ウガンダ共和国両国の親善及び国際協力の推進に寄与することを願うものです。

終わりに、本調査にご協力とご支援をいただいた内外の関係各位に対し、心から感謝の意を表します。

平成26年6月

独立行政法人国際協力機構

農村開発部長 北中 真人

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## 略 語 表

略 語	欧 文	和 文
A/P	Action Plan	アクションプラン
CBPP	Contagious Bovine Pleuropneumonia	牛肺疫
CCPP	Contagious Caprine Pleuropneumonia	小反芻獣肺疫
CDC	Centers for Disease Control and Prevention	アメリカ疾病管理予防センター
CDL	Central Diagnostic Laboratory	中央診断ラボラトリー
C/P	Counterpart	カウンターパート
DVO	District Veterinary Office	郡獣医事務所
FAO	Food and Agriculture Organization of the United Nations	国連食糧農業機関
JCC	Joint Coordinating Committee	合同調整委員会
JICA	Japan International Cooperation Agency	独立行政法人国際協力機構
J-NADIC	Joint National Animal Disease Diagnostic Center	国家共同家畜疾病診断センター
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries	農業畜産水産省
MAK-COVAB	College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University	マケレレ大学獣医学・動物資源・生物安全性学部
M/M	Minutes of the Meeting	ミニッツ（協議議事録）
MoLG	Ministry of Local Government	地方自治省
MoU	Memorandum of Understanding	協力合意文書
NADDEC	National Animal Disease Diagnostic and Epidemiology Center	国家家畜疾病診断・疫学センター（農業畜産水産省付属）
PCM	Pharmacy and Comparative Medicine	臨床薬理学科
PCR	Polymerase Chain Reaction	ポリメラーゼ連鎖反応
PDM	Project Design Matrix	プロジェクト・デザイン・マトリックス
PMA	Plan for Modernization of Agriculture	農業近代化計画
PPR	Peste des Petits Ruminants	小反芻獣疫
R/D	Record of Discussions	討議議事録
RVF	Rift Valley Fever	リフトバレー熱
UGX	Ugandan Shilling	ウガンダシリング (1UGX= 0.041 円 2014 年 2 月)

USAID	United States Agency for International Development	米国国際開発庁
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## 評価調査結果要約表

1. 案件の概要		
国名：ウガンダ共和国	案件名：(和) 家畜疾病診断・管理体制強化計画プロジェクト (英) The Technical Assistance to Improve National Diagnostic Capacity for Animal Disease Control	
分野：農村開発	協力形態：技術協力プロジェクト	
所轄部署：農村開発部	協力金額（評価時）：3億3,000万円	
協力期間	2010年6月～2013年6月 (R/D署名日：2010年1月25日) 延長期間 2013年6月～2014年6月 (延長R/D署名日：2013年3月1日)	先方関係機関： ・農業畜産水産省（Ministry of Agriculture, Animal Industry and Fisheries：MAAIF）動物資源水産総局家畜衛生昆虫局（Department of Livestock Health & Entomology, Directorate of Animal Resources and Fisheries） ・MAAIF 国家家畜疾病診断・疫学センター（National Animal Diseases Diagnostic and Epidemiology Center：NADDEC） ・マケレレ大学獣医学・動物資源・生物安全性学部（College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University：MAK-COVAB） ・郡獣医事務所（District Veterinary Office：DVO）
	日本側協力機関：国内支援委員会（日本大学）	
他の関連協力：技術協力プロジェクト「家畜疾病対策計画」（2007年3月～2009年3月）		
1-1 協力の背景と概要 ウガンダ共和国（以下、「ウガンダ」と記す）の畜産業は農業生産高の約13%を占めており、農家世帯数の40%以上が家畜に依存した生計を営んでいる。地方分権化政策に基づき2000年に導入された「農業近代化計画（PMA）」では、公的サービスの民営化を基本とし、その一環として獣医臨床サービスの民営化も進められた。しかしながら、財政的制約から、地方政府は限られた予算のなかで家畜衛生対策を行わざるを得ず、中央政府・地方政府間の連携は弱まり、政府による家畜疾病対策は弱体化した。 このような背景の下、ウガンダ政府の要請を受けて、独立行政法人国際協力機構（JICA）は2007年3月から2009年3月まで、技術協力プロジェクト「家畜疾病対策計画」を実施し、農業畜産水産省（MAAIF）の国家家畜疾病診断・疫学センター（NADDEC）及び郡獣医事務所（DVO）の地方診断ラボの施設整備、及びNADDECの疾病診断技術者の育成を通じた家畜疾病対策のための体制強化を図った。しかし、NADDECの診断ラボの人材不足から、国家家畜疾病診断体制の強化には、マケレレ大学獣医学・動物資源・生物安全性学部（MAK-COVAB）との連携が望ましいと判断され、本プロジェクトが日本政府に要請された。同要請を受け、JICAは、家畜疾病対策の行政機関であるNADDECと、MAK-COVABの家畜疾病診断技術の組み合わせで両機関が共同診断機関のプラットフォームとなり、国家としての家畜疾病診断能力が向上するように、2010年6月から3年間、MAK-COVABでは中央診断ラボラトリー（CDL）の施設整備と診断技術の能力向上、またNADDECとMAK-COVAB間の情報共有の強化を図ってきた。		



2013年1月に実施された終了時評価〔以下、終了時評価（1）〕では、プロジェクト成果の定着をより確実なものとするために協力期間が1年間の延長が提言された。以下は、延長期間（2013年6月～2014年6月）を対象とした評価調査結果である。

## 1-2 協力内容

本プロジェクトは、NADDECとMAK-COVABが、密接な連携を図ることで、国家レベルの家畜疾病診断機関のプラットフォーム〔国家共同家畜疾病診断センター（Joint National Animal Disease Diagnostic Center：J-NADIC）<sup>1</sup>〕となり、もって、家畜の生産と生産性の向上に資する国家診断体制の確立をめざすものである。

終了時評価（1）の結果、延長期間中も協力内容を変えず、“CDLの診断技術の定着を図る”ことを主たる目的とした。

### （1）上位目標

家畜の生産及び生産性の向上を目的に、家畜疾病管理のための機能的な国家診断体制を確立する。

### （2）プロジェクト目標

MAAIF疾病診断・疫学センター（NADDEC）とマケレレ大学獣医学・動物資源・生物安全性学部（MAK-COVAB）が、共同疾病診断機関のプラットフォームとして先導しつつ、密接な連携を図ることで、国家の家畜疾病診断能力が向上する。

### （3）成果

【成果1】MAAIF疾病診断・疫学センターとマケレレ大学獣医学・動物資源・生物安全性学部の緊密な連携による機能的な家畜疾病診断システム整備のためのアクションプランが作成される。

【成果2】国家共同家畜疾病診断センター（J-NADIC）を立ち上げることによって、包括的かつ専門的診断サービスが提供できている。

【成果3】緊急疾病発生に対処する実践的な調査システムが整備される。

【成果4】MAAIF疾病診断・疫学センターとマケレレ大学獣医学・動物資源・生物安全性学部間の情報交換システムが開発される。

【成果5】選定された郡獣医事務所において初期診断及びサンプル収集技術が改善される。

### （4）投入（実績）

＜日本側＞

- ・長期専門家派遣 延べ4名（チーフアドバイザー、病理診断、業務調整／疾病診断技術）
- ・研修員受入 23名（2014年1月末時点）
- ・機材供与 約37万1,000ドル（2014年2月時点）

＜ウガンダ側＞

- ・カウンターパート（C/P）<sup>2</sup>配置 延べ38名（NADDEC、MAK-COVAB、5つのDVO）

<sup>1</sup> J-NADIC（国家共同家畜疾病診断センター）は、国家レベルでの家畜疾病診断がNADDEC（国家家畜疾病診断・疫学センター）とMAK-COVAB（マケレレ大学獣医学・動物資源・生物安全性学部）の協働の下に機能することを目標としたシステムであり、建物としての“センター”は存在しない。詳細は、付属資料7を参照。

<sup>2</sup> Jプロジェクトの運営管理、活動に携わるウガンダ側の要員を指す。

- ・事務所スペース、CDL スペース
  - ・人件費、光熱水料
  - ・各種活動資金
- 2,800 万 UGX (2012/13 ウガンダ会計年度の支出実績、MAAIF、約 112 万円)
- 400 万 UGX (2013/14 ウガンダ会計年度の支出実績、マケレレ大学、約 16 万円)

## 2. 評価結果の概要

### 2-1 実績の確認

#### (1) プロジェクト目標

指 標：国家共同家畜疾病診断センターが、本プロジェクトによってリスト化された 25 種類の家畜疾病すべてについて診断できる。

終了時評価 (1) では、プロジェクト目標の達成度は「中程度」と評価されたが、延長期間中は、成果 2 及び 4 について進展がみられたため「おおむね高い」と評価された。

#### <理 由>

成果 2 に関し、本プロジェクトがリストアップした 25 種類の家畜疾病のうち、J-NADIC では 24 種類の家畜疾病を診断できる技術を有しているが、実際に診断を行った疾病数は、終了時評価 (1) では 16 種類であったが、延長期間中に 18 種類に増えていることを確認した。延長期間の重点項目となった CDL の細菌学とウイルス学の診断技術レベルの向上については、今後も弛まぬ努力が必要とされるものの、進歩が確認された。

成果 4 について、NADDEC と MAK-COVAB 間の情報共有のための技術的会合が開催されていることから、両機関の情報共有についても一定の進展があったと判断された。

#### (2) 成 果

##### 1) 成果 1

指 標：アクションプランが作成され、承認を受けるために第 1 年次の JCC に提出される。

本成果に係る達成度は「高い」。

#### <理 由>

J-NADIC に係るアクションプランは、2011 年 4 月 28 日に開催された第 2 回合同調整委員会 (JCC) 会議で承認されており、本成果に係る達成度は「高い」と、終了時評価 (1) で確認済みである。

##### 2) 成果 2

指 標：

- ① 第 3 年次までに国家共同家畜疾病診断センター (J-NADIC) が受領・分析した診断サンプル数が 15% 増加する。
- ② マケレレ大学獣医学・動物資源・生物安全性学部の中央診断ラボラトリーに、以下の 8 分野それぞれのための診断技術が少なくとも 1 つ以上導入される。
  - 病理学／病理組織学の技術
  - 血液学、生化学・血清学の技術
  - 寄生虫学、細菌学、ウイルス学の技術

- 分子・生物学技術

- ③ MAAIF 疾病診断疫学センター (NADDEC) が、CBPP (牛肺疫)、CCPP (小反芻獣肺疫)、アフリカ豚コレラ、狂犬病、PPR (小反芻獣疫) の診断試験を実施できる。
- ④ ブルセラ症のための診断薬キットが生産・利用される。
- ⑤ 国家共同家畜疾病診断センター (J-NADIC) によって、サンプル収集及び検査のためのラボ試薬及び保存溶液が 4 種類以上作成され、選定された郡獣医事務所に供給される。

本成果に係る達成度は「おおむね高い」。

<理由>

終了時評価 (1) では、評価指標は達成されているものの、診断サービス・技術における「質」の観点からはまだ改善の余地が大きいと判断され達成度は「おおむね高い」と「中程度」の中間に位置づけられた。

今次評価では、診断数の増加がみられること、「質」改善のための CDL の細菌・ウイルス分野の診断技術向上が図られつつあることが確認された。

### 3) 成果 3

指 標：プロジェクト期間中 1 回以上、緊急疾病流行が国家共同家畜疾病診断センター (J-NADIC) の共同調査チームによって調査される。

本成果に係る達成度は「高い」。

<理由>

終了時評価 (1) で確認された共同調査に係るガイドラインの作成、及び緊急疾病発生に関する共同現地調査 (2 件) に加え、延長期間中にブルセラ病及び狂犬病に関する共同現地調査 (1 件) が実施された。

### 4) 成果 4

指 標：国家共同家畜疾病診断センター (J-NADIC) が作成したすべての診断データが、センターに集められ、蓄積され、MAAIF 疾病診断・疫学センターとマケレレ大学獣医学・動物資源・生物安全性学部との情報共有が行われる。

本成果に係る達成度は、「おおむね高い」と「中程度」の中間である。

NADDEC から MAK-COVAB への情報発信メカニズムの構築が期待されるが、以前より実施されている MAK-COVAB から NADDEC への月例の情報発信と、延長期間中に実施された NADDEC と MAK-COVAB 間の 2 回の会議 (JCC 及びテクニカルコミッティ) を通じ、両機関間の情報共有の進展を確認した。

### 5) 成果 5

指 標：

- ① 郡獣医事務所によって収集・検査されたサンプル数が、第 3 年次までに 15% 増加する。
- ② 選定された郡獣医事務所職員の初期診断及びサンプル収集についての能力が向上する。
- ③ 選定された郡獣医事務所から国家共同家畜疾病診断センターに提出されたサンプル数が、第 3 年次までに 15% 増加する。

本成果の達成度は「おおむね高い」と判断された。

<理由>

延長期間中も支援対象の5つのDVOで疾病診断数の増加が確認され、終了時評価(1)と同様に、初期診断並びにサンプル収集技術等の技術力は向上したと判断された。

## 2-2 5項目評価結果

### (1) 妥当性

ウガンダ国政策、日本の援助政策、ウガンダ国のニーズのいずれについても整合性を確認したが、終了時評価(1)と変更は生じていなかった。また、本プロジェクトは、“ウガンダ国の畜産振興を目的”とするMAAIFとMAK-COVAB間の協力覚書(MoU、2009年9月21日)に基づき進められている。省を跨ぐ2機関をプラットフォームとしたため実施上の困難性はあるものの、ウガンダ国政府自らの畜産振興戦略に従ったものであり、その妥当性は高いといえる。

### (2) 有効性

#### 1) プロジェクト目標及び成果の達成度

本プロジェクトの目標達成度は、終了時評価(1)では「中程度」から「おおむね高い」の中間に位置していたが、成果2及び4の達成度が上がったこともあり、今次評価では「おおむね高い」となった。成果とプロジェクト目標間も論理的であった。CDLで診断技術向上が期待された細菌とウイルス分野で専門家派遣が実施され、成果2の達成度向上に貢献した。

### (3) 効率性

#### 1) 人的投入

<日本側>

チーフアドバイザー及び病理診断長期専門家の派遣が当初予定に比して1年程度遅れたことは、事業計画に大きな影響を及ぼし、協力期間の延長の一因となっている。延長期間中、微生物(細菌、ウイルス)分野の診断技術指導は短期専門家で対応されているが、同分野はウガンダ側の人材、経験の薄い分野であるだけに、長期派遣であれば、より一層効果的に技術移転できているものと判断される。

<ウガンダ側>

NADDECは慢性的な人員不足に直面しており、カウンターパート(C/P)としての配置はあったものの、協力期間を通じて参加度合いは高くはなかった。CDLは、2013年6月にMAK-COVABの臨床薬理学科(PCM)に付属する組織として正式に位置づけられ、8名の職員がC/Pとして任命された。しかし、そのほとんどがPCM以外に所属する教員であったことから、プロジェクト活動(診断業務)に十分な時間を確保することが難しい局面が続き、事業進捗に影響を及ぼした。このため、プロジェクトは、CDLの診断体制の整備と認知度を上げることを優先し、複数のラボ・テクニシャンをプロジェクト費用で雇用し、プロジェクト成果に貢献した。なお、プロジェクト終了後もこれらラボ・テクニシャンの大学による正式雇用が適わなければ、持続性に懸念を残すことになる。また、8名のCDL-C/PのPCM専任化についてはMAK-COVABでも課題として認識され、既に3名の専任化手続きが進められている。

## 2) 物的投入（資機材・施設）

供与された機材すべてについて、稼働状況、維持管理状況ともに“良好”であることが確認されている。

## (4) インパクト

延長期間中、潜在性乳房炎の検査と搾乳衛生技術指導を3カ所のDVOで披露したところ、パイロットサイト以外のDVOから指導要望があり対応した。また乳房炎診断技術が広まり、牛乳の乳質と生産性向上について農民の意識の改善がみられた。負のインパクトは認められない。

なお、CDLに必要な技術移転は完了していることから、本プロジェクトの上位目標については指標の観点から達成は可能と考えられるが、持続性を高めるためには後述する「2-5 提言」に留意が必要である。

上位目標の指標：

- ① 国家共同家畜疾病診断センター（J-NADIC）が提供する診断サービスの水準が、ステークホルダーと郡獣医事務所職員により5段階評価で3点以上の評価を受ける。
- ② 本プロジェクトによって選定されたすべての郡獣医事務所が、国家共同家畜疾病診断センターをレファレンス診断（基準施設）として利用している。

## (5) 持続性

### 1) 政策・制度

上述の「2-2（1）妥当性」の欄に記載のとおり、ウガンダ国の政策に合致していること、MAAIFとMAK-COVAB間のMoUに基づくプロジェクトであることから、重要性は今後も変わらないと考えられる。他方で、地方分権化や獣医臨床サービス民営化政策は、郡(District)レベルでの家畜疾病対策に携わる人員や予算の減少をもたらしており、持続性に影響を及ぼしている。

### 2) 組織・財政

NADDECのラボラトリー・ユニット及び疫学ユニットは、恒常的な人員不足に直面しており、それがMAK-COVABとの連携によるJ-NADIC構想の背景となっている。現在6名の獣医が公募されているが、増員は容易ではないと予想されるので、NADDECに係る活動（成果2、3、4）の最低限の維持はあっても、現状の人員体制では発展性は期待しにくい。

CDLが2013年6月にMAK-COVABの臨床薬理学科（PCM）の附属機関として正式に位置づけられ、8名の職員がC/Pとして任命されたことは、前進である。しかし、8名は依然としてPCM以外の科に所属する教員であり、指揮命令系統が異なることから、プロジェクト活動〔CDLでの活動（診断）〕に十分な時間を割けず、結果としてプロジェクト活動に影響を及ぼした。このため、プロジェクトでは、CDLの診断体制強化（診断技術の能力向上と診断実績の蓄積）を優先することとし、止むを得ず複数のラボ・テクニシャンをプロジェクト費用で雇用し、それらラボ・テクニシャンにも指導を行った。結果、それらラボ・テクニシャンはプロジェクト活動に貢献し、MAK-COVABはその活動を十分に評価し正規雇用の必要性を認めている。ただし、MAK-COVABの雇用に至らなかった場合は持続性に大きな不安を残すことになる。



プロジェクト終了後の2014/15年度政府予算（2014年7月～2015年6月）として、MAAIFはプロジェクトC/Pファンドとして2億UGX（800万円）を、MAK-COVABはCDL予算として初めて2,000万UGX（80万円）を計上しており、持続性への配慮がみて取れる。地方分権化政策のため、DVOの主たる活動予算はMAAIFからではなく、地方自治省（MoLG）から地方自治体へ支出されるが、DVOレベルでの家畜疾病管理に携わる人員や予算は減少しており、その観点からのMAAIFからMoLGへの働きかけが必要となる。

### 3) 技術面

#### < NADDEC >

疾病診断技術は様々なケースの診断を数多く行い、その診断経験の蓄積によって技術力が向上する類のものである。そのためNADDECは、診断キットを用いて国家重要疾病を診断する（指標2-3）、ブルセラ病の診断薬を生産する（指標2-4）といった定型的な技術は可能であるが、診断技術を発展させていくことは期待しにくい。

#### < MAK-COVAB >

MAK-COVABの技術面での持続性は、日本人専門家の技術指導を受けたC/P、プロジェクトアシスタントが、今後も継続的に業務に携わり、そのうえで現場が真に必要な技術を特定し、MAK-COVABの家畜衛生普及サービスとして確立・定着させるか否かによる。上述のとおり、MAK-COVABとして3名とはいえ、C/PのCDL専従化の手続きをしており、業務に従事しやすい職場環境が整備されつつある。

#### < DVO >

DVOの診断件数の増加は近隣の家畜飼養農家から信頼を得ている証拠であり、DVOの診断技術も維持されると考えられる。

## 2-3 プロセス

### (1) コミュニケーション

NADDEC、MAK-COVAB及び日本人専門家間のコミュニケーションはおおむね良好である。

### (2) モニタリング

本プロジェクトではJCCに加えて、テクニカル・コミッティや四半期ごとに参集するクォーターリー・ミーティング、を設け、プロジェクトの進捗をモニタリングしており、その情報は関係者間で共有されている。プロジェクト終了後も、年2回J-NADICモニタリングの機会を設けること（「2-5 提言（3）」）が合意されている。

## 2-4 結論

「成果の更なる定着に向けてプロジェクト期間の延長が必要」との終了時評価（1）の提言に従い、本プロジェクトは1年間延長された。この延長期間中に、技術的には、不足していた細菌及びウイルス分野の診断技術向上（成果2）が図られつつあり、その他の成果についても維持あるいは進展があること、持続性に関しては、特にCDLの体制強化が組織面・予算面で図られつつあることを確認した。このため、本プロジェクト目標の達成が見込まれることから、予定どおり本年6月をもって終了可能とする評価結果をJCCで報告し、承認された。

## 2-5 提言

「2-4 結論」でも記したとおり、本プロジェクトは予定どおり本年6月をもって終了可能との評価結果がJCCで承認されたが、プロジェクト終了までの期間（4カ月間）、さらに終了後にウガンダ側が実施すべき事項を提言としてまとめた。

### (1) 体制強化（増員と予算）

- ・CDL及びDVOの体制強化のため、それぞれ4名及び2名をプロジェクト費用で雇用しているプロジェクト・アシスタントについては、関係者からその貢献ぶりが評価されており、貴重な戦力となっていることから、これら6名のMAK-COVAB及びMAAIFでの正式採用について強く要請した。
- ・MAAIFが2013/2014年度予算において確保している2億UGXのC/Pファンドの有効な活用がなされること、及びCDL、DVOにおける運営費の予算措置が行われることが肝要である。

### (2) CDLの診断料金徴収システム

- ・2013年4月から徴収されている診断料金について、全額の徴収に向けて徴収システムを改善すること。

### (3) J-NADICに係る定期協議の開催

- ・プロジェクト終了後も定期的（年2回）に進捗・課題等を確認・協議する。

### (4) 供与機材の適切な使用と管理

## 2-6 教訓

### (1) 長期的視点での協力

MAAIFのNADDECとマケレレ大学のCOVAB(MAK-COVAB)という官学連携構想(J-NADIC)については、その革新性に十分配慮して、その枠組みの構築及び定着を図ることが必要であった。そのためにプロジェクト開始前から（日本、ウガンダ側ともに）必要な人員配置体制を確保するとともに、本プロジェクト終了後のウガンダ側での活動期間も視野に入れた長期的計画を設定すべきであった。

### (2) プロジェクト・コンセプトの共通理解

J-NADICという官学連携構想の理解が、プロジェクト開始当初は両機関の責任者を含む一部に限られ活動に影響を及ぼした。準備段階・開始当初には、種々の機会を活用して現場レベルスタッフを含む共通理解醸成に慎重な対応が必要である。

### (3) 広い支援リソースの確保

アフリカでの開発協力に対するわが国支援リソースはいまだ不十分であり、専門家の適期派遣に至らなかった。MAK-COVABが実施機関の中心ではあったが、わが方支援体制も大学のみならずMAAIF等を含めた官学連携にすべきであった。

### (4) 地方分権政策化における協力の工夫

地方分権政策を進めるウガンダにおいて、実施機関に加えられた地方自治体であるDVO

の予算的・人的持続性確保のための工夫が必要であった。



# 第1章 評価調査の概要

## 1-1 調査団派遣の経緯と目的

ウガンダ共和国（以下、「ウガンダ」と記す）の家畜疾病診断・管理体制を強化するために2010年より実施してきた技術協力プロジェクト「家畜疾病診断・管理体制強化計画」が、延長期間を含めた協力期間が2014年6月に終了を迎える。

本終了時評価調査（2）は、プロジェクト目標と成果の達成度をプロジェクト・デザイン・マトリックス（Project Design Matrix：PDM）に基づき確認し、さらに評価5項目の観点からプロジェクトの評価を行うとともに、プロジェクト終了前後の活動に関する提言と類似案件のための教訓を得ることを目的とする。なお、プロジェクト開始後2.5年間の評価は、既に2013年1月に終了〔以下、終了時評価（1）〕しているところ、今回の調査は終了時評価（1）後の活動のみを確認し、前回評価の見直し及び今後への提言を行うものとした。

## 1-2 調査団の構成と調査期間

	氏名	職位	所属	期間
1	鍋屋 史朗	団長／総括	JICA 専任参事	2014年2月10～14日
2	佐藤 雪太	大学連携1	日本大学准教授	2014年2月10～14日
3	杉本 千尋	大学連携2	北海道大学教授	2014年2月10～14日
4	多田 融右	総合診断計画	JICA ミャンマー派遣中専門家 (国際協力専門員)	2014年2月10～14日
5	浅野 誠三郎	計画管理	JICA ウガンダ事務所 所員	2014年2月10～14日

## 1-3 対象プロジェクトの概要

### 1-3-1 プロジェクトの背景

本プロジェクトは、農業畜産水産省（Ministry of Agriculture, Animal Industry and Fisheries：MAAIF）付属の国家家畜疾病診断・疫学センター（National Animal Disease Diagnostic and Epidemiology Center：NADDEC、ウガンダ国における家畜疾病に関する情報の集約・分析・発信を担当）とマケレレ大学獣医学・動物資源・生物安全性学部（MAK-COVAB）の連携により、①国家共同家畜疾病診断センター（Joint National Animal Disease Diagnostic Center：J-NADIC）<sup>1</sup>の立ち上げ、②包括的・専門的な診断サービスの提供、③緊急疾病発生に対処する実践的な調査システムの整備、④国家家畜疾病診断・疫学センター（NADDEC）とマケレレ大学獣医学・動物資源・生物安全性学部（MAK-COVAB）間の情報交換システムの開発、⑤郡獣医事務所（District Veterinary office：DVO）の初期診断・サンプル収集技術の改善を行うものである。

これらの活動により、NADDECとMAK-COVABが、共同診断機関としてのプラットフォームを構築し、両者による密接な連携効果が発揮され、このプラットフォーム構築によって国家家畜疾病診断体制の基礎が確立し、国家としての診断技術が向上し、かつ最終的には家畜の生

<sup>1</sup> 国家共同家畜疾病診断センターと命名されているが、物理的建物としてのセンターの建設・設置ではなく、NADDECとMAK-COVABの官学連携による家畜疾病診断体制を称している。

産と生産性の向上に資することを目標とする。

### 1-3-2 プロジェクトの要約

プロジェクトの PDM バージョン 3 に記載されるプロジェクトの要約は以下のとおり。

#### 上位目標

家畜の生産及び生産性の向上を目的に、家畜疾病管理のための機能的な国家診断体制を確立する。

#### プロジェクト目標

MAAIF 疾病診断・疫学センター (NADDEC) とマケレレ大学獣医学・動物資源・生物安全性学部 (MAK-COVAB) が、共同疾病診断機関のプラットフォームとして先導しつつ、密接な連携を図ることで、国家の家畜疾病診断能力が向上する。

#### 成 果

1. MAAIF 疾病診断・疫学センターとマケレレ大学獣医学・動物資源・生物安全性学部の緊密な連携による機能的な家畜疾病診断システム整備のためのアクションプランが作成される。
2. 国家共同家畜疾病診断センター (J-NADIC) を立ち上げることによって、包括的かつ専門的診断サービスが提供できている。
3. 緊急疾病発生に対処する実践的な調査システムが整備される。
4. MAAIF 疾病診断・疫学センターとマケレレ大学獣医学・動物資源・生物安全性学部の間の情報交換システムが開発される。
5. 選定された郡獣医事務所において初期診断及びサンプル収集技術が改善される。

