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
終了時調査報告書

平成 25 年 10 月
（2013 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。

今般、プロジェクトの協力期間終了を目前に控え、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、インパクト及び自立発展性）の観点から総合的な評価を行うことを目的として、2013 年（平成 25 年）1 月に、終了時評価調査団を現地に派遣しました。

本調査団はウガンダ共和国側評価委員と合同評価報告書を取りまとめ、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の今後の方向性について協議し、協議議事録（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頂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 25 年 10 月

独立行政法人国際協力機構

農村開発部長　熊代　輝義

目　　次

写　　真

CDL

CDL

ムバレ県 DVO ラボラトリー

ムバレ県 DVO

キボガ県 DVO　ラボラトリー

キボガ県 DVO

ワキソ県 DVO　ラボラトリー

ワキソ県 DVO　ラボラトリー

ムピジ県 DVO　ラボラトリー

ムピジ県 DVO

略　語　一　覧

略語	英語名称	日本語訳
CDC	Centers for Disease Control and Prevention	アメリカ疾病管理予防センター
C/P	Counterpart	カウンターパート
DSIP	Agriculture Sector Development Strategy and Investment Plan：2010/11-2014/15	農業セクター開発戦略・投資計画（2010/11 ～ 2014/15 年）
DVO	District Veterinary Office	県獣医事務所
JCC	Joint Coordination 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 Centre	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
MAK-FVM	Faculty of Veterinary Medicines, Makerere University *2013 年に MAK-FVM は組織改編が行われ、本プロジェクトは MAK-COVAB が担当している。本報告書では、困難を避けるためすべて MAK-COVAB とした。	マケレレ大学獣医学部
M/M	Minutes of the Meeting	協議議事録
NADDEC	National Animal Diseases Diagnostic and Epidemiology Centre	家畜疾病診断・疫学センター
NDP	National Development Plan	国家開発計画
OIE	L'Office international des epizooties（World Organization for Animal Health）	国際獣疫事務局
PDM	Project Design Matrix	プロジェクト・デザイン・マトリックス
PO	Plan of Operation	活動計画
R/D	Record of Discussions	討議議事録

終了時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）：4 億 5,000 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）	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 家畜疾病診断・疫学センター（National Animal Diseases Diagnostic and Epidemiology Centre：NADDEC） ・マケレレ大学獣医学部・動物資源・生物安全性学部（College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University：MAK-COVAB） ・県獣医事務所（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」（Plan for Modernization of Agriculture：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・地方政府間のレファレンスシステムは弱まり、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、JICA は 2007 年 3 月～ 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、MAAIF-NADDEC 及び地方診断ラボの施設整備及び同センター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、主要カウンターパート（Counterpart：C/P）の NADDEC のラボだけでは、診断を担当するスタッフが不足しており、体制の強化が困難であるとの課題に直面した。

このような課題に対応するため、ウガンダ政府は「家畜疾病対策計画」の後続案件として、MAAIF-NADDEC と MAK-COVAB との連携による国家家畜疾病診断体制の強化を目的とした本プロジェクトを日本政府に要請した。上記を受け、JICA は 2010 年 6 月から 3 年間の予定で、本プロジェクトを実施してきた。

１－２　協力内容

本プロジェクトは、MAAIF-NADDEC と MAK-COVAB が、密接な連携を図ることで、国家レベルの家畜診断機関のプラットフォームとなり、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。

（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-NADDEC と MAK-COVAB が、共同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-NADDEC と MAK-COVAB 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（Joint National Animal Disease Diagnostic Centre：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-NADDEC と MAK-COVAB の間の情報交換システムが開発される

【成果 5】選定された DVO 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

日本側：

・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　15 名

・機材供与　約 54 万 3,000 ドル（2012 年 11 月時点）

ウガンダ側：

・C/P 配置　NADDEC、MAK-COVAB、5 つの DVO

・事務所スペース、中央診断ラボラトリー（Central Diagnostic Laboratory：CDL）スペース

・C/P ファンド〔2 億ウガンダシリング（UGX）：2012 年より〕

２．評価結果の概要

２－１　実績の確認

（1）プロジェクト目標

プロジェクト目標の達成度は「おおむね高い」と「中程度」の中間に位置づけられる。

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、現在 J-NADIC では 24 種類の家畜疾病を診断できる技術がある。また、このうち 16 種類の疾病については実際の診断を行った経験も有している。このように指標の観点からは、プロジェクト目標を達成し

たといえるが、診断技術の「質」の観点からは更なる向上が必要な状況にある。

本プロジェクトの技術的な目標は「総合」診断ができるようになることであるが、特に細菌学とウイルス学の診断技術レベルはかなり遅れている。総合診断を可能とするためにも、全体的な技術の向上とともに、これら細菌学とウイルス学からの診断技術向上が望まれる。

（2）成　果

1）　成果１

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。アクションプランは、2011 年 4 月 28 日に開催された第 2 回合同調整委員会（Joint Coordination Committee：JCC）会議で承認されている。

2）　成果２

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る。

本成果がめざしたJ-NADICによる診断サービスは既に開始されているものの、診断サービス・技術における「質」の観点からはいまだ改善の余地が大きい。そのため、指標は達成されているものの、評価としては成果の本質である「包括的かつ専門的診断サービス」にはいまだ達していないと判断し、「おおむね高い」と「中程度」の中間に位置づけるものとした。なお、指標が示した新たな診断技術の導入（8 種類以上）や J-NADIC で実施した診断数の増加（3 倍以上）などは達成が確認されている。

3）　成果３

本成果に係る達成度は「高い」。

緊急疾病発生に関する調査が既に 2 件実施されており、実績面から緊急疾病発生に対処するシステムが整備され始めたと判断できる。現地調査自体は 2 例とも結果的には MAK-COVAB のみが人員を派遣した形となったが、調査結果は NADDEC に伝達され、かつ報告書も作成された。また、共同調査に係るガイドラインも作成されている。

4）　成果４

本成果に係る達成度は「中程度」である。

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 からの情報発信は安定的に進められている。しかしながら、逆方向の情報発信～ NADDEC から MAK-COVAB に対する発信はなく、現在まで情報の流れは一方向のみとなっている。

5）　成果５

本成果の達成度は「おおむね高い」と判断された。

プロジェクト実施前との比較において、支援対象である 5 つの DVO では初期診断並びにサンプル収集技術等の技術力は明らかに向上したといえる。ただし、DVO において求められる技術のすべてが習得されたとはいえず、「質」の面からも更なる発展が望まれる。

２－２　５項目評価結果

（1）妥当性

1）　政策との整合性

ウガンダにおける農業セクターの中心的な政策である「農業セクター開発戦略及び投資計画（2010/11 ～ 2014/15 年）」（Agriculture Sector Development Strategy and Investment Plan：2010/11-2014/15：DSIP）では、家畜疾病管理の重要性が謳われており、サブプログラムのひとつとして病虫害診断能力強化が位置づけられている。

2）　日本の援助政策との整合性

日本の対ウガンダ支援は、「農村部の所得向上」を重要分野のひとつに位置づけている。畜産振興プログラムは、コメ生産振興や地場産業振興などと並び、同分野への支援において中心的な位置づけがなされており、国別援助計画との整合性を確認できる。

3）　ウガンダのニーズとの整合性

NADDEC は国内の重大疾病を管理する責を負う CDL であり、診断能力の向上は常に求められるものである。

他方 MAK-COVAB では実践的な授業がほとんど行われていなかったため、学生のみならず教員の診断能力は極めて初歩的なレベルにとどまっており、診断技術の能力向上について高いニーズがあった。また、MAK-COVAB は組織のミッションとして「社会へのサービス・社会貢献」を掲げており、DVO への能力強化支援や農家への支援を果たすことも求められていた。

（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については、「中程度」から「おおむね高い」の中間に位置する。また、成果については合計 5 つの成果が挙げられているが、その達成度は「中程度」から「高い」まで各様となり、成果項目によって差異がみられた（詳細は上記のとおり）。

2）　貢献要因

本邦研修は参加者に新たな診断技術習得の機会を与えたばかりでなく、大学におけるラボラトリーの状況や管理方法、授業の方法などの知見を得る機会を提供した。また、日本の家畜衛生に係る行政システムについても学ぶ機会となり、今後ウガンダの家畜衛生に係る行政を考えるうえでの参考事例となることが期待できる。また、研修参加者のモチベーション向上効果もみられた。

3）　阻害要因

阻害要因としては以下の 2 点が挙げられる。1）CDL の完工がやや遅れたために技術移転のタイミングが結果的に遅れることとなった、2）日本人専門家（チーフアドバイザー、病理診断）の派遣が約 1 年遅れたために技術移転が遅れることとなった。

（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。他方、本プロジェクトでは短期専門家を随時派遣し、病理以外の専門分野における技術指導を行ってきた。この短期専門家による補完的な人的投入は、有効であった。

（ウガンダ側）

NADDEC は慢性的な人員不足に直面しており、本プロジェクトの活動においても C/P としての配置はあったものの、その該当者たちの参加度合いは低かった。また、MAK-COVAB でも技術移転そのものは進んでいったものの、C/P 全員が大学での講義業務と CDL での活動を兼務としていたため、十分な時間を確保することが難しい局面も散見された。

2） 物的投入（資機材・施設）

本プロジェクトでは CDL 及び DVO に対して各種の資機材が調達された。これら資機材は疾病診断に必要なものであり、その投入は本プロジェクトの実施において妥当と判断できる。他方、幾つか使用頻度の少ない機材については、今後ウガンダ側で使用方法を十分に習得し、機材の利用頻度を高め、かつ診断の精度向上に結び付けることが望まれる。

3） 予　算

ウガンダ側 MAAIF から C/P ファンド（200 万 UGX ＝約 7 万 6,000 ドル）が 2012 年度より計上され、日本側のみがプロジェクト活動に係る予算を支出していた状況に変化が生まれつつある。

4） 本邦研修

有効性における貢献要因にあるように、非常に効果的な投入であった。

（4）インパクト

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。他方で、本目標の本質的な内容である「J-NADIC を中心に据えた国家診断体制の確立」を達成するためには、指標の観点を超えて、自立発展性における各種の指摘事項を克服する必要がある。

2） インパクト

本プロジェクトで支援してきた診断能力の向上は、農家に多大な裨益効果を生み出している。端的な例としては、2012 年 5 月にムピジ県において、DVO が中心となり「乳房炎と牛乳衛生に係るワークショップ」を実施し、域内の農家 20 ～ 30 人が参集した。これによって、本ワークショップ参加者が有する乳牛の乳房炎に関する発症率は、非参加者に比して間違いなく抑えられているものと推測できる。

（5）自立発展性

1） 政策面

ウガンダの農業セクターにおいて、家畜疾病管理は国家の重要課題に位置づけられており、政策における重要性は今後も変わらないと考えられる。他方で、急速に進んできた地方分権化の影響や獣医民営化の影響も生まれており、特に県レベルでの家畜疾病管理に携わる人員や予算は軒並み減少を続けている。このように政策的な自立発展性は、

完全に担保されているとは言い難い側面がある。

2） 組織面

（NADDEC）

NADDEC はラボラトリー・ユニット並びに疫学ユニットともに、恒常的な人員不足に直面しており、現状の人員体制では自立発展性があるとは言い難い。ただし、今後獣医やラボラトリー・テクニシャンを複数名新規に雇用する予定もあり、組織体制が強化される可能性もある。

（MAK-COVAB）

MAK-COVAB（より具体的には CDL を指す）の組織的な自立発展性を担保するためには、1）CDL の組織としての正式な位置づけ、2）CDL での常駐人員の配置、3）診断に係る課金システムの明確化並びに予算確保の 3 点が明確にされる必要がある。終了時評価時点、この 3 点（課金システムの明確化のみ除き）は既にマケレレ大学本部の承認に向けて申請を行っており、自立発展性の見込みが立ちつつある。

3） 技術面

（NADDEC）

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。そのため現状の NADDEC のように診断数が限られている場合、その診断技術を維持、発展させていくことができるか否かは若干懐疑的と判断せざるを得ない。

（MAK-COVAB）

MAK-COVAB の技術面での自立発展性は、これまで技術移転を受けてさまざまな経験を蓄積してきた人員が、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、MAK-COVAB として CDL 常駐人員を配置する姿勢を示し、業務に従事しやすい職場環境が整備されつつあることから、諸条件は担保されつつあるものと判断できる。

4） 財務面

財政面での自立発展性は本プロジェクト最大の懸案事項である。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。

２－３　プロセス

（1）コミュニケーション

本プロジェクトの第 1 ～ 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巡って、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時間があった。これは 1）日本側が業務調整員単独で両機関の調整を図らねばならなかったこと（特に第 1 年次）、2）両機関ともに組織単位で協同活動を実施したことがなく、両者による協同活動のイメージをそもそももちづらかったこと等が背景として考えられる。ただし、その後の関係者の努力等により、終了時評価時点は 3 者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オータリー・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。

２－４　結　論

中間評価では、日本人長期専門家派遣の遅れ、MAK-COVAB内のラボラトリーの改修工事の遅れ、及びMAAIF及びMAK-COVAB側のプロジェクト活動に対する資金準備の不足に起因し、プロジェクト活動の進捗に遅れが指摘されていた。その後、中間評価における指摘事項にプロジェクトとして向き合った結果、活動に進捗はあったものの、成果の更なる定着に向けては、1年間のプロジェクト期間の延長が必要である。この延長期間中に、成果の定着と、自立発展性の確保に向けての取り組みが必要である。

２－５　提　言

「２－４結論」でも記したとおり、MAK-COVABのCDLの診断技術の向上と定着に重点を置いた活動を行うため、1年間のプロジェクト期間延長を提言した。また、評価5項目中、大きな懸念は「自立発展性」である。NADDEC、COVAB-CDL双方に努力の跡が見られるものの、特に予算上の課題は大きい。COVAB学部長によれば、J-NADIC構想は、ウガンダ政府の人的・予算制約のなかで練られた戦略であり、J-NADICの成果を政治家・政府に示すことで予算等の支援を得る構想、との説明があったが、達成には時間を要するものとの理解が必要であろう。

また、当初協力期間中には、NADDEC、MAK-COVABそれぞれの体制強化や情報共有の徹底を提言した。

２－６　教　訓

(1) プロジェクト関係者のプロジェクトに対する考え方の摺り合わせ

本プロジェクトにおいては、案件開始当初より関係機関の長のレベルでは内容について合意していたものの、実務者レベルのC/Pのプロジェクトに対する主体者意識が低く、活動への積極的な参加が問題点であった。日本人専門家の努力により、意識の変革は若干認められているが、これらのコミットメントは、プロジェクト開始当初から構築しておくべきものであった。

(2) 人材の確保

本プロジェクトは、アフリカではJICAが実施する唯一の家畜疾病診断に関するプロジェクトである。プロジェクト開始当初より、日本人専門家の確保が困難であり、初めの1年間は長期専門家配置予定の3名のうち、2名に欠員があるままでのプロジェクト運営となった。2年目より、3名の長期専門家が配置されたものの、診断技術の向上のために必要な短期専門家の確保については相変わらず苦戦する状況にあった。今後、JICAとして対アフリカの家畜疾病診断分野に関する支援をどのように行っていくかという長期的な戦略とともに、専門家人材の確保も急務である。

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・管理体制強化計画プロジェクト」が2013年6月に終了を迎える。

本終了時評価調査は「家畜疾病診断・管理体制強化計画プロジェクト」の協力開始から現在までの実績、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、更に評価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。

１－２　調査団の構成と調査期間

（1）日本側調査チーム

No.	Name	Job Title	Designation and Organization	Duration
1	鍋屋　史朗 Mr. Shiro NABEYA	団長 / 総括 Leader	JICA 参事役 Senior Advisor to the Director General, Rural Development Department, JICA	22 Jan to 1 Feb 2013
2	梅村　孝司 Dr. Takashi UMEMURA	家畜疾病 Animal Diseases	北海道大学大学院 獣医学研究科 特任教授 Specially Appointed Professor Graduate School of Veterinary Medicine, Hokkaido University	22 Jan to 1 Feb 2013
3	藤田　暁子 Ms. Akiko FUJITA	評価計画 Evaluation Planning	JICA 農村開発部 乾燥畑作地帯課 Deputy Director, Arid and Semi-Arid Farming Area Division, Rural Development Department, JICA	22 Jan to 1 Feb 2013
4	十津川　淳 Mr. Jun Totsukawa	評価分析 Evaluation Analysis	佐野総合企画株式会社 海外事業部長 Director, International Department, Sano Planning Co., Ltd	15 Jan to 1 Feb 2013

（2）ウガンダ側評価チーム

No.	Name	Designation and Organization	Duration
1	Mr. Fred Mayanja（Team Leader）	Planning Department, MAAIF	15 Jan to 1 Feb 2013
2	Dr. Anna R Ademun（Member）	Directorate of Animal Resources, MAAIF	15 Jan to 1 Feb 2013
3	Dr. Ruth T Muwazi（Member）	Deputy Principal, MAK-COVAB	15 Jan to 1 Feb 2013

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、MAAIF 傘下の NADDEC と MAK-COVAB の連携により、① J-NADIC[1] 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 NADDEC と MAK-COVAB 間の情報交換システムの開発、⑤ 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を発揮することをめざす。このプラットフォーム構築によって、診断技術が向上し、かつ最終的には家畜の生産と生産性の向上に資する、国家診断体制の基礎が確立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。

(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-NADDEC と MAK-COVAB が、共同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

１．MAAIF-NADDEC と MAK-COVAB 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．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-NADDEC と MAK-COVAB の間の情報交換システムが開発される。
５．選定された DVO 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) 活　動

1)　アクションプランの作成（枠組みの構築）

１－１　ウガンダの状況の即した診断システムについて調査を行う。
１－２　MAAIF-NADDEC 及び MAK-COVAB 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-NADDEC 及び MAK-COVAB の連携による J-NADIC 体制を形成する。

[1] 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。

１－５　フィールドから J-NADIC へのサンプル送付体制を形成する。

2）J-NADIC の能力強化

２－１　J-NADIC 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　調査を基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 DVO の能力開発

５－１　パイロットとなる DVO を選定する。

５－２　初期診断及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～ 2013 年 6 月（3 年間）

１－３－４　プロジェクト実施機関

- 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 家畜疾病診断・疫学センター（National Animal Diseases Diagnostic and Epidemiology Centre：NADDEC）
- 県獣医事務所（District Veterinary Office：DVO）
- マケレレ大学獣医学部（College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University：MAK-COVAB）

１－３－５　対象地域

- MAK-COVAB CDL
- MAAIF-NADDEC
- 5 DVO（中部：キボガ県、ムピジ県、ワキソ県、東部：ムバレ県、西部：ムバララ県）

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項目に即した表２－１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、多様な関係者への質問票回答、聞き取り調査、並びにプロジェクト・チームが作成した資料（報告書等）によった。

本調査では、これら調査結果を評価団において協議し、評価５項目の観点に基づく評価結果を本調査時の 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）
	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）
自立発展性	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、評価グリッドにおいて設定した調査項目 / サブ項目への調査・検討を中心に据えながら、日本側及びウガンダ側からなる合同評価調査団によって調査を実施した。現地調査では、聞き取り調査対象者に対して従前に質問票への回答依頼を行い、その回答を基礎としながらプロジェクトに係る情報の収集を行った。

調査は主に下記の 5 つの側面から構成した。

① 日本人専門家及び NADDEC、MAK-COVAB に対する質問票・個別聞き取り調査
② 行政機関（MAAIF）に対する聞き取り調査
③ 支援対象である 5 つの DVO に対する質問票・聞き取り調査
④ ムバララ県の酪農組合に対する聞き取り調査
⑤ CDL 及び DVO 保有のラボラトリーにおける実見調査

これら聞き取り調査結果並びにプロジェクト文献等による実績データなどを検証し、合同評価調査団としての討議を行い、評価結果を導いた。

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。

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

本プロジェクトは 2010 年 6 月のプロジェクト開始から、表３－１のとおりの長期専門家（チーフアドバイザー、病理診断、業務調整）及び短期専門家によって実施されてきた。

表３－１　派遣専門家指導分野及び派遣期間実績一覧

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スーパーバイズ ・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	2 人	・プロジェクトの日常的運営・管理
短期	運営指導	1 人	＞　それぞれの技術分野における指導 ・プロジェクトの運営指導・モニタリング ・疾病診断 ・細菌学 ・ウイルス学 ・微生物学 ・CDL 及び DVO に対する乳房炎対策に係る指導
	モニタリング	3 人	
	疾病診断	2 人	
	細菌学	3 人	
	ウイルス学	3 人	
	微生物学	1 人	
	病理診断	1 人	
	乳房炎・牛乳衛生	1 人	

(2) 機材供与実績

車両、事務機器（コンピュータ、プリンターなど）、ラボラトリー用機器（顕微鏡、冷蔵庫、血液検査機など）が供与された。2012 年 11 月末時点における供与機材の価格合計は 3,930 万円である。

(3) 研修実績

本プロジェクト期間中に、表３－２の 15 名に対して本邦研修が実施された（2013 年 1 月末時点）。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個別技術の指導を中心としたものであり、マケレレ大学のみならず、MAAIF 及び DVO からも参加した。このほかに、2013 年 6 月までに更に 2 人が本邦研修に参加する予定である。

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 ～ 28 日	技術研修訪問	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	MAAIF 動物衛生・昆虫局
2	David Kabasa				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	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	Tingiira Bosco	2011 年 8 月 10 日～ 11 月 20 日	獣医技術	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	キボガ県 DVO 獣医師
7	Afayoa Mathias	2012 年 2 月 25 日～ 3 月 5 日	ラボラトリー診断技術	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
8	Bigirwa Godfrey				MAK-COVAB
9	Francis Mutebi				MAK-COVAB
10	Mugimba Kitizo	2012 年 8 月 13 日～ 10 月 12 日	ラボラトリー診断技術		MAK-COVAB
11	Muzoora Saphan				MAK-COVAB
12	Turyatemba James				MAK-COVAB
13	Benard Agwai	2012 年 8 月 13 日～ 11 月 26 日	獣医技術	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	MAK-COVAB
14	Karungi Fred				ワキソ県 DVO 獣医師
15	Patrick Vudriko	2012 年 10 月 20 日～ 2013 年 8 月 10 日	国際畜産衛生	ラボラトリー管理	MAK-COVAB

注：2012 年 11 月から MAK-COVAB は獣医校（college）となった。

（4）現地業務費

これまで研修実施や交通費等の用途において、現地業務費として約 6,550 万円が投入された。なお、同額は 2012 年 11 月末までの実績値であり、資機材購入費（約 3,930 万円）、CDL 改修費（約 710 万円）を含む。

３－１－２　ウガンダ側投入実績

（1）ウガンダ側カウンターパート（C/P）の配置

C/P として正式に配置された人員は、表３－３のとおりであり、MAAIF が 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、C/P（調整役）〕、MAK-COVAB が 2 名〔プロジェクト・マネジャーと C/P（調整役）〕である。