#### 活 動

1. アクションプランの作成 (枠組みの構築)
  - 1-1 ウガンダの状況に即した診断システムについて調査を行う。
  - 1-2 MAAIF 疾病診断・疫学センター及びマケレレ大学獣医学・動物資源・生物安全性学部の現況を調査する。
  - 1-3 両機関が果たすべき役割を整理する。
  - 1-4 MAAIF 疾病診断・疫学センター及びマケレレ大学獣医学・動物資源・生物安全性学部の連携による国家共同家畜疾病診断センター体制を形成する。
  - 1-5 フィールドから国家共同家畜疾病診断センターへのサンプル送付体制を形成する。
2. 国家共同家畜疾病診断センターの能力強化
  - 2-1 国家共同家畜疾病診断センターにおいて体系的・専門的な診断を可能とするための仕組みを整備する。
  - 2-2 診断用サンプルの受領システムを確立する。
  - 2-3 体系的な診断に必要な専門的診断技術を強化する。
  - 2-4 診断用試薬類 (主として生物製剤) の生産を開始する。

3. 緊急疾病発生に対処する調査システムの整備
  - 3-1 実現可能なシステム検討のための各種調査を行う。
  - 3-2 調査をもとに実用的なシステムを整備する。
  - 3-3 整備されたシステムの運用を開始する。
4. 情報交換システムの開発
  - 4-1 適切なシステム検討のための各種調査を行う。
  - 4-2 両機関で統合的に活用されるシステムを開発する。
  - 4-3 開発されたシステムの運用を開始する。
5. 選定された郡獣医事務所の能力開発
  - 5-1 パイロットとなる郡獣医事務所を選定する。
  - 5-2 初期診断およびサンプル収集に関するスタッフを研修する。
  - 5-3 フィールド活動の実施を強化する。

#### 1-3-3 プロジェクト協力期間

2010年6月～2014年6月（4年間）（延長期間2013年6月～2014年6月を含む）

#### 1-3-4 プロジェクト実施機関

- ・MAAIF 動物衛生・昆虫局（Department of Livestock Health & Entomology, Directorate of Animal Resources and Fisheries）
- ・MAAIF 家畜疾病診断・疫学センター（NADDEC）
- ・郡獣医事務所（DVO）
- ・マケレレ大学獣医学・動物資源・生物安全性学部（MAK-COVAB）

#### 1-3-5 対象地域

- ・マケレレ大学獣医学・動物資源・生物安全性学部中央診断ラボラトリー（Central Diagnostic Laboratory : CDL）（カンパラ）
- ・NADDEC（エンテベ）
- ・5 DVO（中部：キボガ、ムピジ、ワキノ、東部：ムバレ、西部：ムバララ）

## 第2章 評価の方法

### 2-1 評価設問と必要なデータ・評価指標

本調査における主要な調査項目は、評価5項目に即した下表の内容である。また、必要な情報・データについては後述するとおり、関係者からの質問票回答、聞き取り調査、並びにプロジェクトチームが作成した事前資料によった。

本調査では、終了時評価（1）以降の進捗を確認し、評価5項目の観点に基づく評価結果を合同調整委員会（Joint Coordinating Committee：JCC）において発表、関係者間での合意を得た。

表2-1 終了時評価の主要な調査項目

5項目	サブ項目
妥当性	ウガンダ国政策との整合性
	日本援助方針との整合性
	ターゲットグループ・ニーズ（NADDEC、MAK-COVAB、DVO）
	カウンターパート（C/P）としての妥当性（NADDEC、MAK-COVAB）
	日本の技術の優位性・経験蓄積の有無
有効性	プロジェクト目標及び成果達成の見込み
	達成に係る貢献要因
	達成に係る阻害要因
	外部条件の充足
効率性	人的投入（日本・ウガンダ側）
	物的投入（日本・ウガンダ側）
	本邦研修の効果
	調達機材の効果・妥当性
	その他の効率性促進要因
	重複活動の有無
インパクト	上位目標達成見通し
	波及効果（政策、組織、制度、財政、社会、経済、環境）
持続性	政策面
	技術面
	組織面
	財政面
	社会経済面

### 2-2 データ収集・分析方法

本評価調査にあたっては、前回調査事項からの変更点をプロジェクトに確認のうえ、評価調査団がヒアリング及び現地調査を実施し、評価結果を導いた。なお質問票については計10名の

C/P<sup>2</sup>より回答を得た。

### 2-3 評価調査の制約・限界

本調査において重大な調査上の制約はなかった。

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<sup>2</sup> Jプロジェクトの運営管理、活動に携わるウガンダ側の要員を指す。

## 第3章 プロジェクトの実績

### 3-1 投入実績

#### 3-1-1 日本側投入実績

##### (1) 日本人専門家派遣実績（付属資料1のAnnex 3）

本プロジェクトには、2010年6月のプロジェクト開始から、下表のと通りの長期専門家（チーフアドバイザー、病理診断、業務調整）及び短期専門家が派遣されてきた。（カッコ書きは、延長期間中に派遣された人数）

表3-1 派遣専門家指導分野および派遣期間実績一覧（2014年2月14日現在）

長期・短期	指導分野名	派遣人数 実績（延べ）	主たる業務内容
長期	チーフアドバイザー	1人	・プロジェクト全体の運営管理 ・C/P 機関及びDVO に対する技術指導・モニタリング全般
	病理診断	1人	・C/P 機関及びDVO に対する病理診断分野に係る技術指導
	業務調整／ 疾病診断技術	1人	・プロジェクトの日常的運営・管理及びDVO に対する技術指導
	業務調整	1人	・プロジェクトの日常的運営・管理
短期	運営指導	4人	・それぞれの専門分野における技術指導
	業務調整	1人（1）	
	疾病診断	2人	
	細菌学	5人（2）	
	ウイルス学	5人（2）	
	微生物学	1人	
	病理診断	1人	
	乳房炎・搾乳衛生	2人（1）	
	臨床診断学	1人（1）	
	原虫病	1人（1）	
	組織病理	1人（1）	

##### (2) 機材供与実績（付属資料1のAnnex 5）

車両、事務機器（コンピュータ、プリンター等）、ラボ用機器（顕微鏡、冷蔵庫、血液検査機等）が供与された。2014年2月時点における供与機材の価格合計は約37万1,000ドルである。延長期間中に追加で供与された機材はない。

(3) 研修実績 (付属資料1のAnnex 4)

本プロジェクト期間中に、下表の24名に対して本邦研修が実施されており(1名は2014年3月から研修予定)、延長期間中には8名が研修を受けた。研修は日本における家畜疾病管理体制の視察や疾病に関する技術指導を中心としたものであり、MAAIF及びDVOから参加した。

表3-2 本邦研修実績

	氏名	研修期間	研修分野	研修内容	所属
1	Nicolas Kauta	2010年11月20日～ 11月28日	技術研修・関係機関訪問 (国別研修)	家畜疾病管理体制に関する視察並びに日本の大学教育カリキュラム	農業畜産水産省(MAAIF)動物衛生・昆虫局
2	David Kabasa				マケレレ大学獣医学・動物資源・生物安全性学部(MAK-COVAB)
3	Edward Wanpande	2011年2月22日～ 3月13日	ラボラトリー診断技術(日本大学)	家畜疾病管理体制に関する視察及び日本大学獣医学部における個別技術の研修	MAK-COVAB
4	Wilfred Eneku				MAK-COVAB
5	Gabriel Tumwine				MAK-COVAB
6	Amanyire Moses	2011年7月27日～ 10月22日	在来品種を活用した家畜生産システム(課題別研修)	家畜生産に係る人工授精を含む各技術指導に係る研修	国立動物資源センター
7	Tingiira Bosco	2011年8月10日～ 11月20日	産業動物の獣医技術(課題別研修)	疾病管理及び治療・回復のための動物農場における臨床研修	Kiboga郡獣医事務所(DVO)獣医師
8	Robert Mwebe	2012年1月4日～ 3月10日	持続可能な畜産振興政策(課題別研修)	畜産振興に係る政策・行政システムの改善に係る研修	MAAIF
9	Assimwe Alani				MAAIF
10	Afayoa Mathias	2012年2月25日～ 4月24日	ラボラトリー診断技術(日本大学)	家畜疾病管理体制に関する視察及び日本大学獣医学部における個別技術の研修	MAK-COVAB
11	Bigirwa Godfrey				MAK-COVAB
12	Francis Mutebi				MAK-COVAB

13	Mugimba Kitizo	2012年8月13日～ 10月12日	ラボラトリー 診断技術（日 本大学）		MAK-COVAB
14	Muzoora Saphan				MAK-COVAB
15	Turyatamba James				MAK-COVAB
16	Benard Agwai	2012年8月13日～ 11月26日	産業動物の獣 医技術（課題 別研修）	疾病管理及び治療・ 回復のための動物農 場における臨床研修 に係る研修	MAK-COVAB
17	Karungi Fred				Wakiso DVO 獣 医師
18	Patrick Vudriko	2012年10月20日～ 2013年8月10日	国際獣疫対策 上級専門家育 成（課題別研 修）	高度なラボラトリー 技術に係る研修	MAK-COVAB
19	Alex Mukasa	2013年1月9日～ 3月16日	持続可能な畜 産振興政策	畜産振興に係る政策 ・行政システムの改 善に係る研修	MAAIF
20	Maholo Dennis				MAAIF
21	Joanne Kisaka	2013年2月11日～ 2013年5月20日	畜産物の衛生 管理・品質管 理（課題別研 修）	動物食品の生産にお ける品質管理・安全 性、食品衛生に係る 研修	MAK-COVAB
22	Wilfred Eneku	2013年3月27日～ 2013年10月3日	獣医技術研究 （課題別研修）	病理診断等における 技術・研究指導に係 る研修	MAK-COVAB
23	Charles Bosco Okuyo	2013年4月17日～ 2013年7月13日	在来品種を活 用した家畜生 産システム(課 題別研修)	家畜生産に係る人工 授精を含む各技術指 導に係る研修	MAAIF
24	Peter Msinguzi	2013年7月9日～ 2013年9月14日	持続的農村開 発のための畜 産振興（課題 別研修）	持続的な疾病管理及 び動物食品の改善に 係る研修	ミトーマ DVO
25	Samuel Okech	2013年8月25日～ 2013年12月5日	産業動物の獣 医技術（課題 別研修）	疾病管理及び治療・ 回復のための動物農 場における臨床研修 に係る研修	MAK-COVAB



26	Henry Mulondo	2013年8月19日～ 2013年9月21日	口蹄疫防疫対策上級専門家育成（課題別研修）	口蹄疫の予防・安定化に係る研修	イシンギロ DVO
27	Kizito Mugimba	2013年10月22日～ 2014年8月22日	原虫病及び食品媒介感染症上級専門家育成（課題別研修）	原虫病及び食品媒介感染症についての疾病予防・診断及び治療の技術に係る研修	MAK-COVAB
28	Srah Tegule	2014年2月9日～ 2014年5月17日	畜産物の衛生管理・品質管理（課題別研修）	動物食品の生産における品質管理・安全性、食品衛生に係る研修	MAK-COVAB
29	Bigirwa godfrey	2014年3月27日～ 2014年10月30日	獣医技術研究（課題別研修）	生産疾病の診断技術に係る研修	MAK-COVAB

注：2012年11月からマケレレ大学獣医学・動物資源・生物安全性学部（faculty）は獣医校（college）となった。

#### （4）現地業務費

CDL 改修工事費用、CDL における疾病診断に必要な試薬等の消耗品、ウガンダ国内における研修等に、現地業務費として 6,490 万円が投入された。

### 3-1-2 ウガンダ側投入実績

#### （1）ウガンダ側 C/P の配置（付属資料 1 の Annex 6）

プロジェクト実施機関である MAAIF、MAK-COVAB の組織図及び配置された C/P は、付属資料 1 の Annex 6-1 とおりである。プロジェクトの運営部門の C/P は、MAAIF から 3 名（プロジェクト・ダイレクター、プロジェクト・マネジャー、コーディネーター）、MAK-COVAB から 2 名（プロジェクト・マネジャーとコーディネーター）が表 3-3 のとおり配置されている。その他の C/P は、付属資料 1 Annex 6-2、6-3 を参照のこと。

表 3-3 プロジェクト運営部門の C/P

	所 属	氏 名	現在の職位	本プロジェクトにおける役割
1	MAAIF	Mr. Vincent R. Rubarema	次官	JCC 議長
2		Dr. Nicholas K. Kauta	動物衛生・昆虫局 局長	プロジェクト・ダイレクター 兼プロジェクト・マネジャー
3		Dr. Deo B. Ndumu	獣医学伝染性及び診断ユニット シニア獣医師	NADDEC 側コーディネーター

4	MAK-COVAB	Dr. John David Kabasa	獣医学・動物資源・生物 安全性学部 学部長	副プロジェクト・マネジャー
5		Dr. Eddie Wanpande	獣医学・動物資源・生物 安全性学部 講師補佐	MAC-COVAB 側コーディネーター

## (2) ウガンダ側活動経費負担

MAAIF 内及び MAK-COVAB 内の専門家用事務スペース及びラボラトリーにおける光熱費（電気、水道料金等）を両機関が負担した。

### 予算措置状況

ウガンダ会計年度	MAAIF	マケレレ大学
2012/2013 年度	2 億 UGX	光熱費（電気、水道料金等）
2013/2014 年度	2 億 UGX	400 万 UGX 及び光熱費（電気、水道料金等）

## 3-2 成果の達成状況

終了時評価（1）と同様に、本評価では達成度を「高い」、「おおむね高い」、「中程度」、「やや低い」、「低い」の5段階で評価した。

### 3-2-1 成果1の達成状況

MAAIF 疾病診断・疫学センターとマケレレ大学獣医学・動物資源・生物安全性学部の緊密な連携による機能的な家畜疾病診断システム整備のためのアクションプランが作成される。

指標 1：アクションプランが作成され、承認を受けるために第1年次の JCC に提出される。

本成果に係る達成度は「高い」。

本成果については、中間レビュー時に既に達成が確認されていた事項である。アクションプラン<sup>3</sup>（付属資料3）は、2011年4月28日に開催された第2回 JCC 会議で承認されている。

### 3-2-2 成果2の達成状況

延長期間中に期待された診断サービス・技術の「質」の改善、具体的には細菌・ウイルス分野の診断技術能力の強化については、両分野の短期専門家が派遣されて C/P の能力向上が進みつつあり、また、その他の指標も期待値を達成していることから、「おおむね高い」に位置づけた。

指標の達成状況は以下のとおりである。

指標 2-1：第3年次までに国家共同家畜疾病診断センター（J-NADIC）が受領・分析した診断サンプル数が15%増加する。

<sup>3</sup> Action Plan (A/P) は、プロジェクト開始の経緯、実施戦略、方法などが詳細に記述された19頁から成るプロジェクト・ドキュメントである。関係者は A/P に立ち返ってプロジェクトを実施することが期待される。

第1年次と3年次（2012年）との比較で、317%増加となっている。延長後の2013年の診断数が2012年に比較して減少しているが、DVOの診断能力が上がったことにより、CDLに持ち込む診断件数が減ったものと推測される。

表3-4 CDLにおける診断数

年	診断数	備考
2010	280	ベースライン情報（CDL完成前）
2011	64	CDL工事のためにサンプル数は限定
2012	888	CDL完成後の診断数
2013	519	

出典：CDL資料

指標2-2：マケレレ大学獣医学・動物資源・生物安全性学部の中央診断ラボラトリーに、以下の8分野それぞれのための診断技術が少なくとも1つ以上導入される。

- 病理学／病理組織学の技術
- 血液学、生化学・血清学の技術
- 寄生虫学、細菌学、ウイルス学の技術
- 分子・生物学技術

指標が規定した8分野について、終了時評価（1）時点で、①病理診断技術、②血清診断技術、③カンピロバクター、標準サルモネラ、炭疽の分離・標準同定法など細菌学に係る診断技術、④培養細胞、狂犬病の蛍光抗体法診断、アフリカ豚コレラウイルス分離、羊・ヤギ痘などのウイルス学に係る診断技術がMAK-COVABに導入されている。加えて、分子・生物学技術としてポリメラーゼ連鎖反応（Polymerase Chain Reaction：PCR）が部分的に導入されている。

今次評価では、上記に加えて原虫病学の関連技術として殺ダニ剤抵抗試験やダニ識別の技術導入が確認された。したがって、指標2-2は達成されたといえる。

指標2-3：MAAIF 疾病診断・疫学センター（NADDEC）が、CBPP（牛肺疫）、CCPP（小反芻獣肺疫）、アフリカ豚コレラ、狂犬病、PPR（小反芻獣疫）の診断試験を実施できる。

指標に定められている家畜疾病は、ウガンダの国の重大疾病に位置づけられ、NADDECはこれら疾病のコントロールを行う責を負っているため、これら疾病の診断試験は継続的に実施されている。

表 3 - 5 NADDEC における診断数

年	診断数
2010	2,105
2011	7,907
2012	5,799
2013*	3,767

出典：NADDEC 資料

\*：指標の疾病以外の診断数及び血清診断数も含む。2013 年は、1 月から 6 月までの診断数。

指標 2-4：ブルセラ症のための診断薬キットが生産・利用される。

NADDEC 及び MAK-COVAB はブルセラ症のための診断薬キットを生産し、DVO にも診断薬を供給している。2013 年は十分な備蓄があるため、製造を中断しているが、指標 2-4 は達成されたといえる。

指標 2-5：国家共同家畜疾病診断センター（J-NADIC）によって、サンプル収集及び検査のためのラボ試薬及び保存溶液が 4 種類以上作成され、選定された郡獣医事務所に供給される。

CDL において 4 種類以上のラボ試薬及び保存溶液を生産し、DVO のリクエストに応じて供給している。したがって、指標 2-5 は達成されたといえる。

### 3 - 2 - 3 成果 3 の達成状況

緊急疾病発生に対処する実践的な調査システムが整備される。

指標 3：プロジェクト期間中 1 回以上、緊急疾病流行が国家共同家畜疾病診断センター（J-NADIC）の共同調査チームによって調査される。

本成果に係る達成度は「高い」。

緊急疾病発生に関する調査は、終了時評価（1）時点で 2 件実施されており、延長期間中にも 1 件（2012 年 4 月に発生した 2 県でのブルセラ病のフォローアップ調査指示を受け、2013 年 4 月に実施したもの）を確認した。

### 3 - 2 - 4 成果 4 の達成状況

MAAIF 疾病診断・疫学センターとマケレレ大学獣医学・動物資源・生物安全性学部の間的情報交換システムが開発される。

指標 4：国家共同家畜疾病診断センター（J-NADIC）が作成したすべての診断データが、センターに集められ、蓄積され、MAAIF 疾病診断・疫学センターとマケレレ大学獣医学・動物資源・生物安全性学部との情報共有が行われる。

本成果に係る達成度は、「おおむね高い」と「中程度」の中間に位置づけられた。

毎月 MAK-COVAB から NADDEC に対して、CDL で実施された診断データが送付されており、MAK-COVAB からの情報発信は定期的に行われている。NADDEC から MAK-COVAB に対する定期的な情報発信はないが、2 度の技術会議（Technical Meeting）等の開催を通じて情報共有体制は強化された。

他方で DVO からの質問票回答には、NADDEC から DVO への情報提供を強化すべきとの提言が挙げられている。

### 3-2-5 成果 5 の達成状況

選定された郡獣医事務所において初期診断及びサンプル収集技術が改善される。

DVO における診断（サンプル）数（表 3-6）、J-NADIC への送付数（表 3-8）が増加しており、本成果の達成度は「おおむね高い」と判断された。

指標 5-1：郡獣医事務所によって収集・検査されたサンプル数が、第 3 年次までに 15% 増加する。

プロジェクト対象 5 郡の DVO が収集し、かつ診断を行ったサンプル数は下表のとおり 15% 以上増加している。

表 3-6 対象 DVO において収集かつ診断を行ったサンプル数

県	年				
	2010	2011	2012	2013	2010-2013 年比較値
Kiboga	55	32	469	397	722%
Mbale	31	21	70	61	197%
Mbarara <sup>1)</sup>	2,670	2,454	2,270	4,321	162%
Mpigi	118	143	130	364	308%
Wakiso	N/A	48	124	246	513% <sup>2)</sup>
計	2,874	2,698	3,063	5,389	188% <sup>2)</sup>

出典：プロジェクト資料

1) Mbarara 郡のサンプル数はブルセラ症の血清診断数を含むため多くなっている。

2) Wakiso 郡及び合計の増減は 2011 年と 2013 年の比較を示す。

指標 5-2：選定された郡獣医事務所職員の初期診断及びサンプル収集についての能力が向上する。

終了時評価（1）と同様に、対象 5 郡の DVO における初期診断に係る能力は表 3-7 のと

おり総括できる。

表 3-7 対象 DVO の初期診断技術（全体的な傾向）

技 術	現状能力
寄生虫糞便検査	可能
血中原虫検査	可能
細菌分離	一部可能
病理解剖	可能
細菌染色	可能
白血球分画測定	一部可能

指標 5-3：選定された郡獣医事務所から国家共同家畜疾病診断センターに提出されたサンプル数が、第 3 年次までに 15%増加する。

表 3-8 に示すとおり、J-NADIC に持ち込まれるサンプル数は増加しており、プロジェクト開始時の 2010 年と 2013 年の比較では、50 %以上の増加が確認できる。

表 3-8 J-NADIC へ送付されたサンプル数

年	2010			2011			2012			2013		
	M	C	計	M	C	計	M	C	計	M	C	計
DVO / 機関												
Kiboga	50	1	51	0	1	1	20	26	46	0	23	23
Mbale	12	0	12	0	0	0	0	10	10	0	8	8
Mbarara	0	0	0	0	2	2	0	3	3	0	19	19
Mpigi	20	0	20	14	13	27	0	33	33	0	9	9
Wakiso	0	0	0	8	43	51	0	40	40	16	56	72
計	82	1	83	22	59	81	20	112	132	16	115	131

M : MAAIF、C : MAK-COVAB

出典：プロジェクト資料

なお DVO からの質問票回答には、MAK-COVAB へサンプルを送付する際の搬送代について予算措置をすべきであること、またサンプルの梱包・搬送方法について改善が図られるべき、との提言があった。

### 3-3 プロジェクト目標の達成度

プロジェクト目標：

MAAIF 国家家畜疾病診断・疫学センター（NADDEC）とマケレレ大学獣医学・動物資源・生物安全性学部（MAK-COVAB）が、共同疾病診断機関のプラットフォームとして先導しつつ、

密接な連携を図ることで、国家の家畜疾病診断能力が向上する。

指 標：国家共同家畜疾病診断センターが、本プロジェクトによってリスト化された 25 種類の家畜疾病すべてについて診断できる。

延長期間中に 3 点の進捗が確認されたことから、プロジェクト目標の達成度は「おおむね高い」に位置づけられる。

第一に、終了時評価（1）時点では 16 種類の家畜疾病について実際の診断を行った経験を有していたが、今次評価では 18 種類（表 3-9）を確認した。第二に、細菌、ウイルスの疾病診断の経験を、延長期間中に蓄積した。第三に、NADDEC と MAK-COVAB との 2 度の技術会議による情報共有の実施が確認された。

表 3-9 に 25 種類の疾病診断能力についての現状を示す。なお、これら判断は日本人専門家による判断を基礎として、本評価調査団が再確認を行なったものである。表の見方は表下段の注に示すとおりであるが、同セル内に○や●、△が混在する理由は、同一の学問分類において、複数種類の診断技術があるためである。

表 3-9 25 疾病に係る診断技術習得状況

	疾病名称	病理学	細菌学	ウイルス学	血液学・寄生虫学	分子生物学	診断経験
1	牛肺疫（CBPP）、 小反芻獣肺疫（CCPP）		○・●			●	✓
2	狂犬病（Rabies）	○		○			✓
3	トリバノソーマ症 （Trypanosomiasis）				○	●	✓
4	結核（Tuberculosis）	○			○	△	✓
5	羊痘（山羊痘） （Sheep（Goat）Pox）	○					
6	アフリカ豚コレラ （African Swine Fever）	○		○		△	✓
7	豚丹毒（Swine Erysipelas）	○	△				
8	気腫疽（Blackquater）	○	△・●				
9	ブルセラ症（Brucellosis）		△・○			●	✓
10	トリコモナス症（Trichomoniasis）				○		
11	カンピロバクター感染症 （Campylobacteriosis）		○・●			○	
12	ヨーネ病（Paratuberculosis）	○					



13	すべてのダニ媒介疾患 (All tick-born diseases)	○			○		✓
14	ランピースキン病 (Lumpy Skin Disease)			●		●	✓
15	ニューカッスル病 (Newcastle Disease)	○		○			✓
16	ガンボロ病 (Gumboro Disease)	○		●			✓
17	鶏痘 (Fowl Pox)	○					✓
18	小反芻獣疫 (PPR)			●		○	
19	乳腺炎 (Mastitis)		○				✓
20	サルモネラ症 (Salmonellosis)		○				✓
21	大腸菌症 (Colibacillosis)	○	○				✓
22	炭疽病 (Anthrax)		○				✓
23	栄養欠乏 (Nutritional Deficiency)	○			△		✓
24	寄生虫疾患 (Parasitic Diseases)				○		✓
25	リフトバレー熱 (RVF)	△		○・●			✓

注：表内の記号は以下を意味する。

○：対応可能

●：対応不可能

△：追って対応可能と予想できる。

出典：プロジェクト資料

### 3-4 実施プロセスにおける特記事項

#### 3-4-1 コミュニケーション

本プロジェクトの第1年次から2年次の前半期間まで、プロジェクトの活動内容や方針をめぐって、NADDEC、MAK-COVAB 及び日本人専門家の間で十分な共通認識を得られないままの期間があったが、現在の三者間のコミュニケーションは、おおむね円滑であり、プロジェクトの活動や方針については概ね共通の認識が保たれていると判断できる。

ただし、MAK-COVAB 関係者とのヒアリングからは、MAAIF、MAK-COVAB の両機関における J-NADIC 構想の理解は、いまだ限られていることが判明している。一般関係者に対する広報も積極的に行われており、今後も内外への周知を促進する努力を期待したい。

パイロット郡 DVO のラボの認知度がまだ不足しているとの現状分析から、2郡の DVO (キボガ、ムバララ) にもプロジェクト・アシスタントを配置し、診断体制・広報強化を行っている。近隣地域からの信頼が高まることから、地方分権化政策において DVO への予算確保につながることから、今後もそれらの試みの継続が望まれる。

#### 3-4-2 モニタリング体制

本プロジェクトでは、JCC に加えてテクニカル・コミッティや四半期ごとの会議を設け、プロジェクトの進捗をモニタリングしている。



## 第4章 評価結果

### 4-1 項目ごとの評価

#### 4-1-1 妥当性

##### (1) ウガンダ国政策及び日本の援助政策

ウガンダ国政策、日本の援助政策、ウガンダ国のニーズのいずれについても整合性を確認した〔終了時評価（1）と変更なし〕。また、本プロジェクトは、“ウガンダ国の畜産振興を目的”とする MAAIF と MAK-COVAB 間の協力覚書（MoU、2009年9月21日に署名。付属資料4）に基づき進められている。省をまたぐ2機関をプラットフォームとしているために、実施上の困難はみられるものの、ウガンダ国政府自らの畜産振興戦略に従ったものであり、その妥当性は高いといえる。

##### (2) 日本の対ウガンダ援助方針との整合性

国別援助方針において「農村部の所得向上」は重点分野に位置づけられ、家畜疾病診断能力の強化を通じた畜産振興は「農村部の所得向上」を達成するための協力プログラムと位置づけられている。そのため、日本の対ウガンダ援助方針と本プロジェクトの協力内容との整合性は高いといえる。

##### (3) ニーズとの整合性

###### < NADDEC >

国の中央診断ラボラトリー（CDL）として、所属スタッフの診断技術の向上は常に必要とされており、NADDEC がもつニーズとの整合性は高い。

###### < MAK-COVAB >

プロジェクト開始前より、MAK-COVAB には“Teaching Laboratories”といわれるものがあつたが、不十分な診断機器及び試薬調達により、その機能は十分ではなかった、加えて MAK-COVAB における授業方針は理論重視であり、実技に重きが置かれていなかった。本プロジェクトは実践的な指導を通じて診断技術を強化するものであり、MAK-COVAB がもつ課題・ニーズに対応するものであつた。加えて MAK-COVAB の診断技術の向上は、直接的に国内の畜産農家に裨益するものであることから、本プロジェクトの重要性は高いと認識されている。