また実際の技術移転の対象者としての C/P は NADDEC、MAK-COVAB 及び 5 つの DVO に複数名配置されている。

表３－３　C/P の配置

	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	プロジェクト・ダイレクター
2		Dr. Nicholas K. Kauta	家畜衛生・昆虫局長	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	C/P（調整役）
4	マケレレ大学	Dr. John David Kabasa	MAK-COVAB　学部長	プロジェクト・マネジャー
5		Dr. Eddie Wanpande	MAK-COVAB　講師補佐	C/P（調整役）

（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、水道料金など）を両機関が負担した。また、2012 年会計年度より、MAAIF から年間 200 万 UGX の C/P ファンドが投入された。

３－２　成果の達成状況

＊　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 -NADDEC と MAK-COVAB 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[2]（付属資料 5）は、2011 年 4 月 28 日に開催された第 2 回 JCC で承認されている。

３－２－２　成果 2 の達成状況

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。

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る。

[2] アクションプラン（ 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 ページからなるプロジェクト・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。

本成果がめざしたJ-NADICによる診断サービスは既に開始されており、本プロジェクトの成し遂げた具体的成果のひとつとして特記に値する。他方、その診断サービス自体は開始されたものの、診断サービス・技術における「質」の観点からはいまだ改善の余地が大きい。そのため、下記のとおり、指標そのものは達成されているが、評価としては成果の本質である「包括的かつ専門的診断サービス」にはいまだ達していないと判断し、「おおむね高い」と「中程度」の中間に位置づけた。

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J-NADICが受領・分析した診断サンプル数が15%増加する。

J-NADICとして受領・分析した診断サンプル数は表３－４のとおり増大しており、2010年との比較では3倍以上に増加している。なお、表３－４ではCDLにおいて診断した数値のみが挙げられている（NADDECは指標2-3にて記載）。

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

出所：CDL資料

指標2-2：MAK-COVABのCDL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ひとつ以上導入される。 - 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分野について下記の技術がMAK-COVABに導入された。

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、ヒツジ・ヤギ痘などのウイルス学に係る診断技術がこれらの新技術に該当する。加えて、分子・生物学技術としてPCRが部分的に導入されつつある。

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

指標に定められているCBPP、CCPP、アフリカ豚コレラ、狂犬病及びPPRは、ウガンダの

国家重大疾病に位置づけられる疾病であり、NADDEC はこれら疾病のコントロールを行う責を負っている。そのため、NADDEC にとって、これら疾病の診断試験は組織が担うミッションの最たる業務であるため、継続的に実施されている。表３－５に NADDEC における診断数の推移を示す。ただし、表は指標の疾病以外の診断数及び血清診断数も含む数値である。

表３－５　NADDEC における診断数

年	診断数
2010	2,105
2011	7,907
2012	5,799

出所：NADDEC 資料

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 は既にブルセラ症のための診断薬キットを生産しており、本プロジェクトで支援を行っている DVO のみならず､他の DVO に対しても診断薬を供給している。

指標 2-5：J-NADIC によって、サンプル収集及び検査のためのラボラトリー試薬及び保存溶液が 4 種類以上作成され、選定された DVO に供給される。

CDL において 4 種類以上のラボラトリー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。

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 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が既に 2 件実施されており、実績面から緊急疾病発生に対処したと判断できる。

2 例のうちの第 1 例は、2012 年 10 月にムバレ県の農場におけるウシの流産情報を受けて、NADDEC が MAK-COVAB へ現場訪問を依頼した事例である。また、第 2 例としては 2012 年 12 月にカンパラ近郊のルウェロにおいてヤギの PPR を疑う事例が発生し、緊急に現地調査、採材を MAK-COVAB が実施したことが挙げられる。現地調査自体は 2 例とも結果的に MAK-COVAB のみが人員を派遣した形となったが、調査結果は NADDEC に伝達され、かつ報告書も作成された。NADDEC からの要請に基づき MAK-COVAB が現地調査を実施し、そのうえで結果を共有、活用するという仕組みも、共同調査の一形態ということができるであろう。また、

これら実績に加えて、共同調査に係るガイドラインも作成された。以上の観点から、本成果の達成度は高いと判断できる。

３－２－４　成果 4 の達成状況

MAAIF-NADDEC と MAK-COVAB の間の情報交換システムが開発される。

指標 4：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-NADDEC と MAK-COVAB との情報共有が行われる。

本成果に係る達成度は「中程度」である。

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 からの情報発信は安定的に進められている。しかしながら、逆方向の情報発信、すなわち NADDEC から MAK-COVAB に対する情報発信はなく、現在までのところ情報の流れは基本的に一方向のみにとどまっている。国家組織である NADDEC こそが有している国内の疾病情報などの情報共有を期待する声も多く、この点で NADDEC からの情報発信は望まれている。以上の点から、本成果の達成度は中程度とした。

３－２－５　成果 5 の達成状況

選定された DVO において初期診断及びサンプル収集技術が改善される。

本成果の達成度は「おおむね高い」と判断された。

プロジェクト実施前との比較において、支援対象である 5 つの DVO では初期診断並びにサンプル収集の技術力が明らかに向上したといえる。ただし、DVO において求められる多様な技術のすべてが習得されたとはいえず、また「質」の面からも更なる発展が望まれる状況にあるため、本成果の達成度は「おおむね高い」レベルと判断した。

他方、指標そのものは以下のとおり、多くの項目において達成が確認されている。

指標 5-1：DVO 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 県の DVO が収集し、かつ診断を行ったサンプル数は表３－６のとおりである。

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	2010 ～ 2012 年比較値
キボガ	55	32	469	853％
ムバレ	31	21	70	226％
ムバララ [1)]	2,670	2,454	2,270	85％
ムピジ	118	143	130	110％

ワキソ	N/A	48	124	258% [2)]
計	2,874	2,698	3,063	114% [2)]

1) ムバララ県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) ワキソ県及び合計の増減は 2011 年と 2012 年の比較を示す。
出所：プロジェクト資料

指標 5-2：選定された DVO 職員の初期診断及びサンプル収集についての能力。

対象 5 県の 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。全体的な傾向として DVO における職員の能力向上は著しいが、更に診断の正確性を高めるとともに、表内において「一部可能」と評価された技術を習得していくことが望まれる。

表３－７　対象 DVO の初期診断技術（全体的な傾向として）

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

またサンプル収集については、プロジェクト開始前まで DVO ではほとんど注意が払われない活動項目であったが、本プロジェクトの研修を通して、サンプル収集の重要性並びに留意点などが関係者に認識、習得された。現在では、サンプル収集の部位、運搬方法、保存方法などが大きく改善されたといえる。ただし、改善はされたものの、本件も同様に更なる向上が求められることに変わりはない。特に運搬方法に関しては、自前の運搬手段がないため、CDL や NADDEC にサンプルを送付するには一般の乗り合いバスなどを利用しており、結果的にサンプルの質を低下させてしまうケースも散見されている。

指標 5-3：選定された DVO から J-NADIC 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 年との比較では第 3 年次にあたる 2012 年結果で約 60%増加していることが分かる。

表３－８　J-NADIC へ送付されたサンプル数

年	2010	2011	2012						
DVO/ 機関	MAAIF	COVAB	計	MAAIF	COVAB	計	MAAIF	COVAB	計
キボガ	50	1	51	0	1	1	20	26	46
ムバレ	12	0	12	0	0	0	0	10	10
ムバララ	0	0	0	0	2	2	0	3	3
ムピジ	20	0	20	14	13	27	0	33	33
ワキソ	0	0	0	8	43	51	0	40	40
計	82	1	83	22	59	81	20	112	132

出所：プロジェクト資料

３－３　プロジェクト目標の達成度

プロジェクト目標：

MAAIF-NADDEC と MAK-COVAB が、共同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：J-NADIC 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。

プロジェクト目標の達成度は「おおむね高い」と「中程度」の中間に位置づけられる。

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、現在 J-NADIC では 24 種類の家畜疾病を診断できる技術がある。また、このうち 16 種類の疾病については実際の診断を行った経験を有している。このように指標の観点からは、プロジェクト目標を達成したとする見方もできるが、診断の正確性においては、更なる技術向上が必要なレベルにあるため、完全にプロジェクト目標を達成したとはいえないと評価した。

また、本プロジェクトが掲げる技術的な目標は「総合」診断ができるようになることであり、例えば病理学からの診断だけではなく、細菌学、ウイルス学、血液学・血清学、分子生物学等、多様な側面から総合的に診断を行えるようになることが求められている。現時点まで、病理分野は比較的進展しているものの、細菌学とウイルス学は、これまで MAK-COVAB で体系的な教育がほとんどなされていなかったという背景もあるため、両分野の進捗はかなり遅れている。総合診断を可能とするためにも、全体的な技術の向上とともに、特に細菌学とウイルス学の更なる知見の蓄積、診断技術の向上が望まれる状況にある。

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（詳細は付属資料 Action Plan の Appendix3 を参照）。

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	CBPP、CCPP		○・●			●	✔
2	狂犬病（Rabies）	○		○			✔
3	トリパノゾーマ症（Trypanosomiasis）				○	●	✔
4	結核（Tuberculosis）	○			○	△	✔
5	ヒツジ痘（ヤギ痘）（Sheep（Goat）Pox）	○					
6	アフリカ豚コレラ（African Swine Fever）	○		○		△	✔
7	ブタ丹毒（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（Paratuberclosis）	○					
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	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
出所：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 ～ 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巡って、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時間があった。これは 1）日本側が業務調整員のみで両機関の調整を図らねばならなかったこと（特に第 1 年次）、2）両機関ともに組織で協同活動を実施したことがなく、両者による協同活動のイメージをそもそももちづらかったこと等が背景として考えられる。ただし、このような過程を経て、3 者間のコミュニケーションは、現在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おおむね共通の認識が保たれていると判断できる。

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に参集するクオータリー・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いる。このように関係者が一定頻度で参集できる体制を整えたことも、上記のコミュニケーションに係る課題を徐々に軽減させてきた要因にもなっていると考えられる。

第4章　評　価　結　果

４－１　5項目ごとの評価

４－１－１　妥当性

(1) ウガンダ政府の政策との整合性

ウガンダ農業セクターの中心的な政策である「農業セクター開発戦略及び投資計画（2010/11 ～ 2014/15 年）」（DSIP）では、家畜疾病管理の重要性が謳われている。

同政策では 4 つのプログラムが定められているが、そのうちのプログラム 1「生産増加と生産性向上」に関するサブプログラムのひとつとして病虫害診断能力強化が位置づけられており、「将来の脅威に備え、より良い診断が必要である」ため、「ラボラトリー・サービスのニーズを検証しながら、診断能力を高めることが求められる」としている。

以上のことから、家畜疾病管理のための国家診断体制の改善を図る本プロジェクトは、ウガンダ政府の政策に整合していると判断できる。

(2) 国別援助計画との整合性

日本の対ウガンダ支援は、「農村部の所得向上」を重要分野のひとつに位置づけている。畜産振興プログラムは、コメ生産振興や地場産業振興などと並び、同分野における中心的なアプローチとして位置づけられており、国別援助計画との整合性を確認できる。

(3) ニーズとの整合性

1） NADDEC

NADDEC は国内の重大疾病を管理する責を負う CDL であり、診断能力の向上は常に求められるものである。

2） MAK-COVAB

MAK-COVAB では本プロジェクトを開始する以前から授業に供するためのティーチング・ラボラトリーこそ有していたものの、その資機材の種類や整備状況、試薬などのストック等は極めて乏しい状況にあった。そのため、MAK-COVAB では実践的な授業がほとんど行われておらず、学生のみならず教員の診断能力は極めて初歩的なレベルにとどまっていた。この点において、本プロジェクトが実践的な診断技術の能力強化を図ったことは、MAK-COVAB のニーズに極めて整合していたといえる。

また更に、MAK-COVAB は組織のミッションとして、これまでの「教育」「研究」の充実に加えて、「社会へのサービス・社会貢献」を掲げるようになっていた。DVO への能力強化支援、及び農家への支援を果たすことは、同ミッションに整合したものであり、この観点からも本プロジェクトは MAK-COVAB のニーズに整合した取り組みであったといえる。

3） DVO

県レベルにおいては地方分権化の影響を受けて、獣医やラボラトリー・テクニシャンの人員が不足し、また恒常的な資機材の未整備、試薬の不足等といった困難に直面していた。また、DVO に勤務する獣医等は概して自らの診断技術や知識の向上を促すような研修の受講機会が限られており、資機材等のインフラ面と合わせて、その診断技術は

極めて低位にあった。DVO における技術力向上は国家の疾病管理における重要課題であり、本プロジェクトが地域的な拠点となることを視野に入れながら、5 つの DVO を巻き込んだことは適切であり、対象 DVO のニーズにも即したものであったと判断できる。

(4) カウンターパート（C/P）選定の適切性：疾病診断・疫学センター（NADDEC）及びマケレレ大学獣医学・動物資源・生物安全性学部（MAK-COVAB）

NADDEC は国家の疾病管理を担う CDL であり、本プロジェクトがめざす J-NADIC メカニズムを機能させるためには不可欠な組織である。

また MAK-COVAB は国内で唯一獣医学部を有する大学であり、その専門性及び人材層の観点から、NADDEC の役割を補完し、かつ専門的見地からの助言や支援活動等が期待できる組織である。

以上から、両組織ともに本プロジェクトの C/P としては最適と判断できる。

(5) 支援対象とした県獣医事務所（DVO）選択の適切性

本プロジェクト対象地の 5 県はムバレ県を除いて、牧畜回廊（Cattle Corridor）に位置しており、地域における疾病診断のニーズは非常に高い。

また、5 県ともに整備状況こそ課題はあったものの、プロジェクト開始前から独自のラボラトリーを有しており、本プロジェクトではその既存ラボラトリーを利用できるといった利点も兼ね備えていた。

以上の点から、本プロジェクトが選択した 5 県の DVO は適切であったと判断できる。

4－1－2　有効性

(1) プロジェクト目標及び成果の達成進捗

本プロジェクトは目標及び各成果ともにおおむね順調に進捗してきたが、診断技術の「質」を向上させ、多面的な診断による「総合診断」を実施できるまでには、今後更なる技術移転及び定着が必要な状況にある。

(2) プロジェクト目標・成果達成に係る貢献要因

本プロジェクトの進捗に貢献した要因のひとつに、本邦研修が挙げられる。本邦研修は参加者に新たな診断技術習得の機会を与えたばかりでなく、大学におけるラボラトリーの状況や管理方法、授業の方法などの知見を得る機会を提供した。また、日本の畜産衛生に係る行政システムについても学ぶ機会となり、今後ウガンダの畜産衛生に係る行政を考えるうえで有益な参考事例となることが期待できる。

また、もうひとつの効果として、本邦研修参加者は帰国後、プロジェクト活動へ積極的に参加するようになり、モチベーション向上の効果もあった。

(3) プロジェクト目標・成果達成に係る阻害要因

阻害要因としては 1）CDL の完工がやや遅れたために技術移転のタイミングが結果的に遅れることとなった、2）日本人専門家（チーフアドバイザー、病理診断）の派遣が約 1

年遅れたため技術移転も自ずと遅れることになったことの 2 点が挙げられる。

４－１－３　効率性

(1) 人的投入

1)　日本側投入

本プロジェクトでは上記の阻害要因にも挙げたように、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 年程度遅れたため、投入のタイミングの観点からは非効率と判断せざるを得ない状況がみられた。

他方、技術分野の長期専門家が派遣される以前並びに長期専門家が当初の計画どおり 3 名体制になったあとも、本プロジェクトでは短期専門家を随時派遣し、病理以外の専門分野における技術指導を行ってきた。この補完的な人的投入は、有効な投入であったと考えられる。

2)　ウガンダ側投入

NADDEC は慢性的な人員不足の問題を抱えており、本プロジェクトの活動においても C/P としての配置はあったものの、その該当者たちの参加度合いは低かった。ラボラトリーで働く人員も少数であり、かつコミットメントの点でも十分とはいえない状況が垣間みられ、日本人専門家による診断技術の移転を行うことが難しい状況もたびたびみられた。

他方、MAK-COVAB では新たに CDL が設けられ、C/P も配置された。ただし、全員が大学での講義業務と CDL での活動を兼務としていたため、十分な時間を確保することが難しい局面も散見された。これら状況を補うために、プロジェクトでは学生をボランティアとして受け入れたことは、人的投入の工夫として評価できる。

(2) 物的投入

本プロジェクトでは CDL 及び DVO に対して各種の資機材が調達されている。これら資機材は疾病診断に必要なものであり、その調達は本プロジェクトの実施において妥当と判断できる。他方、短期専門家がウガンダに滞在している間のみ利用されている機材も一部見られる。技術移転の観点から必要なものであるが、今後これら機材についてはウガンダ側でその使用方法を十分に習得し、機材の利用頻度を高め、かつ診断の精度向上に結び付けることが望まれる。

(3) 予　算

ウガンダ側 MAAIF から C/P ファンド（200 万 UGX ＝約 7 万 6,000 ドル）が 2012 年度より計上された。日本側のみがプロジェクト活動に係る予算を支出していた状況に変化が生まれつつある。

(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、モチベーション向上にもつながっており、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、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（主には獣医が参加者対象と考えられる)。本プロジェクトとの間で直接的な協同活動はないが、能力向上という観点においては一定の補完関係があるといえるだろう。

他方、非効率な重複活動を生じ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する国家診断体制が確立する

指標 1：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 DVO 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 DVO が、J-NADIC をレファレンス診断（基準施設）として利用している。

本プロジェクトの上位目標については、指標が比較的計測しやすく、かつ達成可能な内容が設定されており、指標の観点からの達成は十分可能と考えられる。

他方で、本目標の本質的な内容である「J-NADIC を中心に据えた国家診断体制の確立」を達成するためには、これら指標の観点を超え、自立発展性において指摘された課題を克服する必要がある。

(2) 波及効果

1) プラス・インパクト

本プロジェクトで支援してきた診断能力の向上は、農家に多大な裨益効果を生み出しているものと推測できる。

端的な例としては、2012 年 5 月にムピジ県において、DVO が中心となり「乳房炎と牛乳衛生に係るワークショップ」を実施し、域内の農家 20 ～ 30 人が参加した。これによって域内で大きな問題となっていた非臨床型の乳房炎及び搾乳衛生問題への理解が進み、本ワークショップ参加者の乳牛の乳房炎に関する発症率は、非参加者に比して間違いなく抑えられているものと推測できる（数値としての追跡調査はなされていない)。

これは代表的な例であるが、このようなワークショップのみならず、日常的な疾病診断において、家畜の疾病頻度や状況の悪化を軽減、回避できたであろうことは想像に難くない。

2) マイナス・インパクト

これまでマイナス・インパクトはみられない。

４－１－５　自立発展性

(1) 政策面

ウガンダの農業セクターにおける中心的政策である「農業セクター開発戦略及び投資計画（2010/11 ～ 2014/15 年）」（DSIP）が示すように、家畜疾病管理は国家の重要課題に位置づけられており、政策における重要性は今後も変わらないと考えられる。

他方、同国の場合、近年急速に進んできた地方分権化の影響並びに「農業近代化計画」（PMA）が促進する獣医民営化の影響も考慮する必要がある。農業政策としては家畜疾病管理や診断技術の向上を重視する姿勢をみせる一方で、地方分権や獣医民営化の方針が打ち出されているため、特に県レベルでの家畜疾病管理に携わる人員や予算は軒並み減少を続けており、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。

つまり、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、政策的な自立発展性は今後更に複雑化する可能性も秘めているといえる。

(2) 組織面

1) NADDEC

NADDEC はラボラトリー・ユニット並びに疫学ユニットともに、恒常的な人員不足に直面しており、現状の人員体制では自立発展性があるとは言い難い。終了時評価の現在、NADDEC では獣医やラボラトリー・テクニシャンを複数名新規に雇用する予定があり、既に募集プロセスが開始されている。この人員補強によって、NADDEC の組織面が強化されることが期待される状況にある。

2) MAK-COVAB：実質的には CDL の意

MAK-COVAB の組織的な自立発展性を担保するためには、以下の点が解決される／明確化される必要がある。すなわち、1）CDL の MAK-COVAB 内における組織としての正式な位置づけ、2）CDL での常駐人員の配置、3）診断に係る課金システムの明確化並びに予算確保の 3 点である。これらの点が CDL として自立発展的に業務を継続できるか否かを左右する項目となるが、以上の 3 点（課金システムの明確化のみ除き）は既に MAK-COVAB の役員会議で了承が取られており、終了時評価の現在、マケレレ大学本部の承認に向けて申請を行っているところである。MAK-COVAB 学部長によれば、2）の人員配置については 2013 年 2 月末、3）の予算確保については 2013 年 6 月末までには承認される見込みであるとの説明であった。

【参考】

表４－１　NADDEC の人員数（2013 年 1 月末時点）

	ラボラトリー・ユニット	疫学ユニット
獣医	3 人	3 人
ラボラトリー・テクニシャン	5 人（このほかに 3 人契約）	0 人

出所：NADDEC 所長からの聞き取り

表４－２　CDL の人員数（2013 年 1 月末時点）

	病理	細菌学	ウイルス学	血清学・寄生虫学
獣医	1 人	1 人	2 人	1 人
ラボラトリー・テクニシャン	5 人			
ボランティア	3 人			

出所：CDL 所長からの聞き取り

（3）技術面

1） NADDEC

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。そのため、現状の NADDEC のように診断数が限られている場合、その診断技術を維持、発展させていくことができるか否か若干懐疑的と判断せざるを得ない。

ただし、国家の CDL としての位置づけは今後も継続されることから、本プロジェクトのみならず、他ドナーによるトレーニング等の機会には今後も恵まれる可能性は高く、このような環境を効果的に利用することで技術力が維持、発展する可能性もある。

2） MAK-COVAB

MAK-COVAB の技術面での自立発展性は、これまで技術移転を受けてさまざまな経験を蓄積してきた人員が、今後も継続的に業務に携わるか否かによる。この点においては、多くが CDL 業務に前向きな姿勢を示していること、並びに上述のとおり、MAK-COVAB として CDL 常駐人員を配置する姿勢を示し、業務に従事しやすい職場環境が整備されつつあることから、諸条件は担保されつつあるものと判断できる。

（4）財政面

財政面での自立発展性は本プロジェクト最大の懸案事項である。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、財政面の自立発展性は 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、財政面での自立発展性は非常に厳しいと考えられる。

他方、若干視野を絞り、NADDEC と MAK-COVAB 及び本プロジェクトで関与した 5 つの DVO との活動継続性をみると、端的には本プロジェクトで JICA 側が支出してきた試薬などの消耗品費、活動に際しての燃料費や会議等々のコストをウガンダ側が賄えるか否かが問われる。これらは年間で約 600 万円程度であり、現在ウガンダ側が支出している C/P ファンドとほぼ同額に近い。このような符合からも、本 C/P ファンドの継続更には増大によって、この観点においては持続し得る可能性はある。

第5章　所　　感

５－１　技術的側面

ウガンダでは地方分権及び行政単位（県）の細分化が進められている（1990 年代初頭には 33 県、2010 年 3 月には 112 県に増加）が、地方政府の人的及び財政基盤が脆弱なため、住民への行政サービスは低下の一途をたどっている。この状況は畜産及び文教行政に、人員及び予算の削減、あるいは行政サービスの有料化などの自助努力要請の形で反映されてきている。