###### < DVO >

DVO の疾病診断に係る資機材・人的資源は限られており、かつ疾病診断技術を向上させるための研修等の機会が少なかったため、畜産農家を十分に指導することができていなかった。そのため DVO のスタッフは現場における家畜疾病管理のため、自身の技術・知識の向上を強く必要としており、本プロジェクトはそのニーズに対応するものであつた。

##### (4) C/P 選定の適切性

NADDEC は国レベルの疾病診断ラボであり、重要疾病を管理・予防する責任を有している。国レベルでの機動的な疾病診断システムを確立することを目的とする本プロジェクトにおいて、NADDEC は欠くことができない、重要な C/P 機関であつた。

一方で MAK-COVAB はウガンダの獣医を世に送り出す唯一の高等教育機関であり、人的資源等の面から高い優位性を有していた。MAK-COVAB の専門知識及び豊富な人的資源もまた、本プロジェクトの目標を達成するために決定的に重要であった。

#### (5) 支援対象とした DVO 選択の適切性

本プロジェクトの対象となった 5 つの DVO は、地理的観点及び既存の資機材の状況を考慮し、選定された。その多くが“Cattle Corridor”といわれる畜産が盛んな地域に位置し、疾病管理のニーズは非常に高い。加えて他の DVO と比較し、診断資機材、人的資源の観点で優位性をもっていることも選定された理由となった。

#### 4-1-2 有効性

終了時評価(1)では「中程度」から「おおむね高い」の中間に位置していたが、今次評価では、成果 2 及び 4 の達成度が上がったことを確認し、本プロジェクトの目標達成度は、「おおむね高い」とした。延長期間中に、細菌とウイルス分野で CDL に短期専門家が複数回派遣され、成果 2 の達成度向上に貢献したことが主な要因となる。

#### 4-1-3 効率性

##### (1) 人的投入

##### <日本側>

プロジェクト開始当初の 1 年間、チーフアドバイザー及び病理診断の 2 名の長期専門家<sup>4</sup>が不在であったことが、事業進捗に大きな影響を及ぼしており、協力期間延長の一因となった。延長期間中も、長期専門家による微生物(細菌、ウイルス)分野の診断技術指導が期待されたが、当該分野の人材が不足しているなどの理由から長期専門家を派遣できず、短期専門家の複数回派遣を通じて対応している。同分野はウガンダ側の人材、経験の薄い分野であるだけに、長期派遣であれば、より一層効果的に技術移転できたものと推測される。

##### <ウガンダ側>

NADDEC は慢性的な人員不足に直面しており、C/P としての配置はあったものの、協力期間を通じて参加度合いは高くはなかった。

CDL は、2013 年 6 月に MAK-COVAB の臨床薬理学科(PCM)に付属する組織として正式に位置づけられ、8 名の職員が C/P として任命された。全員が大学での講義と CDL での活動を兼務とし、診断業務に十分な時間を確保することが難しい局面が続き、事業進捗に影響を及ぼしたため、プロジェクトは、CDL の診断体制の整備と認知度を上げることを優先し、複数のラボ・テクニシャンをプロジェクト経費で雇用することとした。CDL の C/P の専任化については MAK-COVAB でも課題として認識され、既に 3 名を専任化するよう手続きが進められている。プロジェクトが雇用したラボ・テクニシャンの存在は CDL を機能させるうえで重要な役割を担い、プロジェクト成果発現に貢献した。

<sup>4</sup> 1 年以上の派遣期間の専門家を長期専門家と称している。

(2) 物的投入（資機材・施設）

供与された機材すべてについて、稼働状況、維持管理状況ともに“良好”であることを確認した。

(3) 予算

ウガンダ側 MAAIF から C/P ファンド（2 億 UGX= 約 820 万円）が 2012/13 年度より計上され、NADDEC の資機材購入に 2,800 万 UGX が拠出されたが、管轄する省庁が異なる MAK-COVAB/CDL の活動に直接的には活用されてはいない。2013/14 年度も同額の C/P ファンドが計上されているが、MAAIF と MAK-COVAB 間の協議により、MAAIF から MAK-COVAB へ C/P ファンドの一部を予算配布することは困難であることから、NADDEC から CDL へ疾病診断を業務委託する形で、診断に必要な試薬等の消耗品を提供できないか、最終の詰めをしているところである。一方で MAK-COVAB は 2013/14 年度予算から 400 万 UGX（約 16 万円）を支出し、CDL の試薬を購入している。

(4) 本邦研修

貢献要因に記したとおり、本邦研修はプロジェクト成果の進捗に貢献したばかりでなく、C/P のモチベーション向上にもつながり、効果的な投入であった。

(5) その他（補完関係・重複活動の有無）

NADDEC に対して世界銀行及び米国国際開発庁（USAID）が資機材供与を中心とした支援を行っている。また、国連食糧農業機関（FAO）やアメリカ疾病管理予防センター（Centers for Disease Control and Prevention : CDC）などが折々で特定の疾病対策に係るワークショップやトレーニングを国内の疾病管理関係者に対して行っている。以上より、本プロジェクトとの協力内容が重複する他プロジェクトはみられない。

4-1-4 インパクト

(1) 上位目標達成の可能性

上位目標：

家畜の生産及び生産性の向上を目的に、家畜疾病管理のための機能的な国家診断体制を確立する。

指標 1：国家共同家畜疾病診断センター（J-NADIC）が提供する診断サービスの水準が、ステークホルダーと郡獣医事務所職員によって 5 段階評価で 3 点以上の評価を受ける。  
指標 2：本プロジェクトによって選定されたすべての郡獣医事務所が、国家共同家畜疾病診断センターをレファレンス診断（基準施設）として利用している。

1) 上位目標達成の見込み

本プロジェクトの上位目標については指標の観点からの達成は十分可能と考えられるが、持続性を高めるため後述する「6-1 提言」に留意が必要である。

## 2) インパクト

延長期間中、泌乳期初期の乳房炎予防を2カ所のDVOで披露したところ、他のDVOが模倣し、また乳房炎診断技術が広まり、牛乳の乳質と生産性向上がみられた。

負のインパクトは認められない。

## (2) その他のインパクト

DVOからの質問票回答によれば、プロジェクトによる協力の結果、下記のポジティブなインパクトが現在生じている。

- ・ムバレ郡においてはラボ診断に係る消耗品購入のための予算が計上されるようになった。
- ・ムピジ郡においてはラボの拡張・改修に係る新規の計画が承認された。

## 4-1-5 持続性

### (1) 政策・制度

上述の「2-2(1) 妥当性」の欄に記載のとおり、ウガンダ国の政策に合致していること、MAAIFとMAK-COVAB間の協力覚書(MoU)に基づくプロジェクトであることから、重要性は今後も変わらないものと考えられる。他方で、地方分権化や農業近代化計画(Plan for Modernization of Agriculture)が促進する獣医臨床サービス民営化政策は、県レベルでの家畜疾病管理に携わる人員や予算を減少させ、疾病管理に係る業務遂行が難しくなっている現状がある。そのため農業政策の大方針において本分野の重要性は維持されるものの、他分野の政策的潮流との兼ね合いにおいて、政策的な持続性は今後更に複雑化する可能性も秘めている。

### (2) 組織・財政

#### 1) 組織

NADDECの診断ユニット及び疫学ユニットは、恒常的な人員不足に直面しており、それがMAK-COVABとの連携によるJ-NADIC構想の背景となっている。現在6名の獣医が公募されているが、NADDECスタッフの増員は容易ではないと予想されるので、NADDECに係る活動(成果2、3、4)については、最低限の維持はあっても、現状の人員体制では持続性は期待しにくい。

CDLは、2013年6月にMAK-COVABの臨床薬理学科(PCM)の附属機関として正式に位置づけられ、8名の職員がC/Pとして任命されたことは前進である。しかし、8名は依然としてPCM以外の科に所属する教員であり、指揮命令系統が異なることから、プロジェクト活動[CDLでの活動(診断)]に十分な時間を割けず、結果としてプロジェクト活動に影響を及ぼしたことから、プロジェクト活動が停滞する一因となっていたが、現在8名中3名のC/Pの専任化手続きが行われている。

またプロジェクトでは、CDLの診断体制強化(診断技術の能力向上と診断実績の蓄積)を優先し、複数のラボ・テクニシャンをプロジェクト費用で雇用した。JICA専門家は、C/Pに加えてそれらラボ・テクニシャンにも指導を行っている。その結果、それらラボ・テクニシャンの活動はプロジェクト成果に大きく貢献し、C/Pにも評価されて

いる。このため、MAK-COVAB としての雇用の必要性が認められているが、プロジェクト終了時期（2014年6月）までに、正規雇用に至らなかった場合はCDLの持続性に大きな不安を残すことになる。

## 2) 財政

財政面での持続性は本プロジェクト最大の懸案事項である。上述の(1)にみるとおり、政策的な重要性こそ掲げられているものの、その重要性に係る認識と予算措置は必ずしもバランスが取れておらず、家畜疾病管理に係る予算は恒常的に不足した状況にある。

本プロジェクトがめざすものは国家診断体制の整備であるため、財政面の持続性はNADDECとMAK-COVABだけをみれば事足りるものではなく、国内のDVOを含めた予算措置までを視野に入れる必要がある。この観点において、DVOを含めた財政面での持続性は、まだ低いと考えられる。

他方、NADDEC、MAK-COVABに限ると、延長期間中に、徐々にではあるが、前進が図られつつある。プロジェクト終了後の2014/15年度政府予算（2014年7月～2015年6月）として、MAAIFはプロジェクトC/Pファンドとして2億UGX（800万円）を、MAK-COVABはCDL予算としては初めて2,000万UGX（80万円）を計上しており、持続性に向けた配慮がみて取れる。地方分権化政策のため、DVOの主たる活動予算はMAAIFからではなく、地方自治省（MoLG）予算（地方自治体経由）から支出されるが、DVOレベルでの家畜疾病管理に携わる人員や予算は減少していることから、MAAIFからMoLGへの働きかけが必要となる。

## (3) 技術面

疾病診断技術はさまざまなケースの診断を数多く行い、その診断経験の蓄積によって技術力が向上する類のものである。NADDECは、診断キットを用いて国家重要疾病を診断する（指標2-3）、ブルセラ病の診断薬を生産する（指標2-4）といった定型的な診断技術は可能であるが、予算・人員体制ともに不足傾向にあるNADDECで診断技術を発展させていくことができるかどうか、若干懐疑的と判断せざるを得ない。

MAK-COVABの技術面での持続性は、日本人専門家の技術指導を受けたC/P、ラボ・テクニシャンが、今後も継続的に業務に携わるか否かによる。上述のとおり、3名のC/PのCDL専従化の手続きをしており、業務に従事しやすい職場環境が整備されつつあるのは朗報である。

DVOの診断件数の増加は、近隣の家畜飼養農家から信頼を得つつある証拠であるが、まだ十分にDVOの機能が理解されていないため、延長期間中において、一般広報が強化された。こういった試みを通じてDVOに対する期待が高くなり、そして診断件数の増加がみられれば、現在の診断技術が将来的にも維持されることが期待される。

【参考】

表 4-1 NADDEC の人員数 (2013 年 9 月末時点)

	ラボラトリー・ユニット	疫学ユニット
獣 医	3 名	5 名
ラボラトリー・テクニシャン	5 名 (この他に 3 名契約)	20 名

出典：NADDEC 所長からの聞き取り

#### 4-2 結 論

「成果の更なる定着に向けてプロジェクト期間の延長が必要」との終了時評価（1）の提言に従い、本プロジェクトは1年間延長された。この延長期間中に、技術的には、不足していた細菌及びウイルス分野の診断技術向上（成果2）が図られつつあり、その他の成果についても維持あるいは進展があること、持続性に関しては、特にCDLの体制強化が組織面・予算面で図られつつあることを確認した。このため、本プロジェクトは予定どおり本年6月をもって終了可能とする評価結果をJCCで報告し、承認された。



## 第5章 技術的側面

今次評価においては、将来の日・ウ大学連携の観点から、CDLの活動並びにその継続性を評価するため、所属スタッフに対し下記のインタビューを行った。

- ① 日本での研修事項と CDL 業務遂行への反映、効果
- ② 現在の主要業務
- ③ 今後の展望

日本での研修については、おおむね効果的であり、そこで習得された技術は現在の業務遂行に役立っているとの回答であった。また、日本人専門家による教育訓練により、彼らの技術的向上が達成できていると考えられたが、以下のような問題点が考えられた。

- (1) マケレレ大学既存技術等活用できれば、より技術的な発展、診断精度の向上が期待できる。具体例として、CDLではトリパノソーマ診断に顕微鏡下の原虫検出にとどまっているが、同原虫の種・亜種鑑別をPCR、LAMP（Loop-Mediated Isothermal Amplification）で実施している研究者もいる。
- (2) 他のプロジェクトでサルモネラ等を収集しているが、ウガンダ国内の貴重な疫学調査試料であることから、情報交換も必要である。また、菌株を安定して保管し、試料を共有するうえで、CDLスタッフ、並びに日本人専門家のアドバイス、CDL設置の機器利用が望まれる。
- (3) C/Pは、授業など教育上の負担が大きく（人によっては1週間に10時間程度の授業負担）、CDL業務に時間を割けない。

さらに、本インタビューを通じて、各メンバーの専門領域を把握でき、現在実施中、あるいは興味のある研究課題等を聞き出すことができ、今後の大学連携課題の立案、推進の基礎となる情報が得られた。

現在、MAAIFのNADDECにおいては世銀支援による鳥インフルエンザラボ建設や口蹄疫ラボの他ドナーによる支援が行われている。これに対してCDLは日々の現場における種々の家畜疾病の問題に対応するための、総合的な診断技術体制の構築をめざしている。具体的には、基本的な病理診断技術、細菌、ウイルス、寄生虫などの病原体の分離同定技術、媒介動物の同定や薬剤感受性試験技術など、場合によっては未知のものであるかもしれないものを含むさまざまな家畜疾病にも適用可能な基本的な技術が導入されつつあり、広く現場の日々のニーズに応えるとともに、野外材料から得られる新しい科学技術的な知見の収集にも資することが期待される。

感染症診断には、感染症に対する総合的な知識が必要であるとともに、個別の病原体の特性を知り尽くし、的確な手法を用いることが肝要である。また、実験室内感染を防ぐ知識をもつことも安全な業務遂行上不可欠である。これらは単に最新の機器を導入し操作を習得させるだけでは十分でなく、長期にわたる継続的な教育訓練が必要である。

CDLは病理、細菌、ウイルス、寄生虫の診断施設が整備され、またそれぞれに対応する日本人専門家が派遣されて教育訓練が行われ、基本的な技術伝達できたことは評価に値する。特に「総合的な判断」が必要な場合、それぞれの分野の専門家、技術員が情報を適切に交換できる場

が必要であり、CDLはコンパクトにまとまった環境であり、情報交換には適した場であるとの印象を受けた。またウガンダで初めて、各専門分野による総合疾病診断がCDLで行われている意義は大きい。加えて、MAK-COVABでは本プロジェクト関係者以外に、欧州等との共同研究を通じて、高度な専門知識と技術を有するスタッフも一定数在職していると考えられた。これらのスタッフもCDL活動に取り込むことができれば、より診断精度や技術の向上が可能と考えられるため、MAK-COVABが総力を上げて継続的なCDL機能強化にあたることを期待する。

さらに、家畜衛生の向上には、CDLでの診断だけにとどまらず、発生現場である各地方獣医関連機関のアンテナ機能、初期診断体制と農家に対する指導体制の整備が不可欠であるが、調査期間中に視察できたMbararaのDVOは十分にその機能を担っていると判断された。今後このような地方拠点を更に整備・強化し、CDLをハブとしてネットワークをうまく形成できれば、ウガンダの家畜衛生は飛躍的に向上するものと考えられる。中央及び地方におけるこのような家畜衛生管理体制を維持、発展させるためには、予算的な裏づけ、人材育成が必要であり、ウガンダ側関係者はもとより、必要に応じて援助スキームを申請するなど、これまで構築してきた相互理解関係を生かした継続的な努力を期待する。



## 第6章 提言と教訓<sup>5</sup>

### 6-1 提言

#### (1) プロジェクト終了時及び終了後の提言

以下を JCC に提言し承認された。

##### 1) 体制強化

- CDL 及び DVO (郡獣医事務所) の体制強化のため、プロジェクトの費用で 6 名 (CDL に 4 名、DVO に 2 名) が雇用され、活動に貢献していることが確認されている。特に CDL の診断業務に欠かせない戦力となっており、これら 6 名の正式採用について強く要請した。
- NADDEC からの情報発信の強化、及び現在採用手続き中である新規獣医師の NADDEC 疫学ユニットへの配属
- 2013/2014 年度予算の 2 億 UGX の C/P ファンドの活用
- CDL、DVO 運営費の確保

##### 2) CDL の診断料金徴収システムの改善

##### 3) J-NADIC に係る定期協議の開催

##### 4) 供与された機材の適切な利用と維持管理

#### (2) 日本の大学からの支援の可能性

プロジェクトの成果と人的ネットワークを今後に生かす方策として、日本の支援大学と MAK-COVAB との今後の連携の可能性を探った。MAK-COVAB 学部長からは、日本の支援大学に対して、中～短期的な教育訓練と並行して長期的視野に立った人材育成の希望が述べられた。中～短期的な教育訓練については、わが国の各種の教育・研究グラント等既存の枠組みを利用することが可能である。特に研究という側面から、両国で興味が一致する研究課題を発掘できれば、日本側研究者にとってもメリットがあり、ウガンダ側にとっても共同研究を通じた感染症診断技術の習熟、新規診断法の習得等につながることから、支援大学等からの協力は比較的得やすいものと考えられる。

一方、長期的視点に立った人材育成としては、文科省国費留学生制度の活用が第一に考えられる。ウガンダ側から優秀な人材が推薦されれば、支援大学が窓口となり、受け皿となる研究室、主指導にあたる教員を紹介することは可能である。その際、もし MAK-COVAB の正式なスタッフではない人材が留学する場合には、帰国後に確実に MAK-COVAB スタッフとして採用され、CDL 活動に積極的に関与させることの担保が重要である。人材育成には長期的展望と支援継続が必要であり、これまで構築してきた両国間の人的ネットワークを生かしていくことも、持続性のために重要であろう。

### 6-2 教訓

#### (1) 長期的視点での協力の必要性

本プロジェクトでは、「4-2 結論」に記述のとおり、MAK-COVAB の CDL の診断技

<sup>5</sup> 「提言と教訓」は、延長期間のみならずプロジェクト開始時から念頭に記載したので、終了時評価報告書と重複する事項がある。

術の向上と定着に重点を置いた活動を行うためにプロジェクト期間が1年間延長され、この間 NADDEC、MAK-COVAB 双方に努力の跡がみられたが、「持続性」についての課題は残っている。MAK-COVAB 学部長は、「J-NADIC 構想は、ウガンダ政府の人的・予算的制約のなかで練られた戦略であり、J-NADIC の成果を示すことで政治・政府からの予算等の支援を得ていくこと、そのためには長期的な試みが必要」、と力説している。MAAIF 家畜衛生昆虫局長は、今次 JCC の冒頭挨拶で、「JICA プロジェクトの終了後も、J-NADIC 構想はウガンダ側の努力で引き続き継続されるべきもの」、との発言があった。J-NADIC 構想のみならず CDL の機能すらも MAK-COVAB においては革新的なものであることから、J-NADIC のような組織の垣根を超えた官学連携案件については、その革新性に十分配慮のうえ、その枠組みの構築及び定着を図るために、相応の協力期間を設定すべきである。

## (2) プロジェクト・コンセプトの共通理解

本件は、J-NADIC 構想の下、MAAIF の NADDEC と CDL の2つの組織をまたぐ協力として開始された。MAAIF と MAK-COVAB の協力覚書（付属資料4）、アクションプラン（付属資料3）を通じ、両組織の責任者においては、J-NADIC 構想は十分な認識が得られていたが、実際の活動を担うべき NADDEC 及び MAK-COVAB のスタッフ・レベルにおいては、プロジェクト開始時点において十分な理解とモチベーションが得られていたとはいえず、プロジェクト活動の進捗に影響を及ぼした。活動の具体的な進捗に伴って、関係するスタッフの理解とモチベーションが向上していくという流れが期待できるという事例はあるものの、準備段階や開始時点において、トップレベルにとどまらず現場レベルのスタッフに及ぶ共通理解の確認と醸成に更に注意を払う必要があるだろう。

## (3) 広い支援リソースの確保

日本との地理的な距離と社会文化への理解不足もあり、アフリカでの開発協力に対する日本の支援人材はまだ不十分というのが実情である。本プロジェクトにおいても、専門家の確保は容易でなかった。ウガンダ側実施機関の中心は大学獣医学部ということもあり、専門家リソースを大学を中心とする国内支援委員会に求めたが、協力内容が疾病診断の実技指導にあったことから、早期にわが国農林水産省、都道府県等の家畜衛生関連機関に支援の輪を拡大しておくことが望ましかった。人材のリクルートにあたっては、JICA で実施してきた家畜衛生分野の技術協力プロジェクトに参画した専門家の活用の検討など、これまでの蓄積を利用する工夫が求められるところである。国内に広く支援人材を確保することは、日本の国益としての海外家畜伝染病に関する技術及び情報の獲得と蓄積、またプロジェクトを通じて得られた人材や相互関係などを含む協力成果の持続的活用と発展にも資するものである。

## (4) 地方分権化政策下における協力の工夫

ウガンダの地方分権政策下では、セクター省庁は、地方自治体の政策の実施状況を把握し、成果基準に達しているか否かを確認する役割をもつが、地方自治体の人事、財政上の直接の権限を有してはいない<sup>6</sup>。今次プロジェクトでは、実施機関のひとつに5つの DVO が加

<sup>6</sup> JICA 国際協力総合研修所（2007年11月）：アフリカにおける地方分権化とサービス・デリバリー [174] より引用。

えられ、地方分権化政策を考慮した DVO における予算的確保のための工夫として、延長期間中に対象 DVO の事業広報を通じた地方自治体への働き掛けを行っている。ただそういった取り組みだけでは、必ずしも十分ではなかったと判断され、またそれら DVO に係る人材強化については、JCC で要望したのみとなった。財務・人事面で独立した地方自治体の参加にあたっては、少なくとも地方自治体を管轄する中央省庁との接点を常に保ち、協議できる体制をつくるなどの対応が必要である。

## 付 属 資 料

1. M/M 及び合同評価報告書
2. 延長時 R/D
3. Action Plan
4. MAAIF と MAK-COVAB の協力覚書
5. 調査日程
6. 主要面談者リスト
7. J-NADIC の構想図

MINUTES OF MEETING  
ON  
THE TERMINAL EVALUATION  
ON  
THE EXTENDED PERIOD OF  
THE TECHNICAL ASSISTANCE TO IMPROVE NATIONAL DIAGNOSTIC  
CAPACITY FOR ANIMAL DISEASE CONTROL  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY  
AND  
THE AUTHORITIES CONCERNED OF THE REPUBLIC OF UGANDA

The Japan International Cooperation Agency organized the Terminal Evaluation Team from February 10 to February 14, 2014 in order to review the progress of the extended period of the Technical Assistance to Improve National Diagnostic Capacity for Animal Disease Control (hereinafter referred to as “the Project”).

After the intensive study and analysis of the activities and achievements of the extended period of the Project, the Team prepared the Terminal Evaluation Report (hereinafter referred to as “the Report”) and presented it to the Joint Coordinating Committee (hereinafter referred to as “JCC”) which was held on February 14, 2014.

JCC discussed the major issues of the extended period of the Project stated in the Report and agreed on the matters attached hereto.

Kampala, February 14, 2014

  
\_\_\_\_\_

Mr. Shiro Nabeya  
Leader  
The Terminal Evaluation Team  
Japan International Cooperation Agency

  
\_\_\_\_\_

Dr. Nicholas K. Kauta  
For Permanent Secretary  
Ministry of Agriculture, Animal Industry,  
and Fisheries

  
\_\_\_\_\_

Prof. John D. Kabasa  
Principal  
College of Veterinary Medicine, Animal  
Resource and Biosecurity,  
Makerere University

ATTACHMENT

1. JCC approved the Report and agreed to take necessary actions to each recommendation.

END

Appendix: Terminal Evaluation Report

A handwritten signature in black ink, appearing to be 'J. M. K.' or similar, located in the lower right quadrant of the page.A small, handwritten mark or signature in black ink, located in the lower left quadrant of the page.A small, handwritten mark or signature in black ink, located in the lower right quadrant of the page, below the main signature.

THE TERMINAL EVALUATION REPORT  
ON  
THE EXTENDED PERIOD OF  
THE TECHNICAL ASSISTANCE TO  
IMPROVE NATIONAL DIAGNOSTIC CAPACITY FOR ANIMAL DISEASE  
CONTROL IN UGANDA

Kampala, February 14<sup>th</sup>, 2014

Terminal Evaluation Team  
Japan International Cooperation Agency



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## Abbreviations

C/P	Counterpart
CDL	Central Diagnostic Laboratory, MAK-COVAB
DVO	District Veterinary Office
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
J-NADIC	Joint National Animal Disease Diagnostic Centre
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MAK-FVM	Faculty of Veterinary Medicine, Makerere University
MAK-COVAB	College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University
NADDEC	National Animal Diseases Diagnostic and Epidemiology Centre, MAAIF
PDM	Project Design Matrix
R/D	Record of Discussion

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M/K

## 1. Introduction

### 1-1 Objectives of the Terminal Evaluation (the Evaluation)

- (1) To review and evaluate the inputs, activities and achievements of the extended period of the Project, and to summarize the achievement.
- (2) To execute a comprehensive evaluation on the achievement of the extended period of the Project from the viewpoint of the five criteria of evaluation, namely "Relevance", "Effectiveness", "Efficiency", "Impact" and "Sustainability".
- (3) To make recommendations on future perspective of the Project and draw lessons learned from the Project in the same field of technical cooperation.

### 1-2 Member of the Evaluation Team

Job Title	Name / Position
Leader	Mr. Shiro NABEYA Senior Assistant Director , Rural Development Department, JICA
Inter-university cooperation(1)	Dr. Yukita SATO Associate Professor, College of Bioresource Sciences, Nihon University
Inter-university cooperation(2)	Dr. Chihiro SUGIMOTO Professor, Graduate School of Veterinary Medicine, Hokkaido University
Animal Disease Control	Dr. Yusuke TADA Senior Advisor to the Director General, Rural Development Dept., JICA
Program Officer	Mr. Seizaburo ASANO Representative, JICA Uganda Office

### 1-3 Schedule of Evaluation

The schedule is attached as Annex 1.

### 1-4 Methodology of the Evaluation

#### 1-4-1 Method of Evaluation

The Project was evaluated by the Japanese evaluation team (the Evaluation Team) based on materials showing the framework of the Project such as PDM, PO and the Record of Discussion (R/D) for the extended period. The evaluation included analysis of reports, field surveys, and interviews with staff of MAAIF, MAK-COVAB, DVOs, JICA experts, beneficiary farmers in the project targeted sites and other concerned personnel in the Project. This evaluation was conducted based on the following five evaluation criteria.

#### 1-4-2 Evaluation Criteria

##### (1) Relevance

Relevance refers to the validity of the Project Purpose and the Overall Goal in connection with the development policy of the authorities concerned of Uganda as well as the needs of beneficiaries and assistance policy of Japan.

##### (2) Effectiveness

Effectiveness refers to the extent to which the expected benefits of the Project have been achieved as planned. It also examines whether these benefits have been brought about as a result of the Project.

##### (3) Efficiency

Efficiency refers to the productivity of the implementation process. It examines whether the inputs of the Project have been efficiently converted into outputs.

#### (4) Impact

Impact refers to direct and indirect, positive and negative impacts caused by the implementation of the Project, including the extent to which the overall goal has been attained.

#### (5) Sustainability

Sustainability refers to the extent to which the Project can be further developed by the authorities concerned of Uganda and the extent to which the benefits generated by the Project can be sustained under national policies, technology, systems and financial state.

## 2. Outline of the Project

### 2-1 Background of the Project

The livestock industry plays an important role in the agricultural sector and for the Ugandan economy. The livestock industry accounts for 13% of Agricultural Domestic Product and more than 40% of rural farmers (about 6 million households) are engaged in livestock keeping for their farming activities.

MAAIF produced Livestock Development Strategy in April 2004 in which the most limiting constraint hindering the development of the livestock sector is the prevalence of livestock diseases, especially in the traditional livestock system that dominates 90% of the animal industry. Rapid and accurate diagnosis followed by appropriate quarantine and control measures is prerequisite to mitigate the effects of livestock diseases on production and productivity of livestock.

MAAIF has formulated the Ministry's Development Strategy and Investment Plan (MDSIP 2010/11 – 15/16), which focuses on the overall national goal of poverty reduction. The importance of livestock endemic and epidemic diseases as well as pest control including strengthened regulatory services for livestock is identified as key elements for MDSIP.

MAAIF, supported by JICA, has implemented the two years' project since 2007 to "Enhance the Capacity of Animal Disease Control in Uganda" through the training on several diagnostic techniques for technical staff and the renovation and installation of necessary equipment. The Project has achieved some improvement of primary diagnostic capacity at NADDEC and selected districts laboratories, but it was recognized that the shortage of qualified veterinary staff has been limiting the capacity improvement of NADDEC of MAAIF.

MAAIF and MAK-FVM (current title is MAK-COVAB<sup>1</sup>) jointly proposed J-NADIC concept and concluded Memorandum of Understanding (MOU) to strengthen the collaboration between both institutes in September, 2009. Its' concept is to establish the core which aims to utilize the integrated staffing not only from MAAIF but also MAK-FVM to be remedy for the shortage of qualified staff and to be developed as national reference diagnostic centre for animal diseases as stipulated in a memorandum of understanding signed between two institutes. The J-NADIC is expected to be a platform where both institutes can utilize staff and expertise of each other. The Project was one of the components of JICA's "Animal Industry Promotion Program" in Uganda. The Project started from June 2010 and was evaluated in January, 2013 with the recommendation that the project period should be extended one year from June, 2013 to ensure sustainability

### 2-2 Summary of the Project

The framework of the extended period of the Project from June, 2013 to June 2014 was decided in the R/D signed on March 1, 2013. The components of the extended period of the Project are same as the original one, therefore, the project's summary described in PDM version 3 is as follows (For more details, see Annex 2).

#### (1) Overall Goal

A functional national diagnostic system for animal disease control is established in order to improve the production and productivity of livestock.

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<sup>1</sup> Title of Faculty of Veterinary Medicine (MAK-FVM) was changed to School of Veterinary Medicine (MAK-SVM) in May 2011, and in November 2011 changed to College of Veterinary Medicine, Animal Resources and Biosecurity (MAK-COVAB).

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## **(2) Project Purpose**

The national diagnostic capacity for animal diseases is improved by means of the close collaboration of NADDEC and MAK-COVAB, leading to the platform for the joint institute.

## **(3) Outputs**

- Output 1: An action plan for a functional diagnostic system on animal diseases through the close collaboration of NADDEC and MAK-COVAB is drawn up.
- Output 2: Comprehensive and specialized diagnostic services become available by launching the Joint National Animal Disease Diagnostic Centre (J-NADIC).
- Output 3: An operational investigation system for emergency diseases is established.
- Output 4: An information exchange system for sharing between NADDEC and MAK-COVAB is developed.
- Output 5: Primary diagnostic and sample preparation techniques are improved at the selected District Veterinary Offices.

## **3. Achievement of the extended period of the Project**

### **3-1 Inputs**

#### **3-1-1 Japanese Side**

##### **(1) Dispatch of Experts**

Long-term experts were dispatched to the Project in the following fields: 1) chief advisor, 2) pathological diagnosis, and 3) coordinator/ disease diagnosis. short-term experts were dispatched in the following fields: 1) management & guidance, 2) disease diagnosis, 3) bacteriology, 4) virology, 5) mastitis control and milk hygiene, 6) pathological diagnosis, 7) microbiology, 8) histopathology and 9) acarology/protozoology. For details, see Annex 3.

##### **(2) Training in Japan**

By the time of the evaluation, 23 counterparts participated in the training in Japan. For details, see Annex 4.

##### **(3) Provision of Equipment/Facility**

Vehicles, office equipment such as computers and printers, and equipment for laboratory such as microscopes, freezers, blood analyzer, etc., have been provided for the project activities. Cost for procurement of equipment was around 371 thousand US dollars as of February 2014. For details, see Annex 5. MAK-COBAB's old laboratory was renovated and renamed as CDL with new diagnostic equipment in September 2011.

##### **(4) Local Cost Allocated by Japanese Side**

Local cost allocated by JICA for the implementation of the project activities was UGX 1,546 million (equivalent to 64.9 million yen) as of December 2013.

### **3-1-2 Ugandan Side**

#### **(1) Assignment of Ugandan Counterparts**

Currently, 38 counterparts in total are assigned, i.e. 2 persons of MAAIF as project director and coordinator, and 2 persons of MAK-COVAB as project manager and coordinator. For details, see Annex 6.

#### **(2) Project Operation Cost Allocated by Ugandan Side**

Running cost (electricity and water, etc.) for the office spaces and laboratories of MAAIF and MAK-COVAB have been shouldered by MAAIF and MAK-COVAB. UGX 4 million was disbursed for the Project to procure reagent in December, 2013, which was the first expenditure by MAK-COVAB besides electricity, water and salaries for C/Ps.

#### **(3) Provision of Facilities**

Office spaces for Japanese experts and diagnostic laboratory at the MAK-COVAB have been utilized for the project activities. An office space for Japanese expert in the building of former headquarters of MAAIF in Entebbe and laboratory of NADDEC have been also utilized for the project activities.

### **3-2 Outputs**

\* Achievement status varies from "high", "almost high", "moderate", "relatively lower", and "low".

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**3-2-1 Output 1: An action plan for a functional diagnostic system on animal diseases through the close collaboration of NADDEC and MAK-COVAB is drawn up.**

Objectively verifiable indicator:  
1. Action plan is prepared and submitted to the JCC in first year for approval.

The achievement status of Output 1 is “high”

<Reason>

Action plan consists of background of J-NADIC, its concept and details of expected activities of relevant institutions. It was prepared in March 2011 after gaining consensus with counterparts, and approved at the 2<sup>nd</sup> JCC meeting in April 2011.

**3-2-2 Output 2: Comprehensive and specialized diagnostic services become available by launching the Joint National Animal Disease Diagnostic Centre (J-NADIC).**

Objectively Verifiable Indicator:  
2-1. No. of diagnostic samples received and analyzed by J-NADIC increase 15% by the 3rd year.  
2-2. At least one diagnostic techniques for each of following 8 specialized areas are newly introduced in Central Diagnostic Laboratory of MAK-COVAB  
- Pathological/histo-pathological techniques  
- Hematological, biochemical and serological techniques  
- Parasitological, Bacteriological and virological techniques  
- Molecular-biological techniques  
2-3. Diagnostic tests for CBPP, CCPP, African swine fever, rabies and PPR can be conducted at NADDEC-MAAIF.  
2-4. Diagnostic reagents for brucellosis are produced & utilized.  
2-5. More than 4 kinds of laboratory reagents and stock solutions for sample preparation and examination can be prepared and supplied to the selected DVOs by J-NADIC

The achievement status of Output 2 is “almost high”.

<Reason>

It should be remarked as a crucial achievement that J-NADIC actually started to provide diagnostic services for clients.

The indicators of this output are basically satisfied as follows:

Regarding 2-1, number of samples increased as the table shows. The number of samples in 2013 is less than one in 2012, because it is attributed to increased capacity of DVOs to diagnose and likely drop of incidence at farms.

Table 1: Number of samples diagnosed at CDL-COVAB

Year	Number of samples	Remarks
2010	280	Baseline information
2011	64	Closure of the CDL-lab due to renovation affected the number of samples.
2012	888	Improvement in samples brought at CDL
2013	519	

Regarding 2-2, the following techniques were demonstrated and newly introduced to Ugandan staff by JICA experts: 1) histopathological techniques; 2) serological techniques; 3) bacteriological techniques such as isolation of Campylobacter, standard Salmonella, and anthrax; 4) virological techniques such as cell culture techniques, FAT for rabies, isolation of virus of African swine fever, Newcastle disease, sheep and goat pox. Molecular techniques such as PCR are partially introduced. In addition, entomological techniques such as acaricide resistant test and tick identification are introduced.

Regarding 2-3, diagnosis has been made at NADDEC as shown in the following table.

Table 2: Number of samples diagnosed at NADDEC

Year	Number of samples tested
2010	2,105
2011	7,907
2012	5,799
2013	3767

Note: 1) The number of 2011 and 2012 does not include the samples in June.

2) The number of 2013 is total from January to June in 2013.

Regarding 2-4, both NADDEC and MAK-COVAB temporary suspended production of diagnostic reagents of brucellosis due to enough stock.

Regarding 2-5, J-NADIC became capable of the preparation of more than four reagents including bacteriology culture media, and supplied them to some of the DVOs based on their requests.

Since the previous evaluation<sup>1</sup> made a point of the quality of diagnosis, the evaluation result of its achievement is placed between “almost high” and “moderate”, even though the indicators were mostly satisfied. During the extended period, CDL’s diagnosis experience have been accumulated and improved, especially in virology and bacteriology. Judging from the observation by the evaluation team and interviews from the Project experts and counterparts, the current levels of diagnosis have been improved, and then the evaluation result of its achievement is placed “almost high”

**3-2-3 Output 3: An operational investigation system for emergency diseases is established.**

Objectively Verifiable Indicator:

3. Emergency disease outbreaks are investigated by joint investigation team of J-NADIC more than once during the project period.

The achievement status of Output 3 is “high”.

<Reason>

In October and December 2012, two surveys were made with collaboration of both laboratories: 1) Bovine abortion case of NAGRIC farm in Kibale: a CDL team was dispatched based on the request from NADDEC, and 2) a suspected PPR case in goat herd in Luwero was detected by CDL and informed to NADDEC, then a CDL team sampled and submitted them to NADDEC. In addition, a guideline for operation investigation system was prepared for the joint survey in April 2012.

During the extended period one joint survey conducted in April 2013, to follow-up Brucellosis case in Luwero and Busia district which outbreaks were in September 2012.

Judging from the facts and guideline setting, it is evaluated that the achievement status is “high”.

**3-2-4 Output 4: An information exchange system for sharing between NADDEC and MAK-COVAB is developed.**

Objectively Verifiable Indicator:

4. All the diagnostic data produced by J-NADIC are centralized, accumulated and shared by NADDEC and MAAIF and Central Diagnostic Laboratory of MAK-COVAB.

The achievement status of Output 4 is between “almost high” and “moderate”.

<Reason>

MAK-COVAB sends diagnosis data monthly to NADDEC continuously and submitted data is used by NADDEC for country information. Systematic and/or regular basis information from NADDEC is expected. Information sharing was strengthened during extended period through having two technical committee meetings.

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<sup>1</sup> The previous evaluation means the Joint Technical Evaluation which was conducted in January 2013.



**3-2-5 Output 5: Primary diagnostic and sample preparation techniques are improved at the selected District Veterinary Offices.**

Objectively Verifiable Indicator:
5-1. No. of samples collected and examined by DVOs increase 15% by the 3rd year.
5-2. Capability of staff of the selected DVOs on primary diagnosis and sample preparation technique
5-3. No. of samples submitted to the J-NADIC from the selected DVOs increase 15% by the 3rd year.

The achievement status of Output 5 is “almost high” as same as the rating of the previous evaluation, however the DVOs became more popular for communities and their diagnostic capacities have been strengthened due to the Project assistants’ support in Kiboga and Mbarara since June 2013.

Regarding the indicator 5-1, number of samples has increased by more than 15%.

Table 3: Number of samples collected and examined by DVOs

Districts	Year				Change between 2010-2013
	2010	2011	2012	2013	
Kiboga	55	32	469	397	722%
Mbale	31	21	70	61	197%
Mbarara <sup>1)</sup>	2,670	2,454	2,270	4,321	162%
Mpigi	118	143	130	364	308%
Wakiso <sup>2)</sup>	N/A	48	124	246	513%
Total <sup>2)</sup>	2,874	2,698	3,063	5,389	188%

1) The figure of Mbarara includes serological test of brucellosis.

2) The data of Wakiso and Total are compared between 2011 and 2013.

The following table shows general situation of DVOs in terms of techniques categorized as primary diagnosis (indicator 5-2). These are based on field observation and interviews by joint evaluation team.

Table 4: Technical level of primary diagnostics as general trend

Techniques	Situation (as general trend)
Fecal examination for gastro-internal parasite	Can do
Blood examination for blood parasite	Can do
Cultivation of bacteria for isolation	Partly can do
Postmortem	Can do
Staining bacteria	Can do
White blood cell and differential count	Partly can do

Note: The table shows the general trend. There are differences among DVOs due to their own various backgrounds such as duration that they received technical assistance from the Project.

Regarding the indicator 5-3, number of samples submitted to J-NADIC has increased by more than 50 % between 2010 and 2013.

Table 5: Number of samples submitted to J-NADIC

Years	2010			2011			2012			2013		
	M	C	T	M	C	T	M	C	T	M	C	T
Institutes												
Kiboga	50	1	51	0	1	1	20	26	46	0	23	23
Mbale	12	0	12	0	0	0	0	10	10	0	8	8
Mbarara	0	0	0	0	2	2	0	3	3	0	19	19
Mpigi	20	0	20	14	13	27	0	33	33	0	9	9
Wakiso	0	0	0	8	43	51	0	40	40	16	56	72
Total	82	1	83	22	59	81	20	112	132	16	115	131

M: MAAIF, C: COVAB, T: Total

Remark: These numbers include suspicious cases of anthrax and rabies.

### 3-3 Project Purpose

**Project Purpose:** The national diagnostic capacity for animal diseases is improved by means of the close collaboration of NADDEC and MAK-COVAB, leading to the platform for the joint institute.

Objectively verifiable indicator

A total of 25 animal diseases listed by the Project can be diagnosed by J-NADIC.

The achievement status of the Project purpose is positioned “almost high”.

<Reason>

A diagnostic manual for the 25 diseases has been prepared, and J-NADIC can now diagnose 24 diseases out of listed 25 diseases. As of the evaluation period, number of diseases which J-NADIC has already diagnosed actually at CDL was increased 18 of the 25 diseases from 16 at the previous evaluation.

Following the recommendation by the previous evaluation that diagnostic capacity at bacteriology and virology should be strengthened towards the level as “comprehensive diagnosis”, the CDL staff has made effort with support of Japanese experts to fill in the gap during the extended period, although further capacity development is required.

In addition to the technical aspect, information sharing with NADDEC and MAK-COVAB is still another necessary issue for tackling. It needs to be strengthened in order to let J-NADIC mechanism function by both institutes more actively.

### 3-4 Implementation process

#### 3-4-1 Communication among organizations/personnel on the project implementation

In the first year particularly, there were communication gaps on understandings of the Project’s activities and the way of implementation among NADDEC, MAK-COVAB and Japanese experts.

Through the efforts of these three players and preparation of the Action Plan approved in April 2011, communication has been activated gradually from the second year, and as of the evaluation, communication between both organizations become smoother in comparison with the beginning period in general.

It should be worthwhile pointing out in here about the necessity to enhance more information sharing particularly in the flow from NADDEC to MAK-COVAB and DVOs.

The evaluation team confirmed that regular-basis information flow from MAK-COVAB to NADDEC was established on diagnosis results data bi-monthly. On the other hand, the frequency of consolidated report sending from NADDEC to MAK-COVAB and DVOs is still limited.

#### 3-4-2 Monitoring system

The Project has been trying to activate and monitor the Project through establishing several committees/meetings such as CDL’s Weekly Implementation Meeting, Technical Committee Meeting and Quarterly Meeting in addition to Joint Coordinating Committee (JCC). Monitoring the progresses of the Project has been basically conducted well under these structures.

#### 3-4-3 Arrangement for effective implementation of the Project

The Project made efforts on public announcement to let concerned parties including livestock farmers know CDL through newsletters and other information sources such as local radio. During the extended period the Project strengthened public relations on J-NADIC, CDL and selected DVOs through participation in the National Agricultural Show in Jinja, and World Egg Day Celebrations and Show, and publicity improvement activities by Volunteer staff in DVOs. These efforts have contributed to growing the realization of CDL in public.

The legal framework of CDL was approved in November 2012 and CDL was established in PCM department in June 2013. In July 2013, eight (8) COVAB academics and two (2) technicians were assigned to CDL by the Principal of COVAB. Since most of them do not belong to PCM department, a single command of Head of PCM department did not necessarily function at the beginning, The MAK-COVAB strove towards the functional CDL and some improvement on it.

MAAIF secured counterpart fund (UGX 200 million) for 2012/13 fiscal year, however the Project could not

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access due to complex formality. MAAIF is allocated for the budget of UGX 200 million for 2013/14. As of the evaluation period, both sides of NADDEC and MAK-COVAB are discussing the access and effective usage of the counterpart fund.

MAK-COVAB has prepared 2014/15 university budget including UGX 20 million for CDL activity. The fund is expected to encourage and promote CDL after the Project ends.

#### **3-4-4 Modification of PDM**

PDM has been modified appropriately through mid-term review and another JICA's mission.

### **4. Results of Evaluation**

#### **4-1 Relevance**

The following aspects are same as the previous evaluation.

##### **4-1-1 Consistency with Ugandan policy**

One of the major agricultural sector policy in Uganda, the Agriculture Sector Development Strategy and Investment Plan: 2010/11-2014/15, places the importance on animal disease control. The policy describes that "in order to safe guard against future invasions, much better diagnosis is required", then, also mentions that "building capacity for diagnosis is required along with needs assessment study for laboratory services including veterinary dispensaries". In this line, the Project is exactly consistent with the Ugandan policy.

##### **4-1-2 Consistency with Japanese aid policy for Uganda**

The Japan's Country Assistance Program for Uganda sets five primary areas to assist. One of them is "to generate income in rural area". In the sub-program of this primary assistance area, livestock development and animal disease control are regarded as one of important approaches. In this line, the Project is consistent with the Japan's ODA policy.

##### **4-1-3 Consistency with needs**

(NADDEC)

As a national central laboratory, NADDEC is always required to develop staffs' capacity development.

(MAK-COVAB)

Although MAK-COVAB had "teaching laboratories" even before the Project, the technical level of diagnosis was remained at fundamental level due to partly constraints of laboratory equipment and necessary consumables, and also teaching policy taken at MAK-COVAB, which basically emphasized on theory comparing with practical lessons. In this line, MAK-COVAB had needs to develop diagnosis capacity through practical trainings.

In addition, MAK-COVAB was rendered another organizational mission as out-reaching activities for social contributions. Upgrading skills of diagnosis directly can contribute to livestock farmers nationwide. Capacity development of MAK-COVAB on animal disease diagnosis was also an important need in this connection as well.

(DVO)

DVOs had suffered from limited facilities and human resources for diagnosis. Under the poor environment, district veterinary officers had fewer chances to develop their own knowledge and skills; therefore, they frequently faced difficulties in proper consulting with livestock farmers. In this connection, DVOs had strong needs to develop their diagnosis skills and knowledge for animal disease control at field level.

##### **4-1-4 Appropriateness of the counterpart to implement the Project**

NADDEC is a primary national laboratory and has responsibility to control state diseases. Considering the Project purpose and the overall goal, which aim at establishing and functioning national diagnostic system, the existence of NADDEC is indispensable for these objectives.

MAK-COVAB has advantages in practical skills and human resources as a single educational entity producing veterinary doctors in Uganda. Their expertise as well as human resources is also crucial to achieve the Project purpose and the overall goal.

#### **4-1-5 Appropriateness of selection of DVOs**

Five DVOs are appropriately selected in terms of their location and existing facilities. Many of them are located in cattle corridor where local needs for disease control are always high. These DVOs also had advantages regarding the laboratory infrastructures and manpower in addition to their locations.

#### **4-2 Effectiveness**

##### **4-2-1 Achievement of the Project Purpose and Outputs**

As abovementioned, the Project has steadily progressed towards achievement of the Project purpose and the outputs through the extended period.

##### **4-2-2 Contribution factors**

During the extended period, experts in virology for 9 months and bacteriology for 4 months respectively have been providing opportunities for counterparts to gather experience, although longer assignment of those experts could further contribute to the Project.

##### **4-2-3 Inhibition factors**

During the extended period, the delay of Project Coordinator's dispatch and the un-dispatched long term expert in virology or bacteriology influenced on the Project management and progress of technical transfer.

#### **4-3 Efficiency**

##### **4-3-1 Input (Manpower)**

(Japanese side)

During the extended period, the delay of Project Coordinator' dispatch as successor of Dr. Saito influenced on the Project management. The un-dispatched long term expert in virology or bacteriology influenced on the progress of technical transfer as well. In this line, there are inefficient manpower inputs for the Project.

(Ugandan side)

MAK-COVAB has allocated as many staffs as possible at CDL, but the number itself has to be increased to reach better level of function. For the purpose of reinforcement of staffs, the Project undertook to recruit four Project assistants, two volunteer staff and three volunteer students from COVAB, for CDL, and two Project assistants for DVOs. It is evaluated as an effective countermeasure for manpower inputs, however it is required to employ those Project assistants officially to sustain J-NADIC.

Under the limited number of staffs at NADDEC, it sometimes faced difficulties to allocate manpower to the Project activities. At the evaluation period MAAIF advertised six positions for NADDEC contributing to J-NADIC.

##### **4-3-2 Input (Material)**

Equipment procured for CDL and the laboratories at DVOs has contributed to their progress of the Project's outputs and the purpose in general.

##### **4-3-3 Input (Training in Japan)**

Training in Japan has contributed to enhancing the Project's outputs. The participants are highly motivated and contribute to the Project aggressively.

##### **4-3-4 Input (Budget)**

UGX 28 million of UGX 200 million Counterpart fund of 2012/13 was provided for J-NADIC and UGX 200 million of 2013/14 were secured, but yet accessed. MAK-COVAB allocated UGX 4 million for CDL. It is noteworthy as a significant future step towards sustainability. Project cost from Japanese side was allocated in right timing in general.

##### **4-3-5 Complementary activities and duplicated activities**

There are/were equipment assistance to the laboratory of NADDEC by the World Bank and USAID. NADDEC is now expected to utilize effectively this new equipment. In addition to equipment support, other development partners such as FAO and CDC provided training and/or workshops.

There are no conflicting activities among development partners and Ugandan government's activities.

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#### 4-4 Impact

##### 4-4-1 Achievement forecast of Overall goal

###### Overall goal:

**A functional joint national diagnostic system for animal disease control is established in order to improve the production and productivity of livestock.**

###### Objectively Verifiable Indicator

1. Stakeholders and DVO staff will grade the diagnostic services provided by J-NADIC higher than 3 under 5-point rating system.
2. All the selected DVOs by the Project are utilizing the J-NADIC for reference diagnosis.

It is possible for the overall goal to be achieved on the basis of the indicators. There are, however, several issues necessary to settle down in order to achieve the overall goal beyond the indicators' requirements stated in the part of sustainability in 4-5.

##### 4-4-2 Other Impacts

(Socio-economy aspect)

Capacity development of DVOs directly has led to better diagnosis and consulting services to livestock farmers in five satellite districts.

One of representative examples is workshops on mastitis control and milk hygiene invited 20-30 livestock farmers at selected DVO sites and gave guidance how to control mastitis. Although it is difficult to present the benefits quantitatively by this activity, it can be estimated that the cows of the workshop participants are able to be away from mastitis, comparing with other non-participants, and resulted in economic benefits of the participated farmers.

During the extended period, CDL staff with Japanese expert demonstrated sub-clinical ketosis in early lactation in dairy cows in Wakiso and Mukono district, and sub-clinical mastitis in Kiboga and Wakiso district. Subsequently, Kiboga DVO followed its activity in same way by themselves for the community. In addition, mastitis diagnosis technique was widely accepted and applied in the field for improvement of milk quality and productivity in not only targeted districts but also others.

There are no negative impacts until now.

#### 4-5 Sustainability

##### 4-5-1 Policy aspect

Animal disease control is regarded as a crucial issue in order to sustain and/or boost livestock sector in Uganda. It is highly expected that the government supports animal disease control issue from the policy aspect.

However, another political trend also has to be concerned for sustainability. As described in Action Plan (P-6-7), rapid decentralization and privatization of veterinary services by the Plan for Modernization of Agriculture (PMA) caused fragmentation of technological and human resources and led to reduced effectiveness of the public animal disease control services. DVOs, which are under local government, are facing challenges technically and financially.

##### 4-5-2 Organizational aspect

(NADDEC)

NADDEC has been facing challenges as limited number of officers. Comparing with the working volume that NADDEC is required, the current number is insufficient. NADDEC is now in the process of recruiting six positions. It is expected successfully to complete this employment process for reinforcement of the current understaffing situation.

(MAK-COVAB)

The previous evaluation indicated that "there are some concerns in MAK-COVAB: 1) official status of CDL in MAK-COVAB, 2) allocation of full time staffs at CDL, and 3) budget allocation along with diagnosis fee collection system". During the extended period, with regard to 1) it was solved as described in 3-4-3. With regard to 2) eight academics and two technicians are assigned with holding a post

concurrently to CDL but the college management committee is discussing toward a betterment as well as official recruitment of six Project Assistants. Regarding 3) the college management committee included UGX 20 million in the 214/15 university budget, and university management is discussing additional support with the Government. The list of diagnosis fee was developed in February 2013 and implemented in April 2013.

If these concerned issues on 2) and 3) are realized, the organizational sustainability of CDL would be secured.

#### **4-5-3 Technical aspect**

(NADDEC)

As the national central diagnostic laboratory, NADDEC is seamlessly required to develop technical capacity of diagnosis further on.

Judging from the fact that the number of diagnosis at NADDEC is relatively limited, therefore, it is difficult for the staffs at the laboratory to accumulate diagnosis experiences under the current condition. Since diagnosis technique can be developed on the basis of accumulation of experiences, this situation may influence other diagnosis techniques later on.

(MAK-COVAB)

Technical sustainability of CDL-COVAB is solely depending on the counterparts' continuity of engagement in the laboratory works. The staffs at CDL-COVAB have successfully developed their diagnosis capacity by the Project, although further experience is required.

#### **4-5-4 Financial aspect**

The financial aspect is one of the major challenges for sustainability of this Project. In spite of the crucial position of animal disease control in the agricultural policy, the budget for the animal disease control has not been allocated at sufficient level as of now.

Counterpart fund from MAAIF is evaluated as one of important steps towards promising budgetary supports for the J-NADIC activities. In addition, MAK-COVAB is also now in the process of budgetary application within University for CDL activities. It is strongly expected to keep and/or even increase such budget for J-NADIC by both institutions for its sustainability.

#### **4-5-5 Social aspect**

The activities and outputs of the Project provide benefits to both subsistence farmers and commercial farmers. Social acceptance is evaluated very high.

#### **4-6 Conclusions**

The Evaluation Mission confirms that the recommendations of the previous evaluation on January 2013 have been running. The Evaluation Mission could also recognize that the necessary step to ensure the sustainability of the J-NADIC are about to carry out through the staff recruitment and budget allocation of NADDEC, and the organizational structuring of CDL-COVAB at Makerere University.

CDL-COVAB is developing the comprehensive and specialized disease diagnostic services, and the technical capabilities of staff of CDL staff for diagnostics are surely improved. In addition, the primary diagnostic and sample preparation techniques are improved at the selected DVOs. From the comprehensive evaluation of these results, the J-NADIC concept seems to be understood by NADDEC and MAK-COVAB and the national diagnostic capacity is strengthened.

#### **5. Recommendations**

In accordance from above mentioned conclusion, it is convinced that the Project could be completed in June 2014 as planned. Through the remaining period, Ugandan staff is required to act more proactively as key implementers of J-NADIC, and take over roles of Japanese Experts. There are several important issues to be addressed in order to have better outcomes of the Project. These issues are explained as recommendations.

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## **(1) Makerere University**

### **(a) Staff recruitment**

Since June 2013, the Project has been recruiting 6 staff as Project assistants who become core players for CDL and DVOs. Official adoption of four by Makerere University and two by MAAIF is relevant and justified to sustain J-NADIC, then it is strongly recommended to take an action before the Project ends.