ウガンダは緑の国である。温暖な気候、広大なサバンナに加えてビクトリア湖などの豊富な水源を有しており、畜産に適した国である。この国での畜産振興には幾つかの阻害要因があるが、最も大きな阻害要因は家畜及び家禽伝染病の蔓延である。これらの伝染病の発生状況を調査分析し、病因を迅速かつ正確に診断し、診断結果に基づいた適切な措置を講ずる体制が充実すれば、ウガンダの畜産業は飛躍的に発展すると思われる。

JICA は 2007 年 3 月～ 2009 年 3 月までの 2 年間にわたり、技術協力プロジェクト「家畜疾病対策計画」を調査地域で実施し、ウガンダ政府 MAAIF の NADDEC 及び地方診断ラボ（DVO）の整備を図った。しかし、十分な成果は得られず、疾病診断の整備充実に対する新たな展開が必要になった。そこでウガンダ政府は後続案件として、NADDEC と MAK-COVAB との連携による家畜疾病診断体制の強化を目的とした「家畜疾病診断・管理体制強化計画プロジェクト」を日本政府に要請し、JICA は 2010 年 6 月から 3 年間の予定で、MAK-COVAB に CDL を新たに設置し、NADDEC と CDL が一体となってウガンダの家畜・家禽疾病の診断と予防を行うプロジェクト（J-NADDEC プロジェクト）を開始した。以下では、今回の調査に同行した専門家の立場から見た J-NADDEC プロジェクトの現状を述べる。

（1）家畜疾病診断・疫学センター（NADDEC）について

人員及び予算の削減による研究及び家畜防疫業務のレベルダウンが顕著であるが、口蹄疫、ブルセラ症、CBPP、ダニ媒介性疾患、トリパノゾーマ症、ランピースキン病、PPR、アフリカ豚コレラの抗体検査 / 血液検査とこれらの疾患の発生状況を国際獣疫事務局（L Office International des epizooties：OIE）や FAO などの国際機関へ報告する業務は行っている。2007 年 3 月～ 2009 年 3 月までに日本側から供与された機器の多くは休眠あるいは故障しており、移転された技術の多くも継承されていない。例えば、上記期間に設置された血清及び遺伝子診断室は日本人専門家が去ったあとは使われた形跡がなく、JICA から供与された高額な分析機器及び超低温冷蔵庫は有効利用されていなかった。

NADDEC は米国国際開発庁（USAID）など日本以外の国からも支援を得ていること、ウガンダ政府が人員増を計画していることから、現在の業務レベルは今後も継続される状況にある。

（2）マケレレ大学獣医学・動物資源・生物安全性学部（MK-COVAB）の中央診断ラボラトリー（CDL）について

JICA から供与された施設と設備は当初計画に沿って順調に稼働しており、日本人専門家とウガンダ側 C/P（テクニシャン、修士課程学生及び 1 名の教員）の連携も良好であった。特に病理診断部門は剖検台帳、組織標本などがよく整備され、症例が着々と蓄積されてい

た。症例は主にDVOから供給されており、日本人専門家がこれらのDVOに積極的に出向き、症例の収集と技術指導を行っていた。特に、狂犬病の診断のほとんどをCDLで行っていた。一方、ウイルス学、細菌学及び血液生化学部門の稼働状況は不十分であった。これらの部門では血液寒天とDHL培地を用いた細菌分離、vero細胞を用いたウイルス分離、抗生物質感受性試験を行うことができるが、依頼検体数が少ないこと、日本人専門家が不在であったことから、そのような状況にあったと思われる。分子生物学的検査（PCR、PT-PCR）についてはほとんど行われていなかったが、最近着任した日本人専門家が技術指導を始めており、いずれ稼働する状況にあった。本プロジェクトで確立をめざした総合診断comprehensive diagnosisシステムは動物疾病を複数の手技によって診断することであり、畜産現場での材料採取の関係で、診断根拠が病理所見に偏重している現状は更なる改善を要する。

以上のように、MK-COVABのCDLはプロジェクト開始当初に問題があったものの、現在は順調に運営されている。しかし、プロジェクト終了後のCDLの継続性及び発展性については以下のことが懸念される。

1） CDLの活動のほとんどを日本人専門家が担っており、プロジェクト終了に伴って日本人専門家が去った場合、CDLの診断機能を維持できるウガンダ人スタッフが十分に育っていない。

2） ウガンダ人スタッフのほとんどはラボラトリー・テクニシャンあるいは修士課程学生であり、マケレレ大学教員の関与が少ないため、現状のままではプロジェクト終了後の自律的発展性について疑問がある。

3） 消耗品費のほとんどがJICAのプロジェクト経費から支出されている。

MAK-FVM学部長（Principal）はマケレレ大学が社会貢献を求められているなかでCDLがその役割を果たしていることを高く評価しており、マケレレ大学本部に人員増、職員の定員化及び必要経費の配分を求めているほか、検査の有料化を検討している。これらが実現すればCDLはプロジェクト終了後も自律的に発展し、ウガンダの畜産業の発展に大きな役割を果たすと思われる。

（3）県獣医事務所（DVO）について

ムバララ県とムピジ県のDVOを視察し、運営状況についてそれぞれの所長から説明を受けた。いずれも数名の獣医師とテクニシャンを中心に運営されており、獣医師は畜産現場で診療と解剖を行い、DVOではテクニシャンが中心となって検査を行っていた。検査は血液検査と糞便検査にほぼ限られ、それ以上の検査が必要な場合はNADDECに検査を依頼していたが、検査結果が帰ってくることは稀で、本プロジェクト開始後はMK-COVABのCDLにほとんどの検査を依頼していた。細菌培養の培地と組織固定用のホルマリンはCDLから供与されていた。視察した2つのDVOには日本の海外協力隊員はいなかったが、本プロジェクトが重点支援しているワキソ県とムバレ県のDVOでは海外協力隊員が中心となって検査を行っている。ウガンダの獣医師は臨床診療が中心で、実験室での検査業務はテクニシャンが行うという棲み分けが行われているようで、日本の常識からすると違和感を覚えるとともに、検査技術レベル向上の大きな隘路になっていた。JICAから供与されたオートクレーブ（高圧滅菌器）は使用されずに放置されていた。感染材料が持ち込まれるDVOにオートクレーブを供与したのは間違っていないが、実際に使用されない理由は、電気容量が足りない

か、感染症に対する知識が乏しい、のいずれかであろう。いずれにせよ、実験室の検査業務を教育レベルの低いテクニシャンに任せている限り、高度な検査機器を DVO に配置する必要はないと思われた。DVO においても特筆すべきは日本人専門家の活躍ぶりで、電話一本で現地に駆けつけてくれる彼らは大変感謝されていた。一方、ウガンダ国内での物流手段が乏しいため、首都カンパラから遠い DVO では検査依頼材料を首都へ手軽に運搬する手段がなく、日本人専門家に出張してもらうか、海外協力隊員が長距離バスで上京する際に運搬していた。

(4) 総　括

2012 年 6 月に行われた運営指導調査以後も NADDEC の本プロジェクトへの貢献度は上がっていないが、MK-COVAB の CDL は、いまだ十分とはいえないものの、その役割を果たしており、今後の発展を見込むことができるレベルに達している。DVO は CDL からの支援に頼りつつ、改善されつつある。現状のまま JICA プロジェクトが終了すれば元の木阿弥に復帰することは必至で、1 年間のプロジェクト延長期間内にウガンダ人 C/P への技術移転を済ませ、ウガンダ政府から NADDEC、マケレレ大学から CDL への人的及び経済的支援の約束が履行されることが強く望まれる。さらに、1 年間の延長期間終了後も短期専門家の派遣など、何らかの継続的支援を行えば MK-COVAB の CDL のサステナビリティは担保される。本プログラムで設置された MK-COVAB の CDL はウガンダの家畜衛生に関する国際支援の橋頭堡として十分活用可能であり、JICA において MK-COVAB の CDL を含めた新たなプロジェクト企画が困難な場合は、大学など JICA 以外の国内機関に MK-COVAB の CDL への技術支援を付託することも検討に値する。

５－２　団長所感

(1) NADDEC、COVAB-CDL の体制強化措置が進みつつあることが確認され、プロジェクト関係者の努力を評価したい。ただし、COVAB-CDL での診断技術に要する試薬等の消耗品費（400 万～ 500 万円／年）のほとんどはプロジェクト活動費として JICA が負担しており、この数字を意識しつつ出口戦略を立てる必要がある。

(2) 中間レビュー調査の団長所感でも言及されているように、小さな政府・民営化、地方分権化といった政府方針下で弱体化した国家家畜疾病診断体制を、官学連携の J-NADIC 構想で再構築させようとする画期的な試みであることを考慮する必要があること、J-NADIC 構想実現のためには、同構想を政府幹部層に正しく理解させ、ウガンダ社会層における支持層を拡大させることをウガンダ側関係者ともに促進することの重要性を、再度強調したい。

(3) 今次協力では、NADDEC、COVAB-CDL の体制・連携強化に重点を置いているが、現行プロジェクトで支援対象の 5 つの DVO の効果が評価され、支援 DVO 数の拡大をたびたび要望されたが、DVO 数の拡大計画の予定はない旨、回答している。一方で、最終目標は畜産農家への裨益にあることから、中央（NADDEC、COVAB-CDL）から地方（DVO）に将来協力をシフトする場合には、ウガンダ地方分権化政策の評価を慎重に行ったうえで計画する必要があろう。具体的には、政府から切り離された普及サービス機関である NARRDS の効用の評価と連携のあり方、

県（District）予算の確保の可能性などである。

また、協力の前提にはウガンダ政府の DVO 支援ビジョンが具体的に示される必要があるが、当面の間強化されるべき DVO は、DVO 診断ラボの効用を評価できる畜産農家が存在する地域に限定するのが、財政的持続性・インパクト確保のために現実的な支援のあり方とも考えられる。

第６章　提言と教訓

６－１　提　言

※評価結果と提言は、1月31日のJCCにて発表・承認され協議議事録（Minutes of Meeting：M/M）にて確認した。

（1）協力期間の延長

1）　評価の結果、協力期間の（2014年6月までの）1年間の延長を提言し、第6回JCCにおいて承認された。

2）　延長期間では、現在実施している協力内容を踏襲するが、成果-2の「COVAB-CDLの診断技術の向上・定着」に重点を置いた活動を行う。協力規模は、長期専門家3名を上限とするが、COVAB-CDLについてはウガンダ側スタッフのみで運営できる体制づくりを意識して進める必要がある。技術はもちろんのこと、NADDEC、DVOsなどの外部機関との連絡・調整といった運営面もウガンダ人が主体となるべく出口戦略を関係者間で共有して進める。

（2）当初協力期間中に実施すべきこと（～2013年6月）

1）　NADDEC、MAK-COVAB-CDLの体制強化進捗の確認

上記「結果」で記述のとおり、両機関ともに人員、予算面の強化が進捗していることが確認された。1年間の延長を提言するための前提条件が担保されたといえるが、次年度（2013/14年度）に向けた人員・予算計画・申請も継続して行われる必要がある。（ウガンダ側より説明を受けた体制整備が確実に行われているかどうかの確認と報告を事務所・専門家にお願いしたい）

なお、MAK-COVAB-CDLでの適切な診断料金徴収と徴収した料金のCDL活動への還元は、CDLの財政的安定につながるものである。方向性なりを早期に固め、試行していくことが望まれる。

2）　情報共有（成果-4関連）

J-NADIC構想の基礎をなすNADDEC、MAK-COVAB-CDL、DVO間の一層の協力体制が必要である。これまでのところ、後者の2機関の関係は強化されており、大きな課題はみられないが、NADDECからの情報共有が不十分とされている。現時点ではNADDECに集約された情報の整理・分析・管理状況については不透明な状況にある。