### **(b) Fee collection and Allocation Rules**

As mentioned above, the price list for all services offered by CDL was approved and implemented in April 2013. Some amount of money has been banked, however more efficient revenue collection system should be improved to secure financial sustainability for CDL.

### **(c) Operational cost for CDL**

Suitable cost recovery system for necessary consumable and equipment maintenance is required for sustainable operation of CDL.

## **(2) MAAIF/NADDEC**

### **(a) Staff recruitment and budget allocation**

Increasing staff and budget allocation is required for J-NADIC. It is hoped by June 2014 that several veterinary officers who are under recruitment are assigned to the epidemiology unit in NADDEC and a part of UGX 200 million counterpart fund is allocated to J-NADIC (MAK and MAAIF components).

### **(b) Data aggregate, analyses and management**

After the diagnostic report is shared by DVO and MAK-COVAB, it is NADDEC's responsibility to aggregate and analyses the data. NADDEC is required to manage the data and to announce at any time. It is expected for NADDEC to enhance information sending at appropriate time to MAK-COVAB and DVOs in order to function fully the J-NADIC mechanism.

## **(3) MAAIF/DVO**

### **(a) Staff recruitment**

Since June 2013, the Project has been recruiting 2 staff as Project assistants who become core players for DVOs. Official adoption of two by MAAIF is relevant and justified to sustain J-NADIC, then it is strongly recommended to take an action before the Project ends.

### **(b) Operational cost for DVOs**

Suitable cost recovery system for necessary consumable and equipment maintenance is required for sustainable operation of DVOs.

## **(4) J-NADIC monitoring and technical exchange meeting**

It is advised that bi-annual meeting of J-NADIC should be organized after the Project ends for monitoring and technical exchange.

## **(5) Communication among stakeholders**

It is strongly recommended and advised that the technological relationship between institutions of Uganda and Japan should be maintained to sustain and develop J-NADIC activities.

## **(6) Utilization and maintenance of equipment**

It is strongly recommended for MAAIF and Makerere University to support investment made at NADDEC, CDL and DVOs to utilize fully and provide good maintenance of equipment provided by the Project along with the growth of technical capacity of diagnosis.

## **6. Lessons Learned**

### **(1) Delay of inputs**

As already mentioned, the delay of completion of CDL facilities, the delay of dispatch of the long-term experts, assignment of the C/Ps etc., made a negative impact on the promotion of the Project. The preparation before the initiation of the Project is important.

### **(2) Communications**

In order to accelerate the progress of the project and maximize the project output, the communication among NADDEC, MAK-COVAB and Japanese experts be improved through frequent and regular meetings

as one important factor.

**(3) Relationship among MAAIF, Makerere University and Local Government**

Under decentralization policy of Ugandan Government, roles of each organization are at the period of the transition. In order to function J-NADIC smoothly and to secure the sustainability, each institution must pay extensive efforts to keep or intensify their integrity.





## Schedule of the Terminal Evaluation

Date	Day	Mission Schedule		Accommodation
		Mr. Nabeya and Dr. Tada	Dr. Sugimoto and Dr. Sato	
9-Feb	Sun		13:35 Arrive Entebbe (QR1387)	Kampala
10-Feb	Mon	AM	Meeting with Project Experts and JICA Uganda Office	Kampala
		PM	Meeting with MAK/COVAB Site touring of CDL, MAK/COVAB	
11-Feb	Tue	AM	Meeting with PMC, MAK/COVAB	Kampala (Mr. Nabeya, Dr. Tada) Mbarara (Dr. Sugimoto and Sato)
		PM	Meeting with Dr. Kauta, MAAIF and Prof. Kabassa, MAK/COVAB Preparation of Terminal Evaluation Report	
12-Feb	Wed	AM	Meeting with MAAIF/NADDEC Meeting with Japanese Experts	Kampala
		PM	Preparation of Terminal Evaluation Report	
13-Feb	Thu	AM	Preparation of Terminal Evaluation Report	Kampala
		PM	Discussion for Terminal Evaluation Report with MAAIF and MAK	
14-Feb	Fri	AM	7th JCC: Presentation of Terminal Evaluation Report from the Mission, Signing of MM	
		PM	(Mr. Nabeya, Dr. Sugimoto and Dr. Tada) Report to Embassy of Japan Report to JICA Office	(Dr. Sato only) 15:50 Leave Entebbe (EK730)
15-Feb	Sat		13:05 Leave Entebbe (QR1390)	



**Project Design Matrix (version 3)**

Name of the Project: Technical Assistance to Improve the National Diagnostic Capacity for Animal Disease Control

Target Groups: Staff who are in the veterinary services at NADDEC, MAK-COVAB and selected DVOs (Kiboga, Mbale, Mbarara, Mpigi and Wakiso)

Project Period: from 21 June 2010 to 20 June 2013 (3 years)

Revised on 15 December 2011 (Ver. 3)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<b>Overall Goals</b> A functional joint national diagnostic system for animal disease control is established in order to improve the production and productivity of livestock.	1. Stakeholders and DVO staff will grade the diagnostic services provided by J-NADIC higher than 3 under 5-point rating system. 2. All the selected DVOs by the Project are utilizing the J-NADIC for reference diagnosis.	1. Questionnaire of stakeholders & DVO staff 2. Questionnaire of stakeholders & DVO staff	
<b>Project Purpose</b> The national diagnostic capacity for animal diseases is improved by means of the close collaboration of NADDEC and MAK-COVAB, leading to the platform for the joint institute.	A total of 25 animal diseases listed by the Project can be diagnosed by J-NADIC. (see attached list of the diseases)	Monitoring report, diagnosis records, evaluation by persons concerned	The policy advocating particular attention on animal disease control is not changed.
<b>Outputs</b> 1. An action plan for a functional diagnostic system on animal diseases through the close collaboration of NADDEC and MAK-COVAB is drawn up.	1. Action plan is prepared and submitted to the JCC in first year for approval.	1. Action Plan & record of JCC meeting	
2. Comprehensive and specialized diagnostic services become available by launching the Joint National Animal Disease Diagnostic Centre (J-NADIC).	2-1. No. of diagnostic samples received and analyzed by J-NADIC increase 15% by the 3rd year. 2-2. At least one diagnostic techniques for each of following 8 specialized areas are newly introduced in Central Diagnostic Laboratory of MAK-COVAB - Pathological/histo-pathological techniques - Hematological, biochemical and serological techniques - Parasitological, Bacteriological and virological techniques - Molecular-biological techniques 2-3. Diagnostic tests for CBPP, CCPP, African swine fever, rabies and PPR can be conducted at NADDEC-MAAIF. 2-4. Diagnostic reagents for brucellosis are produced & utilized. 2-5. More than 4 kinds of laboratory reagents and stock solutions for sample preparation and examination can be prepared and supplied to the selected DVOs	2-1. Records of NADDEC and CDL of MAK-COVAB 2-2. Records on diagnosis and evaluation by persons concerned 2-3. Evaluation by persons concerned 2-4. Records of NADDEC and CDL of MAK-COVAB 2-5. Records of NADDEC and CDL of	

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<p>3. An operational investigation system for emergency diseases is established.</p>	<p>by J-NADIC 3. Emergency disease outbreaks are investigated by joint investigation team of J-NADIC more than once during the project period.</p>	<p>MAK-COVAB  3. Report of investigation and appropriateness of its contents</p>			
<p>4. An information exchange system for sharing between NADDEC and MAK-COVAB is developed.</p>	<p>4. All the Diagnostic data produced by J-NADIC are centralized, accumulated and shared by NADDEC-MAAIF and Central Diagnostic Laboratory of MAK-COVAB.</p>	<p>4. Developed information exchange system and opinion of persons concerned on practicability of the system</p>			
<p>5. Primary diagnostic and sample preparation techniques are improved at the selected District Veterinary Offices.</p>	<p>5-1. No. of samples collected and examined by DVOs increase 15% by the 3<sup>rd</sup> year. 5-2. Capability of staff of the selected DVOs on primary diagnosis and sample preparation technique 5-3. No. of samples submitted to the J-NADIC from the selected DVOs increase 15% by the 3<sup>rd</sup> year.</p>	<p>5-1. Records of NADDEC and CDL of MAK-COVAB 5-2. Questionnaire survey to participants of training courses for staff of DVOs at the end of the training course and before the terminal evaluation 5-3. Records of NADDEC and CDL of MAK-COVAB</p>			
<p><b>Activities</b></p> <p>1. Preparation of the action plan (Formulation of the frame work)</p> <p>1-1 Study on the appropriate diagnostic system in Uganda 1-2 Study on the current status of NADDEC and MAK-COVAB 1-3 Identification of the duties to be conducted by the respective institutes 1-4 Formulation of the framework of the Joint National Animal Disease Diagnostic Centre (J-NADIC) by the collaboration of NADDEC and MAK-COVAB 1-5 Formulation of sample flow from the field to the J-NADIC</p> <p>2. Enhancement of the capacity of the J-NADIC</p> <p>2-1 Establishment of the integrated and specialized diagnostic service functions in the J-NADIC 2-2 Establishment of sample reception system from the field 2-3 Enhancement of the specialized diagnostic techniques 2-4 Production of diagnostic reagents</p> <p>3. Establishment of an investigation system for emergency diseases</p>	<p style="text-align: center;"><b>Inputs</b></p> <table border="0"> <tr> <td data-bbox="920 826 1355 1359"> <p><b>Japanese side</b></p> <p>1. Dispatch of experts 2. Dispatch of volunteers 3. Provision of equipment 4. Training of counterparts 5. Allocation of operational costs for the Project</p> </td> <td data-bbox="1361 826 1796 1359"> <p><b>Ugandan side</b></p> <p>1. Assignment of counterpart personnel and administrative staff 2. Provision of buildings, other necessary facilities and running costs 3. Allocation of operational costs for the Project</p> </td> </tr> </table>		<p><b>Japanese side</b></p> <p>1. Dispatch of experts 2. Dispatch of volunteers 3. Provision of equipment 4. Training of counterparts 5. Allocation of operational costs for the Project</p>	<p><b>Ugandan side</b></p> <p>1. Assignment of counterpart personnel and administrative staff 2. Provision of buildings, other necessary facilities and running costs 3. Allocation of operational costs for the Project</p>	<p><b>Pre-condition</b></p> <p>MOU is approved by both MAAIF and MAK-COVAB.</p> <p>Security conditions in the target areas are maintained.</p>
<p><b>Japanese side</b></p> <p>1. Dispatch of experts 2. Dispatch of volunteers 3. Provision of equipment 4. Training of counterparts 5. Allocation of operational costs for the Project</p>	<p><b>Ugandan side</b></p> <p>1. Assignment of counterpart personnel and administrative staff 2. Provision of buildings, other necessary facilities and running costs 3. Allocation of operational costs for the Project</p>				

<p>3-1 Study on an appropriate system  3-2 Establishment of an operational system  3-3 Operation of the system</p> <p>4. Development of an information exchange system  4-1 Study on an appropriate system  4-2 Development of an integrated system  4-3 Operation of the system</p> <p>5. Capacity development of the selected District Veterinary Offices (DVOs)  5-1 Selection of collaborating DVOs  5-2 Staff training on primary diagnosis and sample preparation  5-3 Enhancement of the field activities</p>			
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**Abbreviations:**

**NADDEC:** National Animal Disease Diagnostic and Epidemiology Centre, **MAK-COVAB:** Makerere University-College of Veterinary Medicine, Animal Resources and Biosecurity;  
**MAAIF:** Ministry of Agriculture, Animal Industry and Fisheries; **TC:** Technical Committee; **JCC:** Joint Coordinating Committee; **MIM:** Minutes of Meeting; **MOU:** memorandum of understanding;  
**J-NADIC:** Joint-National Animal Disease Diagnostic Centre, **DVO:** District Veterinary Office; **CDL:** Central Diagnostic Laboratory of MAK-COVAB

## Dispatch of Experts

## &lt;Long-term experts&gt;

	Names	Field	Assignment Duration	Affiliation
1	Madoka KURATA	Coordinator/Disease Diagnosis	2010/06/21~2012/07/3	
2	Masaharu KANAMEDA	Chief Adviser	2011/06/10~2014/06/20	JICA
3	Hiroshi KONDO	Pathological Diagnosis	2011/06/10~2013/06/20	Hokkaido Local Govt
4	Hideki SAITO	Coordinator	2012/06/21~2013/06/20	
4	Nabi OKI	Coordinator	2013/08/3~2014/06/20	

## &lt;Short-term experts (Mission team in the First Year included)&gt;

	Names	f	Assignment Duration	Affiliation
<b>1st Year</b>				
1	Yusuke TADA	Managemant & Guidance	2010/07/08~2010/08/09	JICA
2	Yoshihito KASHIWAZAKI	Disease Diagnosis	2010/09/22~2010/12/20	A&M Consultant
3	Yusuke TADA	Monoitoring & Survay	2011/01/24~2011/02/10	JICA
4	Masaharu KANAMEDA	Monoitoring & Survay (Mission)	2011/04/17~2011/04/30	JICA
5	Yukita SATO	Monoitoring & Survay (Mission)	2011/04/24~2011/04/30	Nihon University
<b>2nd Year</b>				
6	Yukio MORITA	Bacteriology	2011/08/08~2011/09/02	Tokyo Kasei University
7	Takuya ITOU	Virology	2011/08/20~2011/09/03	Nihon University
8	Yoshihito KASHIWAZAKI	Disease Diagnosis	2011/09/11~2012/02/19	A&M Consultant
9	Akira ANRI	Mastitis Control and Milking Hygiene	2012/01/16~2012/03/17	Hokkaido Nosai
10	Kenichi SAKURAI	Bacteriology	2012/02/11~2012/02/21	Saitama Pref Local Govt
11	Yoshikazu IRITANI	Virology	2012/02/11~2012/03/11	Shionogi Pharma
12	Hisashi SHIBUYA	Pathological Diagnosis	2012/02/18~2012/03/16	Nihon University
<b>3rd Year</b>				
13	Yoshikazu IRITANI	Virology	2012/07/10~2012/10/06	Shionogi Pharma
14	Kenichi SAKURAI	Bacteriology	2012/09/12~2012/12/16	Saitama Pref Local Govt
15	Yoshikazu IRITANI	Microbiology	2013/01/13~2013/04/06	Shionogi Pharma
<b>4th Year</b>				
21	Kenichi SAKURAI	Bacteriology	2013/04/07~2013/06/27	Saitama Pref Local Govt
16	Toshihiko NAKAO	Clinical Diagnosis	2013/06/10~2013/09/07	Yamaguchi Univ
17	Masaji TAGUCHI	Virology	2013/06/10~2013/09/07	Hokkaido Pref Local Govt
18	Akira ANRI	Mastitis Control and Milking Hygiene	2013/09/24~2013/11/23	Hokkaido Nosai
19	Masaji TAGUCHI	Virology	2013/12/02~2014/06/19	Hokkaido Pref Local Govt
20	Kozo FUJISAKI	Acarology/Protozoology	2014/01/11~2014/03/21	Obihiro University
21	Kenichi SAKURAI	Bacteriology	2014/01/18~2014/02/16	Saitama Pref Local Govt
22	Tomoyuki SHIBAHARA	Histopathology	2014/01/20~2014/03/21	National Institute of Anim Hlth
23	Kenichi SAKURAI	Bacteriology	2014/03/15~2014/06/08	Saitama Pref Local Govt
<b>Planned</b>				
24	Monaya Ekgatay (Thailand)	Serology and Brucellosis	2014/03~2014/05	National Institute of Anim Hlth

## Training in Japan

	Name	Period of Participation	Field/Name of the Course	Contents	Implementing Institution	Position at that time	Current Position
1	Nicolas KAUTA	2010/11/20~2010/11/28	Technical Study visit	Study Visit for Animal Disease control system, University Curriculum in Japan	JICA Tokyo, Nihon Univ.	Commissioner Animal Health & Entomology MAAIF	Ag. Director, DAR (Commissioner Animal Health & Entomology MAAIF)
2	David Kalata		Technical Study visit	Study Visit for Animal Disease control system, University Curriculum in Japan	JICA Tokyo, Nihon Univ.	Dean Faculty of Vet Med. Makerere University	Principal, COVAR
3	Edward Wanpande	2011/02/22~2011/03/13	Laboratory diagnostic techniques	Study Visit for Animal Disease control system in Japan. Technical Training in Nihon University College of Bioresource Science Department of Veterinary Medicine for each own subject.	JICA Tokyo, Nihon Univ.	Assistant Lecturer, Faculty of Vet. Med. Makerere University	Assistant Lecturer, School of Vet. Med. Makerere University
4	Wilfred Eneku		Laboratory diagnostic techniques		JICA Tokyo, Nihon Univ.	Teaching Assistant, Faculty of Vet. Med. Makerere University	Teaching Assistant, School of Vet. Med. Makerere University
5	Gabriel Tumwine		Laboratory diagnostic techniques		JICA Tokyo, Nihon Univ.	Teaching Assistant, Faculty of Vet. Med. Makerere University	Teaching Assistant, School of Vet. Med. Makerere University
6	Tingiira Bosco	2011/08/10~2011/11/20	Veterinary Technology for Farm Animals	Clinical Training for farm animals for disease control, treatment and improvement.	JICA Sapporo, Hokkodo Veterinary Association	District Veterinary Officer Kiboga District	District Veterinary Officer Kiboga District
7	Afayoa Mathias	2012/02/25~2012/03/05	Laboratory diagnostic techniques	Study Visit for Animal Disease control system in Japan. Technical Training in Nihon University College of Bioresource Science Department of Veterinary Medicine for each own subject.	JICA Tokyo, Nihon Univ.	Teaching Assistant, Faculty of Vet. Med. Makerere University	Teaching Assistant, Faculty of Vet. Med. Makerere University
8	Bigirwa Godfrey		Laboratory diagnostic techniques		JICA Tokyo, Nihon Univ.	Teaching Assistant, Faculty of Vet. Med. Makerere University	Teaching Assistant, Faculty of Vet. Med. Makerere University
9	Francis Mutebi		Laboratory diagnostic techniques		JICA Tokyo, Nihon Univ.	Teaching Assistant, Faculty of Vet. Med. Makerere University	Teaching Assistant, Faculty of Vet. Med. Makerere University
10	Mugimba Kitizo		Laboratory diagnostic techniques		JICA Tokyo, Nihon Univ.	Teaching Assistant, Faculty of Vet. Med. Makerere University	Teaching Assistant, Faculty of Vet. Med. Makerere University
11	Muzoora Saphan	2012/08/13~2012/10/12	Laboratory diagnostic techniques		JICA Tokyo, Nihon Univ.	Teaching Assistant, Faculty of Vet. Med. Makerere University	Teaching Assistant, Faculty of Vet. Med. Makerere University
12	Turyatamba James		Laboratory diagnostic techniques		JICA Tokyo, Nihon Univ.	Teaching Assistant, Faculty of Vet. Med. Makerere University	Teaching Assistant, Faculty of Vet. Med. Makerere University
13	Benard Agwai	2012/08/13~2012/11/26	Veterinary Technology for Farm Animals	Clinical Training for farm animals for disease control, treatment and improvement.	JICA Sapporo, Hokkodo Veterinary Association		
14	Karungi Fred		Veterinary Technology for Farm Animals	Clinical Training for farm animals for disease control, treatment and improvement.	JICA Sapporo, Hokkodo Veterinary Association	District Veterinary Officer Wakiso District	District Veterinary Officer Wakiso District
15	Patrick Vudriko	2012/10/22~2013/8/24	Advanced Research Course on International Animal Health	Technical training as a leader for International Animal Health in Obihiro University of Agriculture and Veterinary Medicine and other appropriate facilities.	JICA Obihiro, Obihiro Univ., National Animal Research Center	Teaching Assistant, Faculty of Vet. Med. Makerere University	Asst Lecturer COVAB
16	Joanne Kisaka	2013/02/11~2013/05/18	Hygiene and Quality Management for Animal Source Foods	Study about quality and safety of animal source foods, food hygiene, quality control and risk management in the entire process of animal source food production	JICA Obihiro, Obihiro Univ.		Lecturer, COVAB

	Name	Period of Participation	Field/Name of the Course	Contents	Implementing Institution	Position at that time	Current Position
17	Wilfred Eneku	2013/03/27~2013/10/30	Research on Veterinary Technology	Technical and Research skin training in NIAH for each own subject. (Pathological diagnosis etc)	JICA Tsukuba NIHA (National Institute of Animal Health)	Teaching Assistant, Faculty of Vet.Med. Makerere University	Asst. Lecturere, COVAB
18	Jhon Bosco Okuyo	2013/05~2013/07	Cattle Breeding			MAAIF	Senior Vet Officer, MAAIF
19	Peter Msinguzi	2013/07/9~2013/09/14	Animal Agriculture for Sustainable Rural Development	Clinical Training and studying of livestock for sustainable disease control and improvement of animal products for rural development	JICA Obihiro, Obihiro Univ.	District veterinary Officer Mitooma	District Veterinary Officer Mitooma Dist
20	Samuel Okech	2013/08/25~2013/12/05	Veterinary Technology for Farm Animals	Clinical Training for farm animals for disease control, treatment and improvement.	JICA Sapporo, Hokkodo Veterinary Medical Assosiation	Lecturer ,Faculty of Vet.Med. Makerere University	Lecturer, COVAB
21	Henry Mulondo	2013/08/19~2013/09/21	Advanced Training Course for Foot and Mouth disease	Training for playing a leadreship for prevention and stabilization of FMD outbreak.	JICA Kyushu Kibana university	Veterinary Officer Ishingiro District (Endinzi sub county)	District Vet Officer, Ishingiro Dist
22	Kizito Mugimba	2013/10/22~2014/08/22	Advanced Training Course for Protozoan and Food-borne Diseases	Study on disease preventive, diagnostic and therapeutic techniques and relating practical knowledge of globally importantzoonosis	JICA Obihiro Obihiro University	Teaching Assistant, Faculty of Vet.Med. Makerere University	Teaching Asst. COVAB
23	Sarah Tegule	2014/02/09~2014/05/17	Hygiene and Quality Management for Animal Source Foods	Study on quality and safety of animal source foods, food hygiene, quality control and risk management in the entire process of animal source food production	JICA Obihiro Obihiro University	Technologist ,Faculty of Vet.Med. Makerere University	Senior Technologist COVAB
24	Bigirwa Godfrey	2014/03/26~	Research in Veterinary Technology	Study on diagnosis of production diseases, including hormone assay	JICA Tsukuba NIHA (National Institute of Animal Health)	Teaching Assistant, Faculty of Vet.Med. Makerere University	Assit Lecturere, COVAB

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## Equipment Provided by Japanese Side

Condition of equipment (A: Good, B: Fair, C: Need of repair, D: Out of order)

No.	Equipment	Manufacturer	Product No.	Qty.	Purpose of Use	Arrival Date	Price	Installation Place	Suppliers	Current Condition
1	4WD Vehicle	Mitsubishi	Pajero	2	General	Jun-10	¥9,183,756	MAAIF	Victoria Motors	A
2	Desk Top PC	Dell		1	General	Aug-10	\$2,000	Makerere	Micro Tech Ltd	A
3	HP Laser Colour Printer	HP	CP 1510	1	General	Aug-10	\$2,000	Makerere	The Netshop Ltd	A
4	HP Laser Printer	HP	P 1500	1	General	Aug-10	\$2,000	Makerere	The Netshop Ltd	A
5	Lap Top PC	Toshiba	Satelite L505	1	General	Aug-10	\$2,000	MAAIF	Micro Tech Ltd	A
6	Copier	Canon	iR 1020	1	General	Aug-10	\$2,000	Makerere	Micro Tech	A
7	Post Mortem Kit	Allit, Germany	Vet Postmortem kit	5	Pathology	5-Oct-10	€ 1,800	Wak.Mba.Mbar.Mpi,MA	Palin Diagnostic	A
8	Refrigerated Microcentrifuge	Eppendorf	5415R	1	Bac/Viro	14-Feb-11	\$7,863	Makerere	Palin Diagnostic	A
9	Blood Chemistry Analyser	IDEXX	Vet Test	1	General	28-Feb-11	\$17,577	Makerere	Palin Diagnostic	A
10	Multitype Centrifuge	JSP	CENTRONIGBL	1	General	1-Mar-11	\$7,850	Makerere→Wakiso	Palin Diagnostic	A
11	Pick Up Truck(Dubble Cab)	NISSAN	HARD BODY	1	General	Mar-11	\$28,700	Makerere	Kampala NISSAN	A
12	Fluorant Microscope	NIKON	Eclipse E 200	1	Virology	3-Mar-11	\$15,853	Makerere	Palin Diagnostic	A
13	High Resolution Digital Camera	NIKON	DFSil	1	Pathology	3-Mar-11	\$8,110	Makerere	Palin Diagnostic	A
14	Histopathology Microscope	NIKON	Eclipse E 200	1	Pathology	3-Mar-11	\$8,250	Makerere	Palin Diagnostic	A
15	Liquid Nitrogen Tank	Air Liquid	GT35	1	Virology	3-Mar-11	Shs3,100,000	Makerere	ERAM (U) Ltd	A
16	Safety Cabinet (General)	ESCO	LHC-4AI	2	Bac/Viro	11-Mar-11	\$7,836	Makerere	Palin Diagnostic	A
17	Autoclave(midium size)	SANYO	MLS 3751L	2	Bac/Viro	23-Mar-11	\$13,400	Makerere	Palin Diagnostic	A
18	Chest Freezer	SANYO	MDF-236	1	General	23-Mar-11	\$3,700	Makerere	Palin Diagnostic	A
19	CO2 Incubator	SANYO	MCO-19AIC	1	Virology	23-Mar-11	\$12,140	Makerere	Palin Diagnostic	A
20	Deep Freezer -80°C	SANYO	MDF-U33V	1	General	23-Mar-11	\$12,950	Makerere	Palin Diagnostic	A
21	Water Distiller	Fistreem	WSC 004	2	District	23-Mar-11	\$4,989	Mbale,Wakiso	Palin Diagnostic	A
22	Blood Hematology Analyser	Abaxis	Vet Scan HM5	1	General	29-Mar-11	\$28,500	Makerere	Palin Diagnostic	A
23	Paraffin Wax Embedding Center	Slee	MPS/P1	1	Pathology	29-Mar-11	\$13,878	Makerere	Palin Diagnostic	A
24	Rotary Microtome	Slee	CUT 4062	1	Pathology	29-Mar-11	\$11,149	Makerere	Palin Diagnostic	A
25	Stretching Table	Slee	MST	1	Pathology	29-Mar-11	\$1,874	Makerere	Palin Diagnostic	A
26	Tissue Floating Water Bath	Slee	MWB	1	Pathology	29-Mar-11	\$1,770	Makerere	Palin Diagnostic	A
27	Tissue Processor	Slee	MTP	1	Pathology	29-Mar-11	\$25,195	Makerere	Palin Diagnostic	A
28	Analytical Balance	Mettler	ML 204	1	General	30-Mar-11	\$3,419	Makerere	Palin Diagnostic	A
29	Autoclave(Bench Top)	SANYO	SA-230MA	2	District	30-Mar-11	\$5,900	Mbarara, Wakiso	Palin Diagnostic	A
30	Incubator	SANYO	MIR-162	1	District	30-Mar-11	\$3,260	Wakiso	Palin Diagnostic	A
31	PH Meter	Mettler	S 20	1	General	30-Mar-11	\$1,500	Makerere	Palin Diagnostic	A
32	Precision Balance	Mettler	ML 802	3	District/MAK	30-Mar-11	\$2,190	Mbarara,Wakiso,MAK	Palin Diagnostic	A
33	Shaker	CORNING	1900	1	Pathology	30-Mar-11	\$4,599	Makerere	Palin Diagnostic	A
34	Liquid Nitrogen Tank	Air Liquid	GT25	1	Virology/Bacter	25-Aug-11	Shs4,120,000	Makerere	ERAM (U) Ltd	A
35	Haematocrit Cemtrifuge	Eppendorf	5415R	1	General	12-Dec-11	\$2,622	Makerere	Palin Diagnostic	A
36	Mircoplate Reader	LabMed Inc	EMR 500	1	Serology	12-Dec-11	\$6,000	Makerere	Palin Diagnostic	A
37	Thermal Cycler	LabNet Inc	TC 9600 G230V	1	Virology/Bacter	19-Dec-11	\$6,000	Makerere	Palin Diagnostic	A
38	Gel Documentation System	Synoptic Ltd	GVM20	1	Virology/Bacter	1-Feb-12	\$9,571	Makerere	Powelson	A
39	Stomacher	Seward	Stomacher 80 Biomaste	1	Bacteriology	1-Feb-12	\$5,079	Makerere	Powelson	A
40	Crush Ice Maker	Hoshizaki	FM 150KE	1	General	1-Jul-12	\$7,500	Makerere	Palin Diagnostic	A
41	Clinical Microscope	Nikon	Eclipse Ni	1	Pathology	Apr-12	\$15,027	Makerere	Palin Diagnostic	A
42	Digital camera system for inverted microsc	Micropix	9MP	1	Virology	Apr-12	\$4,729	Makerere	Palin Diagnostic	A



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43	Inverted Microscope (binocular)	Nikon	Nikon TS 100F	1	Virology	Apr-12	\$9,825	Makerere	Palin Diagnostic	A
44	Inverted Microscope (trinocular)	Nikon	Nikon TS 100F	1	Virology	Apr-12	\$11,034	Makerere	Palin Diagnostic	A
45	Refrigerated Centrifuge	Eppendorf	5804	1	Virology/Bacter	1-Apr-12	\$7,458	Makerere	Palin Diagnostic	A
46	Ultra pure Water purification System	Firstreem	MultiPure Select	1	Virology	12-Apr-12	\$9,423	Makerere	Palin Diagnostic	A
47	Liquid Nitrogen Tank	MVE	MVE cryosystem 2000	1	Virology	3-Aug-12	\$5,900	Makerere	Palin Diagnostic	A
48	Safety Cabinet (Class II)	ESCO	Class II BSC	1	Virology	Sep-12	\$18,664	Makerere	Palin Diagnostic	A
49	Surgical pump	Surgi craft	Rotary pump type 1	1	Virology	Sep-12	\$2,744	Makerere	Spectra Scientific	A
50	Electrophoresis system	Fisher scientific	FB SB 2318	1	Virology	25-Sep-12	\$2,788	Makerere	Costcare Medical Supplie	A
51	Ultrasonic cleaner	J.P.Seleca	230 VAC	1	Virology	31-Oct-12	\$3,466	Makerere	Palin Diagnostic	A
52	Laboratory Oven	ESCO	OFA 110-8	1	Virology	31-Oct-12	\$4,554	Makerere	Palin Diagnostic	A
53	PCR station	ESCO	PCR Cabinet	1	Virology	31-Oct-12	\$4,625	Makerere	Palin Diagnostic	A
54	Photo Copy machine	Canon	IR2525	1	Office	Mar-13	Shs15,550,000	Makerere	Landmark Computers	A

## Assignment of Ugandan Counterparts

	Institutions	Names & Position	Present Post	Role for the Project	Period of Assignment to the Project	
					From	To
1	MAAIF (Ministry of Agriculture, Animal Industry and Fisheries)	Dr. Vincent R. Rubarema	Permanent secretary	JCC Chairperson	June 2010	At present
2		Dr. Nicolas K. Kauta	Commissioner, Department of Livestock Health and Entomology	Project Director	June 2010	At present
3		Dr. Ademun Rose Okurut	Senior Veterinary Officer, Head of Diagnosis, NADDEC	Project Officer	June 2010	At present
4		Dr. Neolia Nantima	Senior Veterinary Officer, Head of Epidemiology, NADDEC	Project Officer	June 2010	At present
5		Dr. Deo B. Ndumu	Senior veterinary officer, NADDEC	Project Coordinator	June 2010	At present
6	COVAB, Makerere University (College of Veterinary Medicine, Animal Resource and Biosecurity)	Dr. John David Kabasa	Principal, COVAB	Project Manager	June 2010	At present
7		Dr. Eddie Wampande	Assistant lecturer, COVAB	Project Coordinator	June 2010	At present
8		Dr. Wilfred Eneku	Teaching assistant, COVAB	C/P	June 2010	At present
9		Dr. Gabriel Tumwine	Teaching assistant, COVAB	C/P	June 2010	At present
10		Dr. Afayoa Mathias	Teaching assistant, COVAB	C/P	June 2010	At present
11		Dr. Bigirwa Godfrey	Teaching assistant, COVAB	C/P	June 2010	At present
12		Dr. Francis Mutebi	Teaching assistant, COVAB	C/P	June 2010	At present
13		Dr. Mugimba Kitizo	Teaching assistant, COVAB	C/P	June 2010	At present
14		Dr. Muzooro Saphan	Teaching assistant, COVAB	C/P	June 2010	At present
15		Dr. Turyatamba James	Teaching assistant, COVAB	C/P	June 2010	Resigned
16		Dr. Patrick Vudriko	Teaching assistant, COVAB	C/P	June 2010	At present
17	Dr. Joanne Kisaka	Teaching assistant, COVAB	C/P	June 2010	At present	
18	District Veterinary Office (DVO): Kiboga, Mpigi, Wakiso, Mbale, Mbarara	Dr. Atikoro	Veterinary officer at Kiboga	Quasi-C/P	June 2010	At present
19		Dr. Tingira Bosco		Quasi-C/P	June 2010	At present
20		Dr. Oine Patrick	Veterinary officer at Wakiso	Quasi-C/P	June 2010	At present
21		Dr. Karungi Fred		Quasi-C/P	June 2010	At present
22		Dr. Sekiwunga Henry	Veterinary officer at Mpigi	Quasi-C/P	June 2010	At present
23		Dr. Were George	Veterinary officer at Mbale	Quasi-C/P	June 2010	At present
24		Dr. Mwebembezi William	Veterinary officer at Mbarara	Quasi-C/P	June 2010	At present
25	Project Management Committee (COVAB side)	Prof. David Owiny	Dean, SBLC	C/P	April 2012	At present
26		Dr. Eddie Wampande	Lecturer, COVAB	C/P	April 2012	At present
27		Dr. Robert Tuweyoengere	Senior Lecturer, COVAB	C/P	April 2012	At present
28		Dr. Robert Muwine	Senior Lecturer, COVAB	C/P	April 2012	At present
29		Dr. Majalija	Senior Lecturer, COVAB	C/P	April 2012	At present
30		Prof. Acai James	Associate Prof.	C/P	June 2013	At present
31	Central Diagnostic Laboratory (CDL) of J-NADDIC	Dr. Eddie Wampande	Lecturer, COVAB	C/P	July 2013	At present
32		Ms. Suzan Ndyababo	Technologist, COVAB	C/P	July 2013	At present
33		Dr. Wilfred Eneku	Teaching Assistant, COVAB	C/P	July 2013	At present
34		Dr. Godfrey Bigirwa	Assistant Lecturer, COVAB	C/P	July 2013	At present
35		Dr. Mathias Afayoa	Assistant Lecturer, COVAB	C/P	July 2013	At present
36		Dr. Francis Mutebi	Assistant Lecturer, COVAB	C/P	July 2013	At present
37		Dr. Robert Tuweyoengere	Senior Lecturer, COVAB	C/P	July 2013	At present
38		Dr. Kizito Mugimba	Teaching Assistant, COVAB	C/P	July 2013	Training in Japan



The Project for Technical Assistance to Improve the National Diagnostic Capacity  
for Animal Disease Control

Liaison Office, Joint National Animal Disease Diagnostic Centre, COVAB, Makerere University  
PO Box 7062 Kampala: Phone 0414 534 191



Annex6-2

## Staff of NADDEC-MAAIF

(As of September 10, 2013)

Dr. C.S. Rutebarika		Assistant Commissioner Disease Control
1. Dr. Rose Ademun	PVO	Head/Diagnostics &Epidemiology
<b>2. Dr. Neolina Nantima</b>	<b>PVO</b>	<b>Head/Epidemiology</b>
3. Dr. Deo Ndumu	SVO	Diagnostics
4. Dr. Chrisostom Ayebazibwe	SVO	Diagnostics
<b>5. Dr. Robert Mwebe</b>	<b>SVO</b>	<b>Epidemiology</b>
<b>6. Dr. Serruga Joseph</b>	<b>SVO</b>	<b>Data management</b>
<b>7. Dr. Keneth Mugabi</b>	<b>SVO</b>	<b>Tick borne diseases</b>
<b>8. Dr. Mubiru Emmaunuel</b>		<b>AHIP/Communication</b>
9. Ms. Gladys Nakanjako K	LT	Govt
10. Ms. Carolyn Namatovu	LT	Govt
11. Mr. Franklin Mayanja	LT	Govt
12. Mr. Omodo Michael	LT	AHIP/WB
13. Mr. Eugene Arinaitwe	LT	AHIP/WB
14. Mr. Milton Bahati	LT	Govt
15. Ms. Mary Nanfuka	LT	Govt
16. Mr. Martin Essau	LT	Govt
17. Ms. Esther Nambo		Data Entry
18. Mr. Laban Musitwa		Asst LT (Lab1)
19. Mr. Eugene Kidega		SLT and Animal caretaker

(Staff of Epidemiology Unit by boldface)

ef



## Staff of Central Diagnostic Laboratory

(As of Feb 1, 2014)

### CoVAB Staff

Dr. James Acai                      PCM/Project MgtCom  
Dr. Robert Tweyongere      PCM/Project MgtCom

### Officially assigned CDL Staff (since 1<sup>st</sup> July 2013)

1. Dr. Eddie Wampande	BBS	Lab Manager
2. Ms Susan Ndyanabo	BDS/	Deputy Manager
3. Dr. Afayoa Mathias	WAAR	Actively engaged
4. Dr. Francis Mutebi	LIR	Actively engaged
5. Dr. Eneku Wilfred	LIR	Actively engaged/Japan 03-10/2013
6. Dr. Bigirwa Godfrey	BDS	Data mgt/Field monitoring
7. Dr. Mugimba Kizito	BDS	Japan 10/2013-08/2014

### Contributing staff (Not Officially Assigned)

Dr. Joanne Kisaka	LIR	Training in Japan 02-05/2013
Dr. Patrick Vudrico	PCM	Training in Japan 10/2012-08/2013

### Project Assistant

1. Dickson Ndoboli	CDL (General)	since Aug. 2012
2. Dickson Tayebwa	CDL (Amb)	since June 2013
3. Syteven Kakooza	CDL (Bact)	since June 2013
4. Lordrick Alinaitwe	CDL (Patho)	since Aug. 2013
5. Keneth Kasozi	Kiboga DVO	since June 2013
6. Jemimmah Natuhwela	Mbarara DVO	since June 2013

### Volunteer Staff

1. Joseph Byaruhanga	BVM4 (Patho)	since June 2013
2. Paul Ssuna	BVM3 (Viro)	since June 2013
3. Maria Tumwebaze	BLT3 (Bact)	since June 2013

## Trainings Implemented

JFY	Name of the Course	Dates		Districts held	No. of Participants	Target Audience	Remarks
		From	To				
1st	Sampling & Diagnosis Techniques for Veterinary Laboratories	24-Oct	27-Oct	Entebbe	13	Veterinary Officer, Livestock Officer, Lab. Technician	
	Sampling & Diagnosis Techniques for Veterinary Laboratories	14-Nov	17-Nov	Mbale	16	Veterinary Officer, Livestock Officer, Lab. Technician	
	Sampling & Diagnosis Techniques for Veterinary Laboratories	5-Dec	8-Dec	Mbarara	19	Veterinary Officer, Livestock Officer, Lab. Technician	
2nd	Capacity Building for Meat Inspection System	12-Aug	13-Aug	Mbale	15	Veterinary Officer, Meat Inspector	
	Capacity Building for Meat Inspection System	19-Aug	20-Aug	Kiboga	10	Veterinary Officer, Meat Inspector	
	Capacity Building for Meat Inspection System	26-Aug	27-Aug	Mpigi	10	Veterinary Officer, Meat Inspector	
	Capacity Development for Mastitis Control	23-Jan	27-Jan	COVAB	15	Veterinary Officer, Livestock Officer, Lab. Technician	
	Capacity Development for Mastitis Control	30-Jan	3-Feb	Kiboga	7	Veterinary Officer, Livestock Officer, Lab. Technician	
	Capacity Development for Mastitis Control	6-Feb	9-Feb	Mbarara	8	Veterinary Officer, Livestock Officer, Lab. Technician	
	Capacity Development for Mastitis Control	20-Feb	23-Feb	COVAB	14	Veterinary Officer, Livestock Officer, Lab. Technician	
	Capacity Development for Mastitis Control	27-Feb	1-Mar	Kiboga	7	Veterinary Officer, Livestock Officer, Lab. Technician	
	Capacity Development for Mastitis Control	5-Mar	7-Mar	Mbarara	8	Veterinary Officer, Livestock Officer, Lab. Technician	
3rd	Sampling & Diagnosis Techniques for Veterinary Laboratories: Necropsy, bacteriological practice, milk hygiene, etc.	28-Nov	30-Nov	COVAB	27	Veterinary officers, livestock officers	Instructors were principally C/Ps from COVAB.
4th	Mastitis and Milk Hygiene Control	1-Oct	4-Oct	Wakiso	11	Veterinary Officer, Livestock Officer, Lab. Technician	
	Mastitis and Milk Hygiene Control	14-Oct	17-Oct	Kiboga	15	Veterinary Officer, Livestock Officer, Lab. Technician	
	Mastitis and Milk Hygiene Control	21-Oct	24-Oct	Mbalc	16	Veterinary Officer, Livestock Officer, Lab. Technician	
	Mastitis and Milk Hygiene Control	28-Oct	31-Oct	Mbarara	11	Veterinary Officer, Livestock Officer, Lab. Technician	
	Mastitis and Milk Hygiene Control	11-Nov	14-Nov	Mbarara	12	Veterinary Officer, Livestock Officer, Lab. Technician	
	Mastitis and Milk Hygiene Control (Gulu District)	8-Dec	12-Dec	Gulu	20	Veterinary Officer, Livestock Officer, Lab. Technician	
Total					254		

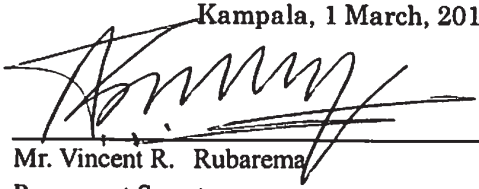
**RECORD OF DISCUSSIONS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY  
AND  
AUTHORITIES CONCERNED OF THE REPUBLIC OF UGANDA  
ON  
THE IMPLEMENTATION  
OF  
THE TECHNICAL ASSISTANCE TO IMPROVE NATIONAL  
DIAGNOSTIC CAPACITY FOR ANIMAL DISEASE CONTROL  
IN UGANDA**


With regard to the Technical Assistance to Improve National Diagnostic Capacity for Animal Disease Control (hereinafter referred to as "the Project") based on the Record of Discussions signed in Kampala on January 25, 2010 (hereinafter referred to as "R/D"), Japan International Cooperation Agency (hereinafter referred to as "JICA") Uganda Office and the authorities concerned of the Government of Republic of Uganda held a series of discussions in accordance with the recommendations of the terminal evaluation conducted in January 2013.

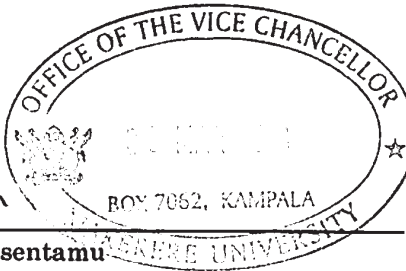
As a result of the discussions, both sides agreed on the modification of R/D in conformity with the lines described in the document attached hereto.

Kampala, 1 March, 2013

  
\_\_\_\_\_  
Dr. Hirofumi Hoshi  
Chief Representative  
Uganda Office  
Japan International Cooperation Agency  
Uganda

  
\_\_\_\_\_  
Mr. Vincent R. Rubarema  
Permanent Secretary  
Ministry of Agriculture, Animal Industry and Fisheries  
Republic of Uganda

  
\_\_\_\_\_  
Prof. John Dumba Ssentamu  
Vice Chancellor  
Makerere University  
Republic of Uganda



## THE ATTACHED DOCUMENT

### I. Extension of the Project Period

The Project period will be extended for one (1) year and the closing date will be changed from June 20, 2013 to June 20, 2014.

### II. Master Plan for the Extended Period

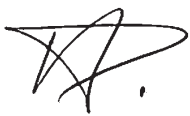
The Project will be implemented in accordance with the Master Plan which is given in Annex 1.

### III. Others

All matters other than those mentioned above will be treated in the same manner as prescribed in the articles of the R/D in Annex2.

## ANNEX

1. Master Plan
2. R/D (Signed on January 25<sup>th</sup> 2010)



## ANNEX 1. MASTER PLAN

### 1. Project Name

Technical Assistance to Improve National Diagnostic Capacity for Animal Disease Control

### 2. Overall Goal

A functional joint national diagnostic system for animal disease control is established in order to improve the production and productivity of livestock.

### 3. Project Purpose

The national diagnostic capacity for animal diseases is improved by means of the close collaboration of NADDEC and MAK-COVAB, leading to the platform for the joint institute.

### 4. Outputs

- (1) An action plan for a functional diagnostic system on animal diseases through the close collaboration of NADDEC and MAK-COVAB is drawn up.
- (2) Comprehensive and specialized diagnostic services become available by launching the Joint National Animal Disease Diagnostic Centre (J-NADIC).
- (3) An operational investigation system for emergency diseases is established.
- (4) An information exchange system for sharing between NADDEC and MAK-COVAB is developed.
- (5) Primary diagnostic and sample preparation techniques are improved at the selected District Veterinary Offices.

### 5. Project Activities

- (1) Preparation of the action plan (Formulation of the frame work)
  - 1-1 Study on the appropriate diagnostic system in Uganda
  - 1-2 Study on the current status of NADDEC and MAK-COVAB
  - 1-3 Identification of the duties to be conducted by the respective institutes
  - 1-4 Formulation of the framework of the Joint National Animal Disease Diagnostic Centre (J-NADIC) by the collaboration of NADDEC and MAK-COVAB
  - 1-5 Formulation of sample flow from the field to the J-NADIC
- (2) Enhancement of the capacity of the J-NADIC
  - 2-1 Establishment of the integrated and specialized diagnostic service functions in the J-NADIC
  - 2-2 Establishment of sample reception system from the field
  - 2-3 Enhancement of the specialized diagnostic techniques
  - 2-4 Production of diagnostic reagents
- (3) Establishment of an investigation system for emergency diseases
  - 3-1 Study on an appropriate system
  - 3-2 Establishment of an operational system
  - 3-3 Operation of the system
- (4) Development of an information exchange system
  - 4-1 Study on an appropriate system
  - 4-2 Development of an integrated system
  - 4-3 Operation of the system





**(5) Capacity development of the selected District Veterinary Offices (DVOs)**

**5-1 Selection of collaborating DVOs**

**5-2 Staff training on primary diagnosis and sample preparation**

**5-3 Enhancement of the field activities**

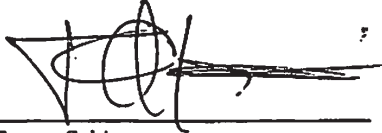


**RECORD OF DISCUSSIONS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY  
AND  
AUTHORITIES CONCERNED OF THE REPUBLIC OF UGANDA  
ON  
THE IMPLEMENTATION  
OF  
THE TECHNICAL ASSISTANCE TO IMPROVE NATIONAL  
DIAGNOSTIC CAPACITY FOR ANIMAL DISEASE CONTROL  
IN UGANDA**

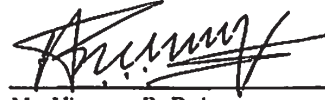
With regard to the Minutes of Meetings between the Japanese Detailed Planning Study Team (hereinafter referred to as "the Team") and the Government of the Republic of Uganda signed on August 14, 2009, Japan International Cooperation Agency (hereinafter referred to as "JICA") represented by the Resident Representative of JICA in Uganda had a series of discussions with the relevant Ugandan authorities on measures to be taken by JICA and the Government of the Republic of Uganda for the successful implementation of the above-mentioned Project.

As a result of the discussions, and in accordance with the provisions of the Agreement on Technical Cooperation between the Government of Japan and the Government of the Republic of Uganda signed in Kampala on December 14, 2005 (hereinafter referred to as "the Agreement"), JICA, Ministry of Agriculture, Animal Industry, and Fisheries (hereinafter referred to as "MAAIF") and Makerere University agreed on the matters referred to in the document attached hereto.

Kampala, 25 January, 2010



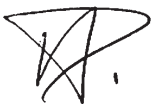
Mr. Tetsuo Seki  
Chief Representative  
Uganda Office  
Japan International Cooperation Agency  
Japan



Mr. Vincent R. Rubarema  
Permanent Secretary  
Ministry of Agriculture, Animal Industry,  
and Fisheries  
Republic of Uganda



Prof. Lilian Tibatemwa Ekirikubinza  
Vice Chancellor,  
Makerere University  
Republic of Uganda



ABBREVIATION

C/P	Counterpart
DVO	District Veterinary Office
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
J-NADIC	Joint National Animal Disease Diagnostic Centre
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MAK-FVM	Faculty of Veterinary Medicine, Makerere University
MDSIP	Ministry's Development Strategy and Investment Plan
NADDEC	National Animal Diseases Diagnostic and Epidemiology Centre
NaLIRRI	National Livestock Resources Research Institute
R/D	Record of Discussion



**THE ATTACHED DOCUMENT**

**I. COOPERATION BETWEEN JICA AND THE GOVERNMENT OF UGANDA**

1. The Government of Uganda will implement The Technical Assistance to Improve National Diagnostic Capacity for Animal Disease Control in Uganda (hereinafter referred to as "the Project") in cooperation with JICA.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

**II. MEASURES TO BE TAKEN BY JICA**

In accordance with the laws and regulations in force in Japan and the provisions of Article III of the Agreement, JICA, as the executing agency for technical cooperation by the Government of JAPAN, will take, at its own expense, the following measures according to the normal procedures of its technical cooperation scheme.

**1. DISPATCH OF JAPANESE EXPERTS**

JICA will provide the services of the Japanese experts as listed in Annex II. The provision of Article III of the Agreement will be applied to the above-mentioned experts.

**2. PROVISION OF MACHINERY AND EQUIPMENT**

JICA will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III. The provision of Article III of the Agreement will be applied to the Equipment.

**3. TRAINING OF UGANDAN PERSONNEL IN JAPAN**

JICA will receive the Ugandan personnel connected with the Project for technical training in Japan.

**III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF UGANDA**

1. The Government of Uganda will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through full and active involvement in the Project by all related authorities, beneficiary groups and institutions.
2. The Government of Uganda will ensure that the technologies and knowledge acquired by the Ugandan nationals as a result of the Japanese technical cooperation will contribute to the economic and social development of the Republic of Uganda.
3. In accordance with the provisions of Article V. of the Agreement, the Government of Uganda will grant in the Republic of Uganda privileges, exemptions and benefits to the



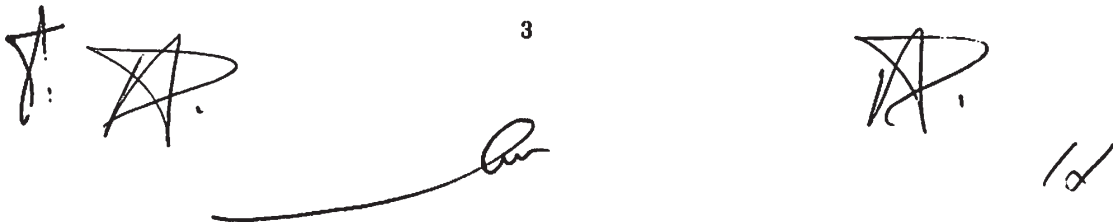
Japanese experts referred to in II-1 above and their families.

4. In accordance with the provisions of Article VII of the Agreement, the Government of Uganda will take the measures necessary to receive and use the Equipment provided by JICA under II-2 above and equipment, machineries and materials carried in by the Japanese experts referred to in II-1 above.
5. The Government of Uganda will take necessary measures to ensure that the knowledge and experience acquired by the Ugandan personnel from technical training in Japan will be utilized effectively in the implementation of the Project.
6. In accordance with the provision of Article V of the Agreement, the Government of Uganda will provide the buildings and facilities as listed in Annex IV.
7. In accordance with the provision of Article V of the Agreement, the Government of Uganda will provide the services of Ugandan counterpart personnel and administrative personnel as listed in Annex V.
8. In accordance with the laws and regulations in force in the Republic of Uganda, the Government of Uganda will take necessary measures to supply or replace at its own expense machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided by JICA under II-2 above.
9. In accordance with the laws and regulations in force in the Republic of Uganda, the Government of Uganda will take necessary measures to meet the running expenses necessary for the implementation of the Project.

#### IV. ADMINISTRATION OF THE PROJECT

1. Director, Directorate of Animal Resources and Fisheries, MAAIF as the Project Director, will bear overall responsibility for the administration and implementation of the Project.
2. Commissioner, Department of Livestock Health and Entomology, MAAIF and Dean, MAK-FVM as the Project Managers, will be responsible for the managerial and technical matters of the Project.
3. The Japanese Team Leader will provide necessary recommendations and advice to the Project Director and the Project Managers on any matters pertaining to the implementation of the Project.
4. The Japanese experts will give necessary technical guidance and advice to Ugandan counterpart personnel on technical matters pertaining to the implementation of the Project.
5. For the effective and successful implementation of technical cooperation for the Project,

3

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a Joint Coordinating Committee will be established whose functions and composition are described in Annex VI.

**V. JOINT EVALUATION**

Evaluation of the Project will be conducted jointly by JICA and the Ugandan authorities concerned, at the middle and during the last six months of the cooperation term in order to examine the level of achievement.

**VI. CLAIMS AGAINST JAPANESE EXPERTS**

In accordance with the provision of Article VI of the Agreement, the Government of Uganda undertakes to bear claims, if any arises, against the Japanese experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Republic of Uganda except for those arising from the willful misconduct or gross negligence of the Japanese experts.

**VII. MUTUAL CONSULTATION**

There will be mutual consultation between JICA and the Government of Uganda on any major issues arising from, or in connection with this Attached Document.

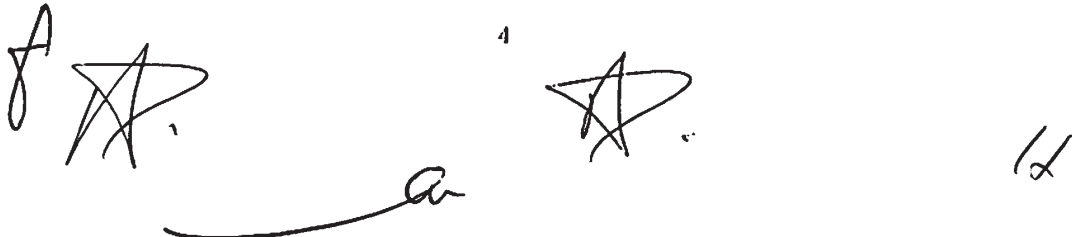
**VIII. MEASURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT**

For the purpose of promoting support for the Project among the people of the Republic of Uganda, the Government of Uganda will take appropriate measures to make the Project widely known to the people of the Republic of Uganda.

**IX. TERM OF COOPERATION**

The duration of the technical cooperation for the Project under this Attached Document will be three years from the date of dispatching the first Japanese expert.

ANNEX I	TENTATIVE MASTER PLAN
ANNEX II	LIST OF EXPERTS
ANNEX III	LIST OF MACHINERY AND EQUIPMENT
ANNEX IV	LIST OF BUILDINGS AND FACILITIES
ANNEX V	LIST OF UGANDAN COUNTERPART AND ADMINISTRATIVE PERSONNEL
ANNEX VI	JOINT COORDINATION COMMITTEE
ANNEX VII	TECHNICAL COMMITTEE

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## ANNEX I. MASTER PLAN

### 1. Project Name

Technical Assistance to Improve National Diagnostic Capacity for Animal Disease Control

### 2. Period of Cooperation

Three years

### 3. Overall Goal

Animal diseases are effectively controlled by the functional diagnostic system.