2013年2月にプロジェクトでDVO向け研修を開催予定であり、同研修にNADDEC、MAK-COVAB-CDLの関係者も招待し、3者間の情報共有の再構築を検討する予定と専門家より報告を受けている。同研修を通じて、第2回JCCで承認されたアクションプランの理念/各機関の期待される活動内容を再度共有し、情報共有の内容・流れのコンセンサスが生まれることを期待したい。

3）　延長期間中の活動計画のまとめ

延長期間終了後（2014年7月以降）のウガンダ側への業務移行を念頭に置いた業務計画をまとめる。

(2) 1 年間の延長時に実施すべきこと（〜 2014 年 6 月）

1) 成果 -2 の検査診断を、MAK-COVAB-CDL スタッフが自律的に、複合的（comprehensive）にできるようになる。

2) その他、今回の終了時評価で指摘された事項に関して、進捗モニタリングと残された課題への対応を適時に適切に行う。

3) J-NADIC が機能するための NADDEC、MAK-COVAB の更なる体制強化を継続的に政府に要望する（2014 年 7 月以降の予算年度に向けた人員・予算要求）。

4) アクションプランの定期的モニタリング（JCC 時の確認・共有を継続的に行う）。

６－２ 教 訓

(1) 長期専門家の長期不在と施設の建設遅延

本プロジェクト開始時に派遣されたのは業務調整員のみで、総括及び診断技術の指導を行う長期専門家 2 名は、適当な人材を容易に確保できなかったため、派遣が約 1 年間にわたり不在であった。J-NADIC の診断部門の中心をなす CDL スタッフの技術向上はプロジェクトの重点課題であっただけに、準備段階で配置できる人材についても検討しておくことが必要である。

また、CDL 建設の遅延も影響を及ぼした。これは、当初 1 年間は、業務調整員 1 名での事業体制であり、調達が遅れたことが最大の原因であるところ、投入計画についても案件立ち上げ時から検討しておくことが必要である。

(2) 関係者のコミュニケーション

事業を行う際にあたりまえのことであるが、開始当時より NADDEC のコミットメントが極めて低く、J-NADIC 構想の具体化が危ぶまれた。NADDEC コミットメントの低さは、案件立ち上げ時の誤解やコミュニケーション不足に起因しているところ、C/P との密なコミュニケーションが必要である。

(3) 地方自治体（Local Government）の関与

「５－２団長所感」でも述べているが、農家と向き合う DVO は業務上は MAAIF の指導を受ける機関であるが、地方行政省―県の傘下にあるので、同省の理解と支援が必要なことは論をまたない。NADDEC へのインタビューで、ウガンダ獣医師会（Uganda Veterinary Association）総会で、DVO は MAAIF 傘下とすべきとの提言がまとめられた旨の報告を受けている。

付　属　資　料

１．調査日程

２．主要面談者リスト

３．質問票及び回答結果

４．ミニッツ及び合同評価報告書

５．成果 -1 にかかわる「Action Plan（March 2011）」

Uganda "Animal Disease Diagnoses and Control" Terminal Evaluation Schedule

		mission team				
Date	Day	Animal Disease Diagnoses	JICA Rural Development Department	JICA Rural Development Department	A&M consultant Co.	
		***	Shiro NABEYA (Leader)	Akiko FUJITA (Programme Officer)	Jun Totsukawa (Evaluation)	Accommodation
14-Jan	Mon				Arrive Entebbe (QR536 13:00)	Kampala
15-Jan	Tue				Meeting with JICA Uganda office, Project experts, C/Ps Meeting with Evaluation Team	Kampala
16-Jan	Wed				Meeting with Project Experts, C/Ps, etc.	Kampala
17-Jan	Thu				Meeting with Project Experts, C/Ps, etc.	Kampala
18-Jan	Fri				Meeting with Project Experts, C/Ps, etc. Site visit	Kampala
19-Jan	Sat				Preparing Evaluation Grid, Joint Evaluation Report	Kampala
20-Jan	Sun				Preparing Evaluation Grid, Joint Evaluation Report	Kampala
21-Jan	Mon		Arrive Entebbe (QR536 13:00) PM JICA Uganda Office, Experts, Internal Meeting		AM: Meeting with Project Experts, C/Ps, etc. PM: Internal Meeting	Kampala
22-Jan	Tue		AM : Meeting with Joint Evaluation Members PM: Meeting with Project Experts, C/Ps, etc.			Kampala
23-Jan	Wed		Meeting with Project Experts, C/Ps, etc.			Kampala
24-Jan	Thu		Site Visit			Kampala
25-Jan	Fri		Site Visit Joint Evaluation Meeting			Kampala
26-Jan	Sat		Site Visit to Rice Promotion Project		Preparing Evaluaation Grid, Joint Evaluation Report	Kampala
27-Jan	Sun		Drafting Joint Evaluation Report, Miniutites of Discussion			Kampala
28-Jan	Mon		Joint Evaluation Meeting(Drafting Joint Evaluation Report, Miniutites of Discussion)			Kampala
29-Jan	Tue		Joint Evaluation Meeting(Drafting Joint Evaluation Report, Miniutites of Discussion)			Kampala
30-Jan	Wed		Joint Evaluation Meeting(Drafting Joint Evaluation Report, Miniutites of Discussion) Visit Donnors (USAID?)			Kampala
31-Jan	Thu		MD Signature Report to JICA Uganda, and EOJ			Kampala
1-Feb	Fri		AM:Report to JICA Uganda Office, Emabassy of Japan Depart Uganda (17 : 50 QR537)			(Mr Nabeya: Kampala)
2-Feb	Sat		Documentation Move to Entebbe	Narita		(Mr Nabeya: Entebbe)
3-Feb	Sun		Depart Uganda (5:10 KQ417)			

２．主要面談者リスト

面会者リスト

1月16日　Mubale　DVOヒアリング

	名前	肩書き	所属先	備考
1	Dr. Were George	Head, Vet officer	Mubale DVO	
2	Dr. Phillip Wakimuwere		Mubale DVO	

1月17日　Kiboga　DVOヒアリング

	名前	肩書き	所属先	備考
1	Dr Atikoro John	Head, vet officer	Kiboga DVO	
2	Dr. Tingiira Bosco	vet officer	Kiboga DVO	

1月18日　Wakiso　DVOヒアリング

	名前	肩書き	所属先	備考
1	Dr. Oine Patrick	Head, production unit	Wakiso DVO	
2	Dr Karungi Fred		Wakiso DVO	

1月21日　17時～18時　JICA事務所　評価ミッション顔合わせ

	名前	肩書き	所属先	備考
1	Emmanuel Muhoozi		MAAIF	muhooziemma@gmai.com
2	Dr Robert Mwebe		NADDEC	mweberobert@yahoo.com
3	Ruth Muwazi		MAK-COVAB	rmuwazi@vetwed.mak.ac.ug
4	Dr Rose Ademun		MAAIF	ademunrose@yahoo.co.uk
5	羽石祐介	農業計画アドバイザー	MAAIF	

1月22日　9時～12時　JICA事務所　専門家との打ち合わせ

1月22日　15時～17時　NADDEC　ヒアリング

	名前	肩書き	所属先	備考
1	Dr Mubiru Emma	Communication Specialist	NADDEC	
2	Kidea Eugene K	SLT	NADDEC	
3	Okwee David	MSC Student	MAK-COVAB	
4	Balati Miiton	Laboratory Technician	NADDEC	
5	Ruth Muwazi	Deputy Principal	MAK-COVAB	Evaluation Team
6	Dr Robert Mwebe		NADDEC	Evaluation Team
7	Emamanuel Kimbowa		MAAIF	Evaluation Team

1月23日～24日　DVO視察同行者

	名前	肩書き	所属先	備考
1	Ruth Muwazi	Deputy Principal	MAK-COVAB	Evaluation Team、Mpigiのみ参加
2	Emamanuel Muttozi		MAAIF	Evaluation Team
3	Dr Okuyo Bosco		MAAIF	Evaluation Team、drokuyo@yahoo.com
4	Joan Kisaka		MAK-COVAB	Evaluation Team
5	Dr Bigirwa Godrey	Assistant Lecturer	MAK-COVAB	※C/Pとして参加

1月23日10時～12時　Mpigi　DVOヒアリング

	名前	肩書き	所属先	備考
1	Dr. Sekiwunngga Herman	District vet officer	Mpigi DVO	
2	Dr. Kawagga Reuben	Vterinary officer	Mpigi DVO	
3	Musoke Godfrey	Animal husbandry officer	Mpigi DVO	

1月23日17時～18時　UCCCU　（民間農協ヒアリング）

	名前	肩書き	所属先	備考
1	George Nuwagira	Chairman	Uganda Crane Creamery Cooperatives Union (UCCCU)	
2	Arinanye　Clayton	General Manager	UCCCU	

1月24日　10時～11時30分　Mbarara

	名前	肩書き	所属先	備考
1	Mwebembezi William	Senior Veternary Officer	Mbarara DLG	
2	Dhalwa James	Veternary Officer	Mbarara DLG	
3	Mugisa Jpshua	Volunteer AHO	Mbarara DLG	
4	Mateeue Alice	AHO	Mbarara DLG	

1月25日　8時　MAK-COVAB

	名前	肩書き	所属先	備考
1	Prof. Jhon David Kabasa	Principal	MAK-COVAB	

1月25日　9時　MAK-COVAB

	名前	肩書き	所属先	備考
1	Thomas Easley, DWM MPH	Country Coordinator	USAID	

1月25日　10時　Meeting with MAK-COVAB

	名前	肩書き	所属先	備考
1	Ruth Muwazi	Deputy Principal	MAK-COVAB	
2	Emmanuel Muhoozi		MAK-COVAB	
3	Emmanuel Kimbowa		MAAIF	
4	Francis Mutebe		MAK-COVAB	
5	Mdoboli Dicksom		MAK-COVAB	
6	Eneku Wilfred		MAK-COVAB	
7	Wanlenle		MAK-COVAB	
8	Joanne Kisaka		MAK-COVAB	
9	Devid Owiny		MAK-COVAB	
10	Afayoya Mathias		MAK-COVAB	
11	Okuyo Bosco		MAAIF	
12	Musisi Lubowa Niclus		MAK-COVAB	
13	Benard Aywai		MAK-COVAB	
14	Frank N Mwiine		MAK-COVAB	

1月25日　13時　MAK-COVAB

	名前	肩書き	所属先	備考
1	Dr Nicholas K Kauta	Commissioner	MAAIF	

1月29日　10時～12時30分　MAK-COVAB Evaluation meeting

	名前	肩書き	所属先	備考
1	Emamanuel Kimbowa		MAAIF	
2	Emmanuel Muhoozi		MAAIF	
3	Ruth Muwazi		MAK-COVAB	
4	Foberi Tiyeyoygyole		MAK-COVAB	
5	Frank N. Mwinne		MAK-COVAB	
6	Wampaone		MAK-COVAB	
7	Mbyanabo Susan		MAK-COVAB	

1月31日　10時～12時　MAK-COVAB　JCC

	名前	肩書き	所属先	備考
1	Dr George Hasafu Were	DLG	Mbale	
2	Dr Damcec M Oine	DLG	Wakiso	
3	Ssekiwunga Herman	DLG	Napigi	
4	Dr Leyce Dkedi	NARO-NALIRRA Tororo		
5	Dr Atikoro J. R.	Kihonga DLG		
6	Ruth Muwazi		MAK-COVAB	
7				

プロジェクト宛資料作成依頼
※ 追加事項が発生する可能性もあります。御了承ください。
※ 中間レビュー時のデータ（*斜体*のもの）がある場合は、更新、追加した形で作成お願いします。