### 4. Project Purpose


The national diagnostic capacity for animal diseases is improved by means of the close collaboration of two NADDEC nodes at MAAIF and at MAK-FVM, leading to the platform for the joint institute.

### 5. Outputs

- (1) An action plan for a functional diagnostic system on animal diseases through the close collaboration of two NADDEC nodes at MAAIF and at MAK-FVM is drawn up.
- (2) Comprehensive and specialized diagnostic services become available by launching the J-NADIC.
- (3) An operational investigation system for emergency diseases is established at J-NADIC.
- (4) An information exchange system for sharing between two NADDEC nodes at MAAIF and at MAK-FVM is established.
- (5) Primary diagnostic and sample preparation techniques are improved at the selected District Veterinary Offices.

### 6. Project Activities

- (1) Preparation of the action plan (Formulation of the frame work)
  - 1-1 To study on the appropriate diagnostic system in Uganda
  - 1-2 To study on the current status of two NADDEC nodes at MAAIF and at MAK-FVM
  - 1-3 To identify duties to be conducted by the respective institutes
  - 1-4 To formulate a framework of the J-NADIC by the collaboration of two NADDEC nodes at MAAIF and at MAK-FVM
  - 1-5 To formulate a sample flow from the field to the J-NADIC
- (2) Enhancement of the capacity of the J-NADIC
  - 2-1 To establish integrated diagnostic service functions in J-NADIC
  - 2-2 To establish a sample reception system from the field
  - 2-3 To enhance specialized diagnostic techniques
  - 2-4 To produce diagnostic reagents
- (3) Establishment of an investigation system for emergency diseases
  - 3-1 To study on an appropriate system
  - 3-2 To establish an operational system
  - 3-3 To confirm the operational system
- (4) Development of an information exchange system
  - 4-1 To study on an appropriate system
  - 4-2 To establish an integrated system
  - 4-3 To confirm the Operation of the integrated system



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**(5) Capacity development of the selected District Veterinary Offices**

**5-1 To select collaborating DVOs for operational trials**

**5-2 To train staff on primary diagnosis and sample preparation**

**5-3 To enhance the field activities**



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**ANNEX II. LIST OF EXPERTS**

**The Project experts, who will be in charge of the following fields, will be dispatched:**

**1 . Long-term experts**

- (1) Chief Advisor / Diagnostic System**
- (2) Diagnostic Technique**
- (3) Project Coordinator / Field Operation**

**2. Short-term Experts**

**Short-term Experts will be dispatched, if necessary.**

**Note: Detail of the fields, number and terms of the experts shall be determined.**



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**ANNEX III. LIST OF MACHINERY AND EQUIPMENT**

**Part of machinery and equipment necessary for the effective implementation of the Project will be provided by the Japanese side in consideration of the progress of the Project and budgets.**

- 1. Laboratory equipments**
- 2. Vehicle(s)**
- 3. Other necessary equipments**



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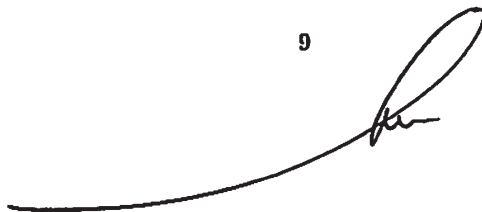


**ANNEX IV. LIST OF LAND, BUILDINGS AND FACILITIES**

- 1. Land, buildings and facilities necessary for the implementation of the Project in MAAIF and MAK-FVM**
- 2. Rooms and space necessary for installation and storage of the Equipment in MAAIF and MAK-FVM**
- 4. Office space and necessary facilities for the JICA experts and related members**
- 5. Other facilities mutually agreed upon as necessary**



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**ANNEX V. LIST OF UGANDAN COUNTERPART PERSONNEL AND ADMINISTRATIVE PERSONNEL**

- 1. Project Director**  
Director, Directorate of Animal Resources and Fisheries, MAAIF
- 2. Project Managers**  
Commissioner, Department of Livestock Health and Entomology, MAAIF and  
Dean, MAK-FVM
- 3. Deputy Project Managers**  
(1) Assistant Commissioner, National Disease Control, MAAIF  
(2) Deputy Dean 1, MAK-FVM
- 4. Project Officers**  
(1) Assistant Commissioner, Veterinary Inspection & Regulation, MAAIF  
(2) Principal Veterinary Officer, Diagnostic Unit, MAAIF  
(3) Principal Veterinary Officer, Epidemiology Unit, MAAIF  
(4) Deputy Dean 2, MAK-FVM  
(5) Coordinator of Central Laboratory Network, MAK-FVM
- 5. Other Project Staff**  
(1) Staff of Diagnostic Unit and Epidemiology Unit, MAAIF  
(2) Staff of Central Laboratory Network, MAK-FVM  
(3) Veterinary inspectors, MAAIF  
(4) Staff of selected District Veterinary Offices



## ANNEX VI. JOINT COORDINATING COMMITTEE (STEERING COMMITTEE)

The Joint Coordinating Committee meets twice a year and whenever the necessity arises.

### 1. Function

- (1) To approve the Annual Plan of Operations under the framework of the Project
- (2) To review achievements of the Annual Plan of Operations and overall progress of the Project

### 2. Composition of the Joint Coordinating Committee

(1) Chairperson: Permanent Secretary (or a person nominated by PS)

(2) Members

#### 1) Ugandan Side

Director, Directorate of Animal Resources, MAAIF  
Commissioner, Department of Livestock Health and Entomology, MAAIF  
Dean, MAK-FVM  
Assistant Commissioner, National Disease Control, MAAIF  
Deputy Dean, MAK-FVM  
Commissioner, Agricultural Planning Department, MAAIF  
Commissioner, Veterinary Inspection and Regulation, MAAIF  
Assistant Commissioner, National Disease Inspection and Regulation, MAAIF  
Director, NaLIRRI, National Agricultural Resources Research Institute  
Executive Director, National Agricultural Advisory Services  
President, Uganda Veterinary Association  
Executive Director, Uganda Wildlife Authority

#### 2) Japanese Side

Chief Representative of the JICA Uganda Office  
Chief Advisor  
Project Coordinator  
Other experts and personnel concerned dispatched by JICA, if necessary

### Notes:

1. Officials of the Embassy of Japan may attend Joint Coordinating Committee meetings as observers.
2. Persons who are nominated by the Chairperson may attend Joint Coordinating Committee meetings as observers.



## ANNEX VII. TECHNICAL COMMITTEE

The Technical Committee will be held regularly and whenever the necessity arises.

### 1. Function

- (1) To develop and improve detailed activities
- (2) To monitor, coordinate and evaluate activities
- (3) To summarize the proceedings of activities

### 2. Composition of the Technical Committee

#### (1) Ugandan Side

Director, Directorate of Animal Resources, MAAIF  
Commissioner, Department of Livestock Health and Entomology, MAAIF  
Dean, MAK-FVM  
Assistant Commissioner, National Disease Control, MAAIF  
Deputy Dean, MAK-FVM  
Assistant Commissioner, Veterinary Inspection & Regulation, MAAIF  
Principal Veterinary Officer, Diagnostic Unit, MAAIF  
Principal Veterinary Officer, Epidemiology Unit, MAAIF  
Coordinator of Central Laboratory Network, MAK-FVM  
District Veterinary Officers at selected District Veterinary Offices

#### (2) Japanese Side

Chief Representative of the JICA Uganda Office  
Chief Advisor  
Project Coordinator  
Other experts and personnel concerned dispatched by JICA, if necessary

#### Notes:

1. Officials of the Embassy of Japan may attend Technical Committee meetings as observers.
2. Persons who are nominated by the Chairperson may attend Technical Committee meetings as observers.



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# **Action Plan**

**The Project for Technical Assistance to  
Improve the National Diagnostic  
Capacity for Animal Disease Control**

**March 2011**

**DLHE-MAAIF**

**MAK-FVM**

**JICA**

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## List of Abbreviation

AFRISA: Africa Institute for Strategic Animal Resource Services and Development  
ASF: African swine fever  
C/P: counterpart  
CBPP: contagious bovine pleuropneumonia  
DLHE: Department of Livestock Health and Entomology  
DVO: district veterinary Office  
ELISA: enzyme-linked immunosorbent assay  
FITC: fluorescein isothiocyanate  
FMD: foot and mouth disease  
GoU: Government of Uganda  
HI: hemoagglutination inhibition test  
IFAT: indirect fluorescent antibody test  
JCC: joint coordinating committee  
JICA: Japan International Cooperation Agency  
J-NADIC: joint national animal disease diagnostic centre  
MAAIF: Ministry of Agriculture, Animal Industry and Fisheries  
MAK-FVM: Makerere University, Faculty of Veterinary Medicine  
MDSIP: Ministry's Development Strategy and Investment Plan  
MM: minutes of meeting  
MOU: memorandum of understanding  
NADDEC: National Animal Disease Diagnostic and Epidemiology Center  
NaLiRI: National Livestock Research Institute  
OJT: on-the-job training  
PCR: polymerase chain reaction  
PDM: project design matrix  
PEAP: Poverty Eradication Action Plan  
PMA: Plan for Modernization of Agriculture  
PO: plan of operation  
PPR: peste des petits ruminant  
RD: record of discussion  
SNT: serum neutralization test  
TC: technical committee

## 1. Introduction

Preparation of the Action Plan of the Project is the first necessary work and output indicated in the Master Plan of the Project and also in the Project Design Matrix (PDM).

More than half a year has past since the beginning of the Project in June 2010. During this period, the Project staff worked out to study on appropriate diagnostic system, current status of NADDEC and MAK-FVM, necessary duties to be conducted by the both institutes, possible framework of the Joint National Animal Disease Diagnostic Centre (J-NADIC) and diagnostic sample flow from the field to J-NADIC.

This action plan has been prepared as an output of study by the Project staff for guiding and monitoring the Project activities and also for the purpose of common understanding about the Project among the stakeholders and relevant authorities.

## 2. Background of the Project

### 2-1. Present situation of the Livestock and Animal Health Sub-sector

Agriculture has had the slowest growth rate of the three major sectors of Industry and services over the past decade. However, Agriculture still contributes the largest share of GDP and is dominated by subsistence farmers: many of whom live in below the poverty line. The agriculture sector supports 80% of the population.

The livestock industry plays an important role in the agriculture sector and for the Ugandan economy. The livestock industry account 13 % of Agricultural Domestic Product and more than 40% of rural farmers (about 6 millions households) are engaged in livestock keeping for their farming activities.

The most limiting constraints hindering the development of the livestock sector is the prevalence of livestock diseases, especially in the traditional livestock system that dominates 90% of the animal industry. Even in the 9% modern farming system, diseases are still a major constraint. Important cross-border diseases such as Foot and Mouth Disease (FMD), Contagious Bovine Pleuropneumonia (CBPP), Peste des Petits Ruminant (PPR), African Swine Fever (ASF) which seriously constraint the international, regional and domestic trade of livestock and livestock products are frequently reported or wide spread. Some zoonotic diseases of public importance such as brucellosis, tuberculosis, anthrax are also wide spread. The Livestock Development Programme of MAAIF suggests that losses from animal diseases are as high as US\$ 86.3 million a year through morbidity (58%), Mortality (30%), post-slaughter condemnation (10%) and poor quality detection during milk processing (2%).

## 2-2. National Strategy for the Improvement of Animal Health

The Government of Uganda (GoU) has been implementing the Poverty Eradication Action Plan (PEAP), a national development framework since 1997, which intends to reduce the proportion of population living in absolute poverty from the level of 44% in 1997 to below 10% by 2017. Since 2000, GoU is also implementing the Plan for Modernization of Agriculture (PMA) with the vision of “poverty eradication through a profitable, competitive, sustainable and dynamic agricultural and agro-industrial sector. The operation of the PMA is an important focus of current national development efforts. The PMA is based on the decentralization and privatization strategy, such as deepening of decentralization for effective service delivery, reducing public sector activities and promoting the role of private sector, supporting the dissemination and adoption of productivity enhancing technologies and guaranteeing food security through market rather than household self-sufficiency.

Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) has been preparing the Ministry’s Development Strategy and Investment Plan (MDSIP) 2010/11-2015/16, which focuses on the overall national goal of poverty reduction. The importance of livestock endemic and epidemic diseases as well as pest control including strengthening veterinary services for livestock are identified as one of the key issues of MDSIP.

MAAIF produced Livestock Development Strategy with Apiary, 2004 in which the diseases were recognized as one of the major constraints for livestock production and marketing. A number of diseases remain endemic in Uganda; notably among them are Foot and Mouth Disease, Contagious Bovine and Caprine Pleuropneumonia, Tick-born diseases, Helminthosis, Trypanosomosis, orf, Newcastle Disease, Gumboro, Coccidiosis, Salmonellosis, African Swine Fever, Tuberculosis, Brucellosis, and Anthrax. These diseases a pause livestock and human health hazard and limit access to livestock export market.

The National Policy for the Delivery of Veterinary Services was prepared by MAAIF in October 2001. The National Policy stressed decentralization and privatization of sustainable veterinary services, and aimed provision of adequate and effective veterinary service nation-wide including remote areas, the establishment of an effective private sector for delivery of veterinary services, effective delivery of public good services, the establishment of appropriate public and private sector roles and realization of conducive legal frame work to enable the policy objectives.

### 2-3. Prior and On-going Project/Assistance

MAAIF, supported by JICA, has implemented the two years' project "Enhance the Capacity of Animal Disease Control in Uganda" since 2007 to 2009 through the training on several diagnostic techniques for technical staff and the renovation and installation of equipments. The Project has achieved some improvement of primary diagnostic capacity at National Animal Disease Diagnostic and Epidemiology Center (NADDEC) and selected district laboratories. The terminal evaluation report of the Project concluded that: Project has been successfully implemented to enhance the bacteriological, virological and histo-pathological diagnostic techniques in NADDEL and some basic laboratory diagnostic and sample preparation techniques in 5 District Veterinary Offices. However, prolonged shortage of the qualified laboratory staff including veterinary and technical staff is the most constraint to sustain the activities. NADDEL has still few demands of laboratory diagnostic services from the field at the moment. It is difficult to anticipate the effective use of transferred diagnostic technology through the Project under such a situation of NADDEL.

Accordingly, the terminal evaluation report of the Project recommended the formulation and implementation of Phase II project in which the fragmented technological and human resources in several institutes would be re-integrated under the national disease diagnostic system and network, and joint diagnostic laboratory which is technologically cored by Faculty of Veterinary Medicine, Makerere University would be established

### 2-4. Current situation and challenge to be addressed for disease control and diagnosis

Department of Livestock Health and Entomology, MAAIF is mandated the control of livestock and zoonotic diseases, sericulture and apiculture. Diagnostic Unit of NADDEC is mainly engaged in monitoring and screening test of a few important epidemic diseases. The rest of the diseases are mostly ignored by the NADDEC and MAAIF.

Advisory service delivery in the livestock industry is a function of local governments, under the Local Governments Act (1997). Under the government policy, this service is being privatized as stipulated in the National Agricultural Advisory Services Act. The National Policy for the Delivery of Veterinary Services 2001 instructed that central government should develop capacity to manage the central reference laboratory, and the central government and local government should encourage the private sector to establish and operate diagnostic laboratories. However, the diagnostic facilities are in most cases lacking. In addition there are very few extension workers trained and skilled in the diagnosis and treatment of diseases. Rapid decentralization and privatization of the veterinary services by the



PMA including disease diagnostic services caused fragmentation of technological and human resources and led to reduced effectiveness of the public disease control services. In this regards, it is necessary to recreate synergies between MAAIF, local government and other technological institutes by sharing facilities, human resources, techniques and information for the effective disease diagnosis and control.

Accurate and prompt diagnosis followed by appropriate quarantine and control measures is prerequisites to mitigate the effects of livestock diseases on production and productivity of livestock. However, the diagnostic capacity is still far behind of the sufficient level of the required national capacity of animal disease diagnostic services to meet the international standard and also the requirement from the field. The most limiting constraint hindering the strengthening of diagnostic capacity of NADDEC is the shortage of qualified veterinary staff (2 principal vets, 2 vets, 1 chemist, 11 technicians who are busy for administrative work.

Through the experience of prior Project “Enhance the Capacity of Animal Disease Control in Uganda”, it was recognized that the shortage of qualified veterinary staff has been a major limiting factor to achieve the improvement of diagnostic capacity of NADDEC. With regard to the current situation of the staffing and budgeting of the MAAIF, it is unlikely that the level of staffing will increase in near future. It has been considered that this gap on diagnostic capacity can be bridged by integrating veterinarians and scientist from Faculty of Veterinary Medicine, Makerere University (MAK-FVM) for national veterinary services. MAK-FVM has over 70 veterinary scientists and over 20 technicians.

#### 2-5. J-NADIC Concept

J-NADIC concept was jointly proposed by MAK-FVM and DLHE-MAAIF. The proposed J-NADDIC integrates and utilizes the available staff from MAK-FVM and MAAIF for necessary functions on the platform of shared laboratories which belongs to individual institutes. Original concept of J-NADIC is cored by 3 national institutes NADDEC, MAK-FVM and NaLiRI. Establishment of 8 regional laboratories is also proposed. It was designed to include very wide functions which were to provide confirmatory and referral diagnosis of animal diseases, conduct effective surveillance, enforce effective veterinary standards, conduct quality assurance of food of animal origin, conduct chemical food residue analysis, conduct research to relevant animal biotechnologies and biologics, train personnel in appropriate techniques, technologies, disease diagnosis, and surveillance and conduct adaptive research in animal diseases. Accordingly, MAAIF and Makerere University concluded Memorandum of

Understanding (MoU) to strengthen the collaboration between both institutes in September 2009.

### 3. Master Plan of the Project

#### 3-1. Project Strategy and Master Plan

Directorate of Animal Resources of MAAIF and MAK-FVM jointly proposed to establish the Joint National Animal Disease Diagnostic Center (J-NADIC) which aims to utilize the integrating staffing both from MAAIF and MAK-FVM to be a remedy for the shortage of qualified staff. The proposed J-NADIC will utilize the integrated staffing from MAAIF and MAK-FVM.

The Master Plan of the Project was formulated based on the proposed concept of J-NADIC Platform. However, the original concept of the J-NADIC covers too wide areas and functions for the technical cooperation project by JICA. Therefore, the target of the Project is limited in disease diagnosis. The Project concentrates into capacity building of central diagnostic techniques and services on the J-NADIC platform between NADDEC and MAK-FVM. Laboratory of NADDEC, MAAIF and Central Diagnostic Laboratory of MAK-FVM will be developed as national reference diagnostic laboratory for animal diseases on the J-NADIC Platform in which necessary functions will be shared by MAAIF and MAK-FVM.

The Project purpose is “The national diagnostic capacity for animal diseases is improved by means of the close collaboration of NADDEC and MAK-FVM, leading to the platform for the joint institute.

Master Plan of the Project drawn up by the Japanese Detailed Planning Study Team through the series of discussions with concerned organization and personnel in Uganda in August 2009 is shown in Appendix 1.

#### 3-2. Implementation Structure

Implementation Structure which includes Project Site, Veterinary Offices, Project Office, and Project staff and administrative framework of Ugandan personnel, Joint Coordination Committee (Steering Committee), Technical Committee is described in Appendix 2.

#### 3-3. Ante-Evaluation of the Project design by Five Criteria

Japanese Detailed Planning Study Team organized by JICA in August 2009 conducted ante-project evaluation study by the five criteria. Although the evaluation report pointed out the weakness of financial sustainability, other criteria of relevance,

effectiveness, efficiency and impact were highly evaluated. Results of the evaluation were summarized as follows.

#### 1) Relevance

Relevance is high. Agricultural industry including livestock industry is one of the major industries in Uganda and National Poverty Eradication Action Plan is clearly indicating the importance of livestock industry and necessity of animal disease control. MAAIF is preparing Memorandum of Understanding for collaboration with MAK-FVM following the instruction from President's Office.

The Project can contribute to the livelihood improvement and poverty alleviation of small scale livestock farmers through decreasing the major production risk of animal diseases by means of strengthening of appropriate diagnostic system. Staff and budget of NADDEC are apparently very short to provide the appropriate diagnostic service as National Center. Therefore, the project framework which aims strengthening the National Capacity of animal disease diagnosis by means of the collaboration between MAAIF and MAK-FVM meets needs and resources of target group of the Project.

Development assistance for agricultural sector is the most important sectors of JICA's country assistance program which includes rice development, livestock development and rural/local industry development. The Project is designed as the succeeding project after the Project implemented from 2007 to 2009 based at NADDEC. Experience, knowledge and know-how obtained through the previous project can be effectively utilized for the Project implementation.

#### 2) Effectiveness

Significant efficiency is expected because of following reasons.

Diagnostic techniques and information sharing, which are included in project design, are the important elements for the project purpose of strengthening of diagnostic capacity. Recognizing the present situation of the weak national disease diagnostic system, formulation of collaborative works between NADDEC, MAK-FVM and also the district veterinary offices will lead the strengthening of the basic national diagnostic system in Uganda.

Ugandan government and MAAIF are requested to take necessary measures of staffing and budgeting for the disease diagnosis and investigation which are necessary to achieve the Project purpose.

#### 3) Efficiency

It is expected that the Project will be implemented efficiently because of following reasons.

The project is designed to utilize national technical and human resources which are already available especially at MAK-FVM. In addition to the resources from MAK-FVM, experiences, know-how, human resource network obtained through the previous project at NADDEC and DVOs.

#### 4) Impact

Significant economical impacts from household level to national level are expected.

Because, accurate and timely diagnosis is the basis of disease control which is necessary to reduce the production loss and to increase the market value and opportunity of livestock products not only domestic market but also foreign high-value market.

#### 5) Sustainability

- Institutional sustainability

Institutional sustainability is considered to be high, because the animal disease control is clearly described in National Poverty Eradication Action Plan and MDSIP as one of the important area to be tackled. Active participation and contribution to the public veterinary services of the MAK-FVM are also described in Strategic Plan of MAK-FVM. In addition, Memorandum of Understanding for the collaboration between MAAIF and MAK-FVM are being prepared.

- Technological sustainability

Human resources and techniques established through the Project will be continuously utilized at the established institutes of MAAIF, MAK-FVM and District Veterinary Offices.

- Financial sustainability

There are not enough budgets for the disease control and diagnostic activities at MAAIF and MAK-FVM. Ugandan side is requested to assure the necessary budgets to sustain the disease control and diagnostic activities after the completion of JICA's assistance.

#### 4. Action Plan

4-1. Activity for output 1 (Plan for a functional diagnostic system on animal diseases through the close collaboration of NADDEC and MAK-FVM is drawn up.)

##### 1) Current status of NADDEC-MAAIF and MAK-FVM

Both MAK-FVM and NADDEC have been providing diagnostic services to the public, however, the quality of the diagnosis is very poor and the available diagnostic tests are limited. Namely, a number of diseases are left either undiagnosed or mis-diagnosed. In addition, NADDEC is far too understaffed and has heavily relied on

the donor support financially. These problems cause wide spread of infectious animal diseases in the country. MAAIF has sometimes requested individuals of MAK-FVM for the technical support in case. However such a request has not been done in systematic manner.

The diagnostic services provided by MAK-FVM are also not in the satisfactory levels either, especially the diagnoses for viral diseases. Furthermore, the relatively high charges set for the services have been causing a setback for the veterinarians and farmers from sending the samples for diagnoses, therefore, those charges should be reconsidered by the concerned personnel and adjusted to the reasonable levels so that the veterinarians and farmers can benefit.

Currently available diagnostic techniques (partly disease-wise) in the both institutes were summarized in Appendix 3. Yet, appropriate techniques for a number of major diseases are not available in the both institutes, and accordingly, strong commitment to improve the situation is imminent and expected from NADDEC, MAK-FVM and JICA. The specific fields that need strong attention are virology (isolation and serum neutralization test), histopathology, serology (ELISA, diagnostic reagents) and PCR-based genetic diagnosis.

MAK-FVM is planning to be strengthening its public service activities including extension, dissemination and training under the Framework of AFRISA. Diagnostic function of MAK-FVM has been decided to be concentrated in its Central Diagnostic Laboratory.

## 2) Duties to be conducted by the Respective Institutes

Considering the concept of J-NADIC platform, the ministry, i.e., NADDEC should be responsible for the control of the major infectious diseases such as State Control Diseases and OIE List-A diseases while MAK-FVM deals with the ordinary samples submitted from the fields. However, the current NADDEC conditions described earlier would clearly indicate that MAAIF merely cannot take appropriate actions for disease control in case of emergency outbreaks. As a result, MAK-FVM also has to play a certain role in those emergency outbreaks. That could be diagnosis itself or the development diagnostic techniques. Especially serological ones are valuable for their control as can be utilized for investigation.

Recognizing the present situation, public duty and available technical and manpower resources of both institutes, the both institutes will take following roles and activities in accordance with the J-NADIC concept of the Project.

- Diagnoses (mainly by ongoing screening tests using the commercial kits) of State

Control Diseases and OIE list A Diseases are basically the responsibility of the NADDEC.

- Diagnoses of other diseases and more general and comprehensive diagnoses will be conducted and strengthened mainly at Central Diagnostic Laboratory of MAK-FVM.
- Adaptive research on diagnostic technologies might be promoted at MAK-FVM
- Investigation of emergency outbreak is basically a responsibility of NADDEC. MAK-FVM participate the investigation according to the J-NADIC Platform concept.
- Obtained diagnostic data from both institutes are collected and compiled at Epidemiology Unit of NADDEC for data sharing between the both institutes.
- Production and supply of necessary reagents for primary sample preparation, processing and examination for the selected DVOs are mainly conducted at NADDEC.
- Staff member of both institutes closely collaborate for the all of project activities including above indicated role and activities for respective institute according to J-NADIC Platform concept. The Project is requested to promote the collaborative works of the staff of respective institutes utilizing both laboratories of NADDEC and MAK-FVM in accordance with shared laboratory concept.

### 3) Appropriate National Animal Disease Diagnostic System

Public veterinary service is recognized as one of the important public goods. On the other hands, the beneficiary pays principle is one of the government policy and global trend in market economy. According to the Strategic Plan of MAAIF, control of State Control Animal Diseases is the responsibility of the government. Now, NADDEC provides its diagnostic services free of charge. Central Diagnostic Laboratory of MAK-FVM charges its diagnostic services to the clients. Respecting these policy, strategy and present situation, followings are recommended.

- Diagnostic fee is charged to clients or beneficiaries of diagnostic services.
- Diagnostic fee is minimized in cost recovery basis of consumables for diagnostic tests.
- Diagnoses of the samples suspected for State Control Diseases and OIE List A Diseases are free of charge
- Diagnoses of the samples collected for disease investigation purposes by DVO and other Public Institutes are basically free of charge. But if the budget is allocated to DVO and other Public Institutes for the investigation from their own resources or

from outside resources, diagnostic fee may be determined based on the J-NADIC Standard.

- Project will draft the proposed J-NADIC Standard of Diagnostic Fee. Respective institutes will determine the reasonable diagnostic fee referring to the proposed J-NADIC Standard.

#### 4) Sample flow from the field to the J-NADIC

Suggested Sample flow in J-NADIC is shown in Appendix 4. Received samples are categorized into a) Samples suspected for State Control Diseases and OIE-List A Diseases, b) Samples which can be analyzed in received Laboratory, 3) Samples cannot be analyzed in received laboratory and sent to another laboratory for accurate and detailed analysis. Based on the role of respective institutes described earlier in 2), the received samples suspected for State Control Diseases and OIE List A diseases are immediately reported and sent to NADDEC-MAAIF for laboratory screening tests. If negative for the suspected State Control Disease by the screening tests, samples of diseased case have to be further analyzed by either laboratory which can analyze.

Proposed Sample and personnel flow in MAK-FVM for diagnosis is shown in Appendix 5. Staff of the related departments and units have to be encouraged to participate the diagnostic activities at the Central Diagnostic Laboratory.

#### 4-2. Revision of Project Design Matrix (PDM 2) and Plan of Operation (P.O.)

Master Plan was prepared quoting from R/D of the Project, and PDM and PO were revised focusing especially on the objectively verifiable indicators in this Action Plan (Appendix 6 & 7).