１．投入実績（英文・様式はエクセルデータ「MTE1 投入実績」）
年度ごとに、人数・人員配置及び金額等を表にまとめて下さい。バーチャート化できるものはそのように工夫お願いします。
(1) 家畜疾病診断・管理体制強化計画長短期専門家派遣実績
(2) C/P 配置実績一覧
(3) 研修員受入実績
(4) 機材供与実績
(5) 研修実績（人数、対象者、内容を含む）
(6) 日本側ローカルコスト負担実績（現地業務費実績）
(7) ウガンダ側投入予算実績（予算見込み含む）
(8) ウガンダ側提供の土地、建物、事務所、施設及び施設図
※実績については、10 月末、もしくは 11 月末までを対象範囲として整理ください。（可能であれば、11 月末というオプションもありますが、無理をする必要はありません。）

２．実施プロセスに関する事項（英文・様式はワードデータ「MTE2 実施プロセス」）
(1) ウガンダ側との定期的な会合の実施状況（頻度、回数、出席者等）
(2) JCC Meetings (Date, attendances, Agendas)
(3) 供与機材の維持管理体制（管理台帳整備状況、責任者、管理方法等）
(4) Organization Chart of Implementing Agency
(5) Implementation Structure of the Project
(6) プロジェクト実施プロセスに関するレポート
以下の内容について、英文で簡潔に記載（様式は問わない）
プロジェクト戦略：共同疾病診断システム・関係者の技術向上・普及等プロジェクトの中心的な戦略について、背景、方法を簡潔に記載。
プロジェクト運営方法：有効な共同疾病診断システム構築方法等、プロジェクト運営の基本的な考え方、留意点について簡潔に記載。
C/P との関わり等：自立性を尊重するために、特に留意してきた事項を簡潔に記載。
その他：必要に応じて記載。

３．活動実績及び成果（英文）※C/P の意見も取り込んだものがより望ましい。
(1) 最新版の PDM と PO
(2) PDM に設定された指標の達成状況（上位目標、プロジェクト目標、成果の達成度を測るために PDM に設定された各指標について、現時点での達成状況・見込みを記載）※C/P の意見も取り込んだものがより望ましい。（様式はエクセルデータ「MTE 3-2 Achievements so far」）
(3) PO（**計画と実績の比較**としてください）および活動実績報告（3 年間の活動実績を記載。）
① *PO について、進捗状況および計画と実績を比較したもの*（様式はワードデータ「MTE 3-3 Pj Activities 」）
② PDM の各活動項目ごとに行った活動リスト

③ 実際に行ったセミナーや研修等のタイトル、回数、対象者等。および研究・研修・普及の連携について実績がわかる資料（各地域での試験結果概要等）（PDM のどの活動に結びつくかわかる形で記載することとし、別添でデータ提出でも可。）

(4) 自己評価（評価 5 項目に沿ったプロジェクトの自己評価、様式は「MTE 3-4 自己評価表 3-5 成果品」）

(5) これまでに作成された成果品（マニュアル、教材等、様式は「MTE 3-4 自己評価表 3-5 成果品」）

(6) そのほか実績関連資料　（様式自由）

① 対象疾病の技術移転リスト（マトリックス化したもの）

② J-NADDIC 構想による具体的成果実例

(7) 中間レビューおよび運営指導調査での指摘事項を踏まえ、対応した内容（様式自由）

① 専門家チーム、NADDEC、MAC-COVAB 間の情報共有の強化

② プロジェクト詳細活動計画の策定

③ 追加人員の配置状況

④ 情報収集と記録システム

⑤ 専門家チームから NADDEC、MAC-COVAB へのプロジェクト主導県の移行状況

⑥ J-NADEC の継続的実施・強化のための取組（ウガンダ関係者の政策レベルでのコミットメントや予算配置状況、J-NADEC 構想の共通理解の構築への取り組み）

⑦ DVO との連携強化に向けた取り組み

⑧ その他、重点的に対応した取り組み

(8) 上記（１）～（７）の成果に対して、プロジェクトとして延長を提案する場合、残り１年で技術移転が必要な内容とその理由、達成見込み　（様式自由）

(9) その他　必要に応じて記載

４．プロジェクト終了までの計画に関すること（和文）

以下の事項について専門家チームの見解としてご回答願います。

（１） プロジェクト懸案事項（特に、実施プロセス、持続性・インパクトの観点で）

（２） 日本側（調査団）からの申し入れ希望事項

（３） 予想されるウガンダ側からの申し入れ事項（あれば）

５．協力終了後および延長期間（延長を希望するのであれば）に関すること（和文）

以下の事項について、ご回答願います。

（１） 実施内容の方向性（実施すべき内容、その理由、留意点を含む）

（２） プロジェクト延長期間終了後の方向性

（３） 日本側（調査団）からの申し入れ希望事項

（４） 予想されるウガンダ側からの申し入れ事項（あれば）

以　上

1. (1) Experts dispatched, including Mission Assignment

<Long-term experts>

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

<Short-term experts (Mission team included)>

#	Names	Field	Assignment Duration	Affiliation
1st Year				
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	2011/04/17～2011/04/30	JICA
5	Yukita SATO	Monoitoring&Survay	2011/04/24～2011/04/30	Nihon University
2nd Year				
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	
10	Kenichi SAKURAI	Bacteriology	2012/02/11 ~2012/02/23	
11	Yoshikazu IRITANI	Virology	2012/02/11~2012/03/11	
12	Hisashi SHIBUYA	Pathological Diagnosis	2012/02/18~2012/03/16	Nihon University
3rd Year				
13	Yoshikazu IRITANI	Virology	2012/07/10~2012/10/6	
14	Kenichi SAKURAI	Bacteriology	2012/09/12~2012/12/16	
15	Yoshikazu IRITANI	Microbiology	2013/01/13~2013/04/13	

1. (2) List of Counterpart (C/P) Personnel Assigned

#	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	Commisioner, Department of Livestock Health and Entomology	Project Director	June 2010	At present
3		Dr. Deo B. Ndumu	Senior veterinary officer, veterinary epidemiology and diagnostic unit	Project Coordinator	June 2010	At present
4	Makerere University (COVAB=College of Veterinary Medicine, Animal Resource and Biosecurity)	Dr. John David Kabasa	Principal, COVAB	Project Manager	June 2010	At present
5		Dr. Eddie Wanpande	Assistant lecturer, COVAB	Project Coordinator	June 2010	At present
6		Dr. Wilfred Eneku	Teaching assistant, COVAB	C/P	June 2010	At present
7		Dr. Gabriel Tumwine	Teaching assistant, COVAB	C/P	June 2010	At present
8		Dr. Afayoa Mathias	Teaching assistant, COVAB	C/P	June 2010	At present
9		Dr. Bigirwa Godfrey	Teaching assistant, COVAB	C/P	June 2010	At present
10		Dr. Francis Mutebi	Teaching assistant, COVAB	C/P	June 2010	At present
11		Dr. Mugimba Kitizo	Teaching assistant, COVAB	C/P	June 2010	At present
12		Dr. Muzoora Saphan	Teaching assistant, COVAB	C/P	June 2010	At present
13		Dr. Turyatemba James	Teaching assistant, COVAB	C/P	June 2010	At present
14		Dr. Patrick Vudriko	Teaching assistant, COVAB	C/P	June 2010	At present
15		Dr. Joanne Kisaka	Teaching assistant, COVAB	C/P	June 2010	At present
16	District Veterinary Office (DVO): Kiboga, Mpigi, Wakiso, Mbale, Mbarara	Dr. Atikoro	Veterinary officer at Kiboga	Quasi-C/P	June 2010	At present
17		Dr. Tingiira Bosco		Quasi-C/P	June 2010	At present
18		Dr. Oine	Veterinary officer at Wakiso	Quasi-C/P	June 2010	At present
19		Dr. Karungi Fred		Quasi-C/P	June 2010	At present
20		Dr. Sekiwunga	Veterinary officer at Mpigi	Quasi-C/P	June 2010	At present
21		Dr. Were George	Veterinary officer at Mbale	Quasi-C/P	June 2010	At present
22		Dr. Mwebembezi William	Veterinary officer at Mbarara	Quasi-C/P	June 2010	At present

1. (3) C/Ps Training in Japan

#	Name	Period of Participation	Field/Name of the Course	Contents	Implementing Instisution	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	JICATokyo, Nihon Univ.	Commissioner Animal Health & Entemorogy MAAIF	Commissioner Animal Health & Entemorogy MAAIF
2	David Kabasa		Technical Study visit	Study Visit for Animal Disease control system, University Curriculum in Japan	JICATokyo, Nihon Univ.	Dean Faculty of Vet.Med. Makerere University	Dean School of Vet.Med. Makerere University
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.	JICATokyo, Nihon Univ.	Assistant Lecturer,Faculty of Vet.Med. Makerere University	Assistant Lecturer,School of Vet.Med. Makerere University
4	Wilfred Eneku		Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,School of Vet.Med. Makerere University
5	Gabriel Tumwine		Laboratory diagnostic techniques		JICATokyo, 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 improvemant.	JICA Sapporo, Hokkodo Veterinary Assosiation	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.	JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
8	Bigirwa Godfrey		Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
9	Francis Mutebi		Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
10	Mugimba Kitizo	2012/08/13~2012/10/12	Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
11	Muzoora Saphan		Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
12	Turyatemba James		Laboratory diagnostic techniques		JICATokyo, 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 improvemant.	JICA Sapporo, Hokkodo Veterinary Assosiation	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
14	Karungi Fred		Veterinary Technology for Farm Animals	Clinical Training for farm animals for disease control, treatment and improvemant.	JICA Sapporo, Hokkodo Veterinary Assosiation	District Veterinary Officer Wakiso District	District Veterinary Officer Wakiso District
15	Patrick Vudriko	2012/10/20~2013/08/10	Advanced Research Course on Interanation Animal Health	Laboratory and management	JICA Obihiro, Obihiro Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
16	Joanne Kisaka	*Planned in 2013*					
17	Wilfred Eneku	*Planned in 2013*					