Quantitative indicators are always recommended for the monitoring and evaluation purposes rather than qualitative indicators. Qualitative indicators are sometimes required to be converted to quantitative indicators by means of statistical analysis. For this reason, rating system by questionnaire study, target numbers such as number of samples, number/kind of diseases and times of investigation etc. are adopted as indicators. Several target numbers, such as number of target diseases, number of introduced or improved techniques, number of diagnostic samples, etc were set as indicators for varification. The Project is requested to collect the necessary baseline data for the indicators.

The Project aims principally the building of functional diagnostic capacity at central level. The words of establishment of the disease control and improvement of production and productivity written in overall goal are the secondary and indirect effect



derived from the Project. So, level of utilization and quality rating of diagnostic services provided by J-NADIC are adopted as more direct indicators for the overall goals of the establishment of diagnostic capacity. A total of 25 target diseases are listed tentatively according to their importance in Uganda (Appendix 8). Indicators of the project purpose are clarified and defined by the setting of target diseases which can become diagnosed by the J-NADIC.

Plan of operation (P.O.) is a little modified in activities and sub-indicators according to the revision of PDM indicators especially in the target setting of diseases and introduced techniques (Appendix 7).

4-3. Activities for Outputs 2 (Comprehensive and specialized diagnostic services become available by launching the Joint National Animal Disease Diagnostic Centre.)

For the time being, the Project should concentrate on the establishment of diagnostic services in Central Diagnostic Laboratory at MAK-FVM. Diagnostic approaches in histopathology, bacteriology, parasitology, hematology, serology, virology, and molecular biology are required for the comprehensive laboratory diagnostic services which can respond to demand from the field.

The diseases to be tackled and the diagnostic techniques to be established through the Project should be listed up, illuminating the means of technical cooperation activities (e.g., experts, OJT, etc.) to achieve the Project purpose. Tentative list of the diseases and diagnostic techniques to be introduced covered by the project is shown in Appendix 8. A total of 25 kinds of diseases are listed tentatively. The diseases were selected based on the list of State Control Diseases and Notifiable Diseases of MAAIF which are officially recognized as important diseases in Uganda. Some other animal diseases of public health and livestock production importance prevalent in Uganda are also included in the list. Diseases covered by other donor supported project such as HPAI and FMD, not yet confirmed diseases in Uganda such as BSE, and considered to be less important diseases such as diseases mainly of horse are not included in the list.

On-going diagnostic tests conducted in NADDEC will be respected by the Project. However the most of the available test at the NADDEC-MAAIF are the screening test using the commercial test kits. Negative samples by the test even from the diseased cases are totally ignored without more detailed analysis for the other potential diseases. Negative results by the single test have some value for diagnostic data but obviously incomplete for the diagnoses.

Proposed laboratory techniques for each of listed diseases to be introduced or improved by the Project are listed in Appendix 8. The techniques are selected referring

the OIE Diagnostic Standard. Listed laboratory techniques include ordinary microscopic examination, pathological and histo-pathological examination, bio-chemical and hematological examination, bacteria isolation/identification, drug sensitivity test, virus isolation/identification, immunological tests such as HI, CFT, IFAT, ELISA, SNT, molecular-biological tests such as PCR, RT-PCR. Well known and widely used diagnostic test for some important diseases such as Tuberculin test (skin test) for tuberculosis, Rose Bengal Test (rapid agglutination test) for Brucellosis and Pearl Test for Anthrax are also included in the list. If necessary, basic techniques acquired from the introduction of those laboratory diagnostic techniques listed can be applied for many other diseases.

In addition, diagnostic reagents as well as the diagnostic tools to be produced or developed at J-NADIC should be studied along with their feasibility and necessity. The list should include not only the names of the products or techniques but also the names of responsible persons and supervisors along with the necessary disposals or even equipment. The development of diagnostic tools can be related with someone's research work or degree as the original tools readily enrich the research capacity and benefit disease investigation as well. The following items are some examples for consideration.

- Reagents

Stock solutions and diluents for sample preparation (fixatives, staining, buffered solutions etc.), rose bengal, milk ring test, FITC conjugate for rabies, HI antigen for Newcastle disease, polyclonal antibodies for various organisms, etc.

- Diagnostic tools

Indirect ELISA for brucellosis, antigen detection ELISA for porcine cysticercosis, antigen detection ELISA for trypanosomiasis, IFAT and ELISA for neosporosis, serum neutralization test for viral diseases, etc.

#### 4-4. Activities for Outputs 3 (An operational investigation system for emergency diseases is established.)

Indicator of output 4 is "Emergency outbreaks are investigated by joint investigation team of J-NADIC more than once during the project period." The control of State Control Diseases and OIE List-A diseases is the task of MAAIF, and accordingly, in case of the outbreak of emergency diseases, the action for the investigation and control should be initiated by the MAAIF. Investigations of emergency outbreak of State Control Diseases have been done routinely by NADDEC.

However, the response of the MAAIF has been unsatisfactory because of the

understaffing, limitation of available techniques and limitation of the budget, etc. of NADDEC. It is expected that the investigation capacity for animal diseases including risky emerging and re-emerging diseases are strengthened by the cooperation of NADDEC and MAK-FVM on the J-NADIC Platform.

The activities expected to MAK-FVM are to establish reliable diagnostic system for emerging diseases. If the diagnostic tools available, then they can be utilized not only for individual diagnostic service but for investigation of the diseases and some research work of interest, which can be arranged even within the framework of the faculty curriculum, i.e., collaborating with the students.

Joint investigation system may need following components and processes.

- Formulation of joint investigation team consists of suitable technicians, veterinarians and specialists from NADDEC and MAK-FVM. Making the list of candidate member of the team.
- Preparation and stock of equipment and materials for emergency field investigation including materials and equipment for sample collection, post-mortem examination tools, disinfection tools and materials, and simple field test kit, etc.
- Field operation by field investigation team.
- Detailed laboratory analysis of the collected samples in the laboratories of J-NADIC by the Joint Investigation Team and laboratory staff.
- Comprehensive analysis and diagnosis based on the collected data and information from field and laboratories by the participation of specialists from both institutes.

4-5. Activities for Outputs 4(An information exchange system for sharing between NADDEC and MAK-FVM is developed.)

Regarding the project purpose, limited resources and limited period of the Project, the “information” treated by the Project is the diagnostic information including the background information about the diagnostic samples, used laboratory test, diagnostic test data, and diagnostic results obtained by the laboratories of NADDEC and MAK-FVM. Now, respective institutes are using the different format of sample reception form and diagnostic report form. There is Epidemiology Unit in NADDEC which is responsible for the Animal Disease information as a National Center.

There would be at least 2 ways to exchange information between 2 institutes: 1) Paper based, and 2) Internet based. The former appears more laborious and obsolete than the latter but both systems will not work properly if the persons-in-charge are irresponsible. Whichever the system is applied, the rules should be determined and agreed by both sides, and progress ought to be monitored regularly. A comprehensive

reporting format is also necessary.

In case of the internet-based system is applied, it had better be initiated with a very simple one like just by retrieval of pdf files, and later on, can be improved into a more practical one gradually.

Based on these conditions, followings are recommended to achieve the output 4.

- Common format of sample reception and diagnostic report (J-NADIC Form) will be developed and used by NADDEC and MAK-FVM.
- Epidemiology Unit of NADDEC will take a role to collect, compile and distribute the diagnostic information submitted from Laboratories of NADDEC and MAK-FVM. Epidemiology Unit of NADDEC will be equipped for these activities.
- Both Laboratories of NADDEC and MAK-FVM regularly submit the diagnostic information obtained through the diagnostic activities using the prescribed format (J-NADIC Form).
- Appropriate data link for submission and distribution of diagnostic information between Epidemiology Unit of NADDEC and laboratories of NADDEC and MAK-FVM will be developed.
- Internet-mail based submission and distribution of diagnostic information and installation of application software of document filing system may be easier than genuine database system at the beginning.

#### 4-6. Activities for Outputs 5

Project activities are extended to some selected District Veterinary Offices.

Following District Veterinary Offices (DVOs) has been selected at the first JCC meeting based on the criteria of accessibility to J-NADDIC, role as a future reference laboratory for neighboring districts, zonal demands. DVOs of Kampala and Wakiso will be directly provided for laboratory services by J-NADDIC and other DVOs will be strengthened in basic capacity of laboratory diagnosis.

- Central Zone: Kampala, Wakiso, Mpigi, Kiboga
- Eastern Zone: Mbare
- Western Zone: Mbarara

During the previous Project, a basic laboratory was established in Mpigi, Kiboga and Mbale DVOs, however its utilization is limited to a small number of DVO staff mainly due to the physical distance between the office and their responsible sub-counties or lack of scientific interest in their work presumably. Nobody should force them to utilize the laboratories but at least the basic diagnostic techniques can be

transferred and the best way to do so is not by seminars or workshops. Someone has to be there with them for a certain amount of time to work in the laboratory as well as in the field. Therefore, the players for the task would be Japanese volunteers and MAK-FVM students focusing on the problems arising from the respective districts. If some diagnostic tools that can be applied in the field are developed at MAK-FVM, those would benefit a number of farmers.

The possible activities in DVOs are:

- Investigation on hemoparasites in pigs and chickens → Mbare
- Bacteria isolation and antibiotic sensitivity test for mastitis → Mbarara, Kiboga
- Autopsy and sampling from chickens → All DVOs
- Investigation on Newcastle Disease by HI → All DVOs
- Investigation on brucellosis → Kiboga, Mpigi and Mbarara
- Bacteria staining methods → All DVOs
- White blood cell and differential count → All DVOs

#### 4-7. Activities for Inputs

##### 1) Dispatch of Japanese Experts

Now only one long-term Japanese expert, a project coordinator is assigned. Apparently, only one project coordinator is too heavily tasked for organizing all the necessary project activities. Re-dispatch of Dr. Kondo, Pathologist, currently assigned at NADDEC-MAAIF as a JICA senior volunteer has been planned and necessary procedures of JICA is in progress. Recognizing the increasing workload and tasks of the Project in JFY 2011, dispatch of another long term Japanese expert who may be responsible to chief adviser/diagnoses of infectious diseases is urgently required. Early recruitment and dispatch of those long term experts by JICA are strongly requested.

In JFY 2011, the technical works for laboratory diagnoses will be increasing and increasing. More number of short-term experts for specialized technical area should be dispatched. Short-term experts are expected to be recruited mainly from Nihon University. Because short-term experts from Nihon University may be able to be dispatched relatively short period of less than one month during only the school holiday season in Japan, 3-4 short-term for specific specialized areas such as virology, bacteriology, immunology and molecular biology should be dispatched intensively during the periods of school holidays. In addition to such short-term experts from Nihon University, shuttle dispatch of another short-term expert is strongly requested. She/He will stay for 3-4 months twice a year to provide the continual support for

laboratory techniques and laboratory management for disease diagnoses.

## 2) Assignment of Ugandan Project Staff

The list of project staff for administration and implementation for the Project is shown in Appendix 2. Project Coordinators are nominated from MAAIF and MAK-FVM for daily activities and communications.

## 3) Provision of Equipment and Materials by JICA

The design of the Central Diagnostic Laboratory of MAK-FVM will be determined and renovated as soon as possible. Basic laboratory equipment mainly for histopathology and clinical biochemistry will be available by the end of March 2011. Some basic consumables and small equipment for laboratory use has been procured and stored in Central Laboratory of MAK-FVM or Project Office (Appendix 9). However, there are still a number of machineries necessary for the full diagnostic service and the further arrangement is necessary to establish a thoroughly functional diagnostic laboratory.

List of the priority target diseases and candidate diagnostic techniques to be introduced by the Project has been prepared in attached table. In this respect, from the next JFY 2011, equipment and materials necessary for laboratory diagnosis on listed diseases and techniques will be given higher priority for the procurement and supply by JICA. Detailed lists of necessary equipment, consumables and chemicals for the laboratory diagnoses are shown in Appendix 10-1, 2, 3, 4, 5, 6. The lists cover most of the necessary equipment and materials for the listed diagnostic techniques to be introduced by the Project. Annual procurement plan will be prepared referring these lists.

## 5. Monitoring and Evaluation

Progress of the Project will be continuously monitored in accordance with the Action Plan, PDM and PO. Progress report will be prepared by coordinators from MAAIF, MAK-FVM and JICA and submitted and reported regularly (quarterly) to Joint Coordinating Committee members and Technical Committee members. Terminal evaluation will be conducted jointly by JICA and MAAIF. Evaluation report will be submitted and reported to Joint Coordinating Committee and Technical Committee.



## MEMORANDUM OF UNDERSTANDING

Between

**THE GOVERNMENT OF THE REPUBLIC OF  
UGANDA**

As represented by

**THE MINISTRY OF AGRICULTURE, ANIMAL  
INDUSTRY AND FISHERIES**

And

**MAKERERE UNIVERSITY KAMPALA**

As represented by

**THE FACULTY OF VETERINARY MEDICINE**

Executed on the .....*28<sup>th</sup>*..... day of .....*Sept.*..... 2009



## **PREAMBLE**

The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) represented by its Permanent Secretary and the Makerere University Faculty of Veterinary Medicine represented by its Dean, have discussed arrangements for establishing a closer linkage and collaboration between MAAIF and Makerere University for joint implementation of policy and provision of strategic services including research, training, extension and development outreach service in fields of common interest relating to the holistic animal industry and agricultural sector.

**NOTING THAT MAAIF** is the ministry mandated to improve all aspects of animal health and production, disease control, livestock research and extension in order to enhance agricultural productivity and that of the animal industry in Uganda.

**RECOGNIZING THAT** the Faculty of Veterinary Medicine of Makerere University (hereinafter referred to as FVM) also has a national mandate of producing trained and competent manpower, conducting research, developing technology and providing service in the relevant industries and sectors.

**RECOGNIZING THAT** the FVM has a lot of manpower and other resources in diverse fields relevant to MAAIF and that can synergize MAAIF.

**CONSIDERING THAT** there has always been informal collaboration between Makerere University and the Agricultural Sector Ministries, a collaboration that was further strengthened with the establishment of MAAIF.

**NOTING THAT** both parties have recognized the need to cooperate and work together to achieve the above shared goals and objectives.

This Memorandum of Understand (MOU) is made between the Ministry of Agriculture, Animal Industry and Fisheries on one part (*herein-after called "MAAIF"*) and Makerere University (*herein-after called "MAKERERE"*) as the parent organization for the Faculty of Veterinary Medicine on the other part (*herein-after called the "FACULTY"*).

**NOW THEREFORE, MAAIF and MAKERERE** inspired by their complimentary objectives of promoting and accelerating the progress of research, training and service related to the Animal Industry and Agricultural Sector, have decided to enter into agreement and agreed as herein contained:



## ARTICLE 1: BOTH PARTIES AGREE:

1. To strengthen the existing collaboration between MAAIF and Makerere (Faculty of Veterinary Medicine) using the MoU as a legal document..
2. To through consultations identify areas of collaboration and work out detailed operational procedures, division of tasks, funding mechanisms and management of the collaborative programs, to include:
  - a. Collaboration in:
    - i. All aspects of National and Trans-boundary Animal Disease Diagnosis, Surveillance and Control.
    - ii. Sharing resources either technical, infrastructural or human to enhance efficiency and productivity at all levels
    - iii. Vaccine development, production and quality assurance
    - iv. Planning and conducting research on all aspects of animal resources.
    - v. Technology development, outreach and extension in all aspects of Animal Resources Development and Animal Production
    - vi. Animal Breed multiplication and improvement
    - vii. Value addition and entrepreneurship development, outreach and extension in all aspects of Animal Resources Value Chain
    - viii. Wildlife health and disease management for sustainable tourism
    - ix. Developing and implementing the MAAIF Development Strategy and Investment Plans
    - x. Developing the joint institute for strategic animal resources, disease control, bio-security and biotechnology
    - xi. Undergraduate and higher degree training
    - xii. Specialized short-term training and non-degree capacity building
    - xiii. Exchange of expertise for purposes of research, teaching, training and service to communities.
    - xiv. Exchange of information; and public education
    - xv. Scientific publication, information management and communication.
    - xvi. Promoting student-based community service and training e.g. through internships, and assist youths to gain employability and offer service in rural communities.
    - xvii. Promoting priority non-traditional livestock production and health
    - xviii. Sharing farms and farm resources either for production, research, technology development or training
  - b. Representation in various committees of the two parties.
  - c. Participation in training, seminar/ conferences and special events organized by either party; and
  - d. Sharing of costs for collaborative activities.

## **ARTICLE 2: DISEASE DIAGNOSIS, SURVEILLANCE AND CONTROL**

The FVM shall continue to conduct their basic and applied activities in disease diagnosis, surveillance and control. The Faculty staff shall participate in MAAIF disease diagnosis, surveillance and control programs. The FVM shall participate as an approved institution and pillar that implements MAAIF programs and Policy. The Faculty shall also conduct diagnosis, surveillance and control on issues referred to it by MAAIF. The MAAIF and FVM shall develop the Joint Institute for Strategic Animal Resources, Disease Control, Bio-security and Biotechnology as directed by government.

## **ARTICLE 3: RESEARCH**

The FVM shall continue to conduct their basic and applied research activities. The Faculty staff shall participate in MAAIF research, training and service programs in the priority areas as approved by the MAAIF.

The Faculty shall also conduct research and training on issues referred to it by MAAIF.

## **ARTICLE 4: DEGREE TRAINING**

MAAIF shall require training of some of its research and extension staff at Masters and PHD Degree levels. Makerere University shall give preference to MAAIF staff for such training. MAAIF shall send its staff to Makerere University in preference to other Institutions in the region, provided the required course is available and the cost is reasonable.

## **ARTICLE 5: NON-DEGREE AND SHORT- TERM TRAINING**

MAAIF shall train its professional and support staff for technical, entrepreneurial, and management skill development in specialized areas. Makerere University shall, on request, organize such courses, where possible, and provide the required training to MAAIF staff at a cost to be agreed upon by the two parties. MAAIF shall also collaborate with Makerere University staff at the Makerere University Stock Farm at Buyana and other farms. The outreach unit of FVM shall engage in priority outreach activities of MAAIF.

## **ARTICLE 6: EXCHANGE OF EXPERTISE**

FVM shall cooperate in providing short-term expertise in specific areas, whenever requested by MAAIF. Similarly, MAAIF shall cooperate in allocating staff time for teaching and thesis supervision, as and when requested by Makerere University. Both parties shall work out the terms and conditions for such cooperative activities.



## **ARTICLE 7: EXCHANGE OF INFORMATION**

MAAIF and FVM shall cooperate in exchanging scientific, technical and policy related information by way of exchanging reports, proceedings and other forms of scientific and technical publications.

## **ARTICLE 8: PUBLICATION, INFORMATION AND COMMUNICATION**

MAAIF and FVM shall cooperate in the publication of information that the parties may consider important and necessary for enhancing the application of science in Animal Industry, Agriculture, Biotechnology, Fish and Tourism Industry. Both parties shall also cooperate in providing information and documentation services and promoting the inter-library loan scheme, document delivery and information management, including electronic connectivity. Both parties shall work to establish a national reference repository.

## **ARTICLE 9: REPRESENTATION ON COMMITTEES**

MAAIF shall ensure that FVM is represented on relevant committees of MAAIF. FVM on its part shall also ensure that MAAIF is represented on its relevant committees such as Staff Development Committees, Faculty Boards, Research Committees, Undergraduate and Postgraduate, Advisory Committee of Buyana farm and any other as the need may arise.

## **ARTICLE 10: PARTICIPATION IN TRAINING**

MAAIF and MAKERERE shall participate in training programs and seminars/conferences organized by either part. Both parties shall also jointly organize training courses, seminars/workshops/conferences and special events, when necessary.

## **ARTICLE 11: UPGRADING FVM INTO A REGIONAL CENTRE OF EXCELLENCY**

MAAIF and MAKERERE shall collaborate in promoting the development and upgrading of the FVM into a leading and strategic regional centre of excellence in holistic veterinary science, education, animal biotechnology, disease control, bio-security and community transformation. Both parties shall promote international cooperation, and also jointly organize technical exchange, fundraising and capacity building seminars/workshops/conferences and special events, when necessary. The MAAIF and FVM shall work to promote and upgrade FVM infrastructure and programs and to establish a development-oriented Joint Institute for Strategic Animal Resources, Disease Control, Bio-security and Biotechnology at Makerere. Both parties shall work to develop programs that promote social-economic development.

## **ARTICLE 12: SHARING OF COSTS**

The cost of collaborative activities shall be shared by both parties, on a case by case basis, based on terms and conditions worked out and agreed upon by both parties.

## **ARTICLE 13: SHARING OF RESULTS**

Both parties shall have joint ownership and responsibility for all outputs arising out of collaborative programs implemented within the frame work of this MOU.

## **ARTICLE 14: DISCLAIMER**

Both parties shall indemnify each other against claims by third parties.

## **ARTICLE 15: DISPUTES**

Any dispute resulting from the application or interpretation of this MOU shall be settled in accordance with the Arbitration and Conciliation Act Cap 4. The place of arbitration shall be Kampala, Uganda and the language of arbitration shall be English.

## **ARTICLE 16: AMENDMENTS**

The terms and conditions of this MOU are the subject of amendments as mutually agreed to by both parties. Such amendments shall be in writing and signed by the authorized representatives of both parties and shall form an addendum of this MoU.

Having been satisfied with the above agreements, both parties sign and deem this MoU operative with effect from the date of signature.



## **ARTICLE 17: NOTICES**

Any notice or request made under this memorandum of understanding shall be in writing, and shall be demanded duly given or made when it is required to be given or made at such party's address specified below, or at such other address as such party shall have designated by notice to the other party giving such notice or request.

All notices under this Memorandum of Understanding shall be dully affected when addressed and served as follows:

- a) In the case of MAAIF:      The Permanent Secretary  
  Ministry of Agriculture, Animal Industry and  
  Fisheries  
  P.O.BOX 102, Entebbe.
  
- b) In the case of FVM:        The Dean  
  Faculty of Veterinary Medicine  
  P.O.BOX 7062, KAMPALA

## **ARTICLE 18: LAWS APPLICABLE AND LANGUAGE**

The laws of Uganda shall govern this memorandum of understanding, and the language to be used for any correspondence and interpretation of this memorandum shall be English.

## **ARTICLE 19: ENTRY INTO FORCE, DURATION AND TERMINATION**

This MoU shall come into force on the date of its signing and shall be reviewed when need arises. This MoU may be terminated by either Party upon notice in writing 6 (six) months in advance to the other Party at any time. The termination of this MoU shall not prejudice the completion of any on-going project being undertaken in accordance with this MoU.

**ARTICLE 20: OPERATION**

This memorandum shall become operational as from the date of its execution.

Executed in Entebbe:

This ..... 21<sup>st</sup> ..... day of ..... Sept. .... 2009

For the Ministry of Agriculture, Animal Industry and Fisheries, the COMMON SEAL (STAMP) of MAAIF was affixed in the presence of: -

NAME: Mr. Rubarema.... *VR.*

TITLE: Permanent Secretary

SIGNATURE: *[Handwritten Signature]* .....

NAME: Dr. William Olaho-Mukani

TITLE: Director Animal Resources

SIGNATURE: *[Handwritten Signature]* .....

For Makererere University Faculty of Veterinary Medicine, The COMMON SEAL (STAMP) of MAKERERE was affixed in the presence of: -

NAME: Professor ~~Livingstone S. Lubeebi~~ *Lillian Tibatemwa-Ekiri Kubinza*

TITLE: Vice Chancellor

SIGNATURE: *[Handwritten Signature]* .....



NAME: Professor Kabasa John David

TITLE: Dean Faculty of Veterinary Medicine

SIGNATURE: *[Handwritten Signature]* .....

## LIST OF ACRONYMS:

FVM	:	Faculty of Veterinary Medicine of Makerere University.
FACULTY	:	Faculty of Veterinary Medicine of Makerere University.
MAAIF	:	Ministry of Agriculture, Animal Industry and Fisheries.
MAKERERE	:	Makerere University.
MoU	:	Memorandum of Understanding.
PhD	:	Doctor of Philosophy
P. O.	:	Post Office

## APPENDICES

1. Letters of Correspondence from Government and His Excellency the President of the Republic of Uganda, regarding the collaboration of MAAIF and Makerere

### **Drawn by**

Ministry of Agriculture, Animal Industry and Fisheries  
P.O.BOX 102  
Entebbe  
Uganda

## Schedule of the Terminal Evaluation

Date	Day	Mission Schedule		Accommodation
		Mr. Nabeya and Dr. Tada	Dr. Sugimoto and Dr. Sato	
9-Feb	Sun		13:35 Arrive Entebbe (QR1387)	Kampala
10-Feb	Mon	AM	Meeting with Project Experts and JICA Uganda Office	Kampala
		PM	Meeting with MAK/COVAB Site touring of CDL, MAK/COVAB	
11-Feb	Tue	AM	Meeting with PMC, MAK/COVAB	Kampala (Mr. Nabeya, Dr. Tada) Mbarara (Dr. Sugimoto and Sato)
		PM	Meeting with Dr. Kauta, MAAIF and Prof. Kabassa, MAK/COVAB Preparation of Terminal Evaluation Report	
12-Feb	Wed	AM	Meeting with MAAIF/NADDEC Meeting with Japanese Experts	Kampala
		PM	Preparation of Terminal Evaluation Report	
13-Feb	Thu	AM	Preparation of Terminal Evaluation Report	Kampala
		PM	Discussion for Terminal Evaluation Report with MAAIF and MAK	
14-Feb	Fri	AM	7th JCC: Presentation of Terminal Evaluation Report from the Mission, Signing of MM	
		PM	(Mr. Nabeya, Dr. Sugimoto and Dr. Tada) Report to Embassy of Japan Report to JICA Office	(Dr. Sato only) 15:50 Leave Entebbe (EK730)
15-Feb	Sat		13:05 Leave Entebbe (QR1390)	



## 6. 主要面談者リスト

### ■ 在ウガンダ日本国大使館

中村 温	参事官
山角 恵理	専門調査員

### ■ JICA ウガンダ事務所

星 弘文	所長
荒木 康紀	次長
Lubega Paul	所員

### ■ Ministry of Agriculture, Animal Industry and Fisheries

Dr. Nicholas Kauta	Acting Director, Directorate of Animal Resources and Fisheries
Dr. Deo Ndumu	Senior Veterinary Officer, Diagnostics Unit, Department of Livestock Health and Entomology, Directorate of Animal Resources and Fisheries
羽石 祐介	Agricultural Planning Advisor, Planning Department

### ■ College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University

Prof. John Davis Kabasa	Principal
Prof. David Owiny	Dean, School of Biosecurity, Biotechnical & Laboratory Science
Dr. James Acai	Assoc/Professor, Chair of Department of Pharmacy and Comparative Medicine, School of Veterinary Medicine and Animal Resources
Dr. Edward Wampande	Lecturer, Laboratory Manager for CDL, Department of Biomolecule Resources and Bio-laboratory Science, School of Biosecurity, Biotechnical & Laboratory Science
Dr. Wilfred Eneku	Assistant Lecturer, Department of Livestock and Industrial Resources, School of Veterinary Medicine and Animal Resources
Dr. Afayoa Mathias	Assistant Lecturer, Department of Wildlife and Aquaculture Animal Resources, School of Veterinary Medicine and Animal Resources
Dr. Patrick Vudriko	Assistant Lecturer, Department of Pharmacy and Comparative Medicine, School of Veterinary Medicine and Animal Resources
Ms. Susan Ndyanabo	Senior Technologist, Deputy Laboratory Manager, Biotechnology and Diagnostics Science, School of Biosecurity, Biotechnical & Laboratory Science

### ■ 家畜疾病診断・管理体制強化計画プロジェクト関係者

要田 正治	長期専門家（チーフアドバイザー）
大木 奈美	短期専門家（業務調整）
田口 雅持	短期専門家（微生物学診断）
藤崎 幸藏	短期専門家（原虫学）
桜井 健一	短期専門家（細菌学）
芝原 友幸	短期専門家（病理学）