1.(4) Equipment and machinery provided

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

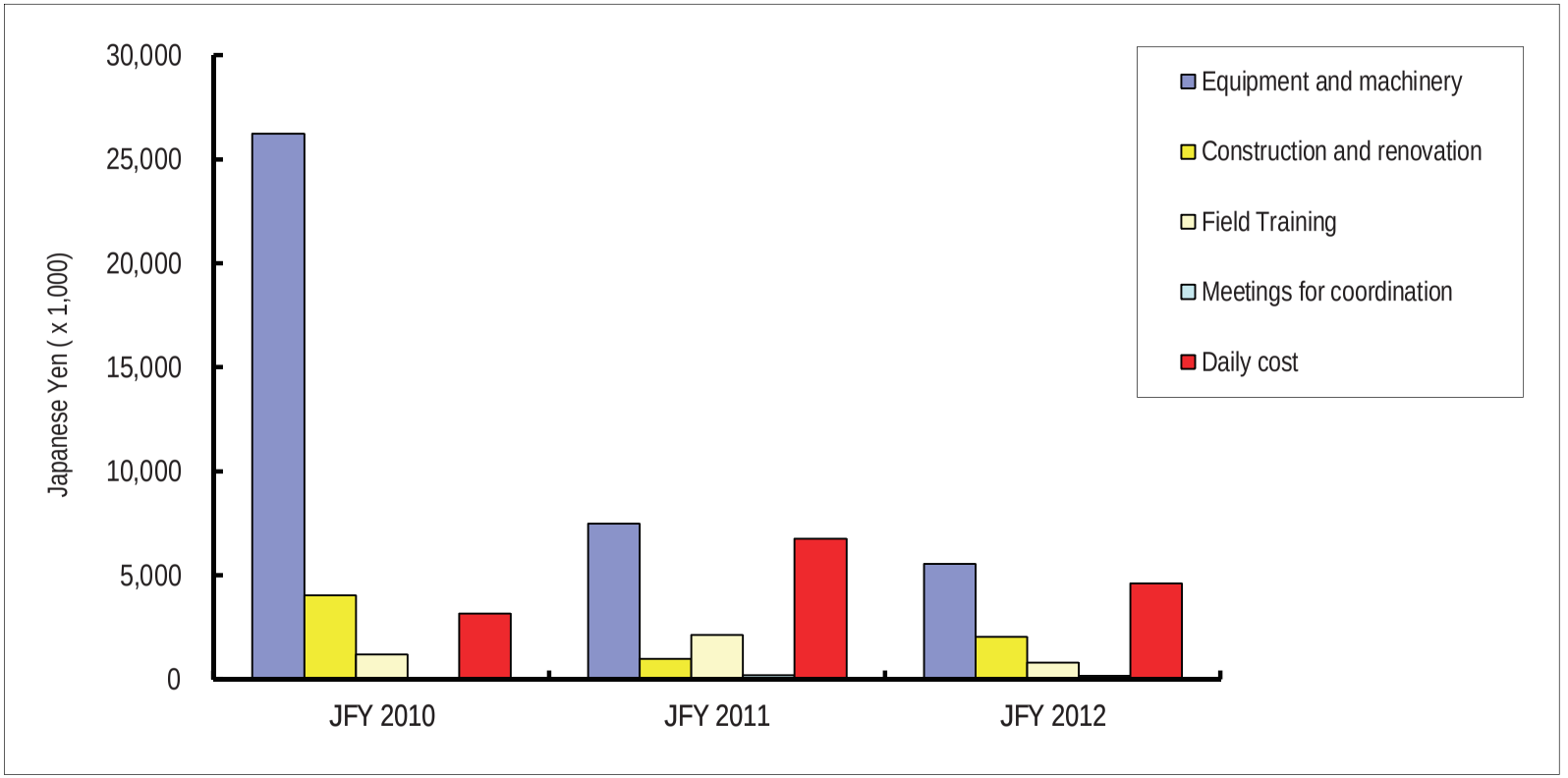
No.	Equipment	Manufacturer	Product No.	Qty.	Purpose of Use	Arrival Date	Price	Installation Place	Suppliers	Current Condition
1st Year										
1	4WD Vehicle	Mitsubishi	Pajero	2	General	Jun-10	¥9,183,756	MAAIF	Victoria Moters	A
2	Desk Top PC	Dell		1	General	Aug-10	$2,000	Makerere	Micro Tech Ltd	A
3	HP 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*5	Wak.Mba.Mbar.Mpi,MAK	Palin Diagnostic	A
8	Refrigirated 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	C
11	Pick Up Truck(Dubble Cab)	NISSAN	HARD BODY	1	General	Mar-11	$28,700	Makerere	Kampala NISSAN	A
12	Fluorsent 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*2	Makerere	Palin Diagnostic	A
17	Autoclave(midium size)	SANYO	MLS 3751L	2	Bac/Viro	23-Mar-11	$13,400*2	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*2	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*2	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
2nd Year										
34	Liquid Nitrogen Tank	Air Liquid	GT25	1	Virology/Bacteri	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	B
37	Thermal Cycler	LabNet Inc	TC 9600 G230V	1	Virology/Bacteri	19-Dec-11	$6,000	Makerere	Palin Diagnostic	A
38	Gel Documentation System	Synoptic Ltd	GVM20	1	Virology/Bacteri	1-Feb-12	$4,970.38	Makerere	Powelson	A
39	Stomacher	Seward	Stomacher 80 Biomaster	1	Bacteriology	1-Feb-12	$5,079.27	Makerere	Powelson	A
3rd Year										
40	Crush Ice Maker	Hoshizaki	FM 150KE	1	General	1-Jul-12	$7,500.00	Makerere	Palin Diagnostic	A
41	Clinical Microscope	Nikon	Eclipse Ci-S	1	Pathology	Jul-12	$15,026.57	Makerere	Palin Diagnostic	A
42	Digital camera system for inverted microscope	Micropix	9MP	1	Virology	Jul-12	$4,728.86	Makerere	Palin Diagnostic	A
43	Inverted Microscope (binocular)	Nikon	Nikon TS 100F	1	Virology	Jul-12	$9,825.21	Makerere	Palin Diagnostic	A
44	Inverted Microscope (trinocular)	Nikon	Nikon TS 100F	1	Virology	Jul-12	$11,034.34	Makerere	Palin Diagnostic	A
45	Refrigirated Centrifuge	Eppendorf	5804	1	Virology/Bacteri	1-Jul-12	$7,457.84	Makerere	Palin Diagnostic	A
46	Ultra pure Water purification System	Firstreeem	MultiPure Select	1	Virology	Jul-12	$9,423.22	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	2	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 Suppliers	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

1. (5) Training Course

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.
Total					**169**		

1. (6) Local Operation Cost Allocated by Japanese Side

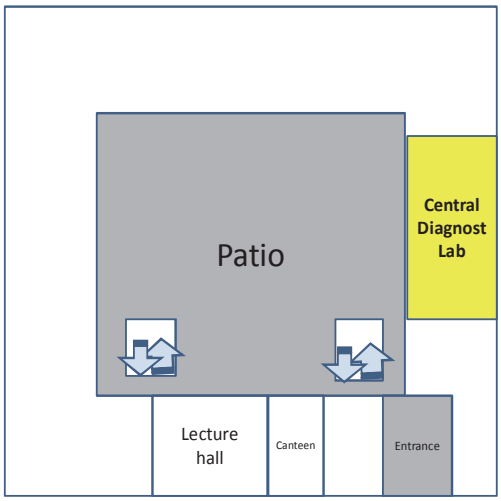
Items	JFY 2010 Fom Jun/2010 to Mar/2011		JFY 2011 From Apr/2011 to Mar/2012		JFY 2012 From Apr/2012 to Nov/2012		Total	
	Amount(JPY)	Amount(UGX)	Amount (JPY)	Amount (UGX)	Amount (JPY)	Amount (UGX)	Amount (JPY)	Amount (UGX)
Equipment and machinery	26,247,077	771,972,851	7,500,000	234,375,000	5,561,017	179,387,645	39,308,094	1,185,735,496
Construction and renovation	4,045,689	118,990,864	1,000,000	31,250,000	2,055,259	66,298,673	7,100,948	216,539,537
Field Training	1,190,000	35,000,000	2,144,000	67,000,000	802,745	25,895,000	4,136,745	127,895,000
Meetings for coordination	47,600	1,400,000	200,000	6,250,000	180,907	5,835,700	428,507	13,485,700
Daily cost	3,165,967	93,116,676	6,755,000	211,093,750	4,622,883	149,125,248	14,543,850	453,335,674
Total	**34,696,333**	**1,020,480,392**	**17,599,000**	**549,968,750**	**13,222,810**	**426,542,266**	**65,518,144**	**1,996,991,408**



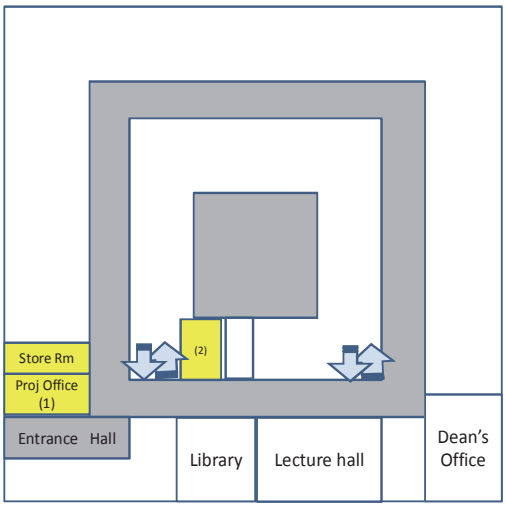
1. (7) Counterpart Fund by MAAIF (Planned)

Sector	Agriculture
Sub Sector	Animal resources
Title:	Improvement of National Diagnostic Capacity for Animal Disease Control
Implementation Agency:	MAAIF in cooperation with JICA
Location:	Ministry of Agriculture, Animal Industry and Fisheries Headquarters
Total Planned Expenditure:	UGX 9.42bn
Expenditure to date	UGX 5.77bn (All Government of Japan funding)
Funding Gap:	UGX 500 Million
Starting Date:	2010
Completion Date:	2013

1. (8) Facilities offered by Uganda



Ground Floor



First Floor

Project Offices and Facilities provided by MAK-SVM

2. Implementation Process

2. (1) Meetings held with Ugandan staff (Number, Frequency, Participants, etc.)

Date	Type of Meeting	Major Agendas	Attendance
<1st year of the Project>			
June 21/2010	Meeting with MAAIF staff	Tentative nomination of target districts	
July 22/2010	Meeting with MAK-SVM staff	Focus on Anim dis diagnostic system out of several requests from staff	
Aug 4, 2010	**1st JCC Meeting**	**Briefed on the background and concept of the Project PDM and PO were confirmed. Also, a focus on only ordinary disease diagnosis was confirmed. Key districts were nominated.**	**Chaired by Mr Rubarema 15 persons**
Aug 20/2010	SVM's Project Operation Committee	The outline of the Pj explained by Dr Kabasa;	
Aug 27, 2010	SVM's Project Operation Committee	TOT plan, Format of sample submission and reporting were initiated. Equipment requests	
Sept 16, 2010	SVM's Project Operation Committee	Outline of TOT, Format of sample submission	
Oct 21, 2010	FVM Board Meeting	Outline of the Project was announced	
Jan 27, 2011	1st Technical Com Meeting	PDM indicators, Roles of NADDEC and MAK-FVM discussed. Modified version of PDM will be drafted.	DN, EWa, MK,YT, HK
Feb. 2, 2011	2nd Technical Meeting	The draft of modified PDM was approved	DN, EWa, MK,YT, HK
Feb 7, 2011	Management & Guidance Mission's Final Report Meeting	2 Project managers commented on the draft of modified PDM, which would be submitted to the 2nd JCC in April.	
Apr 28, 2011	**2nd JCC Meeting**	**Progress of the project and financial reports were presented. Action plan was approved. Modification of PDM and PO was approved.**	**Chaired by Mr. Rubarema, PS 20 persons**

<2nd year of the Project>			
June 21,2011	SVM's Project Operation Committee	Outline of project and Input plan were disclosed for the members who have been appointed by the Dean.	EW, and 8 staff
July 27, 2011	Project Director (MAAIF)	Quarterly plan was explained and particularly the training workshop on improved Meat inspection was strongly supported by the Project manager by issuing official letter to the selected District veterinary offices.	Dr. Kauta, CA, PC
July 28, 2011	Project Workshop at SVM	High ranking staff such as Heads of Depts has attended to the meeting. The Meeting became also a sort of introduction to the project and no substantial discussion was made. However, the meeting authorized the younger staff of operational committee members would draft the project management strategy.	15 staff
Aug 31, 2011	SVM's Project Operation Committee Meeting	Working procedures of CDL of SVM. The major working protocol was described.	
Sep 21, 2011	Project Director (MAAIF)	Urgent issues of a published paper, Livestock sector meeting	Dr Kauta, PC
Sep 26, 2011	SVM's Dept Head meeting	Progress of the project and input plan of the second half of the 2011 presented. Assignment of the staff for the STE was strongly suggested.	Heads of departments, Dean, CA, EWa
Oct 13, 2011	Project Manager (SVM)	Issues of structure of CDL under the restructured SVM and staff assignment.	Dr Kabasa, CA
Oct 17, 2011	Project Director (MAAIF)	Issue of a published paper, Technical Committee Meeting, Mid-term Evaluation, Livestock Sector Meeting	Dr, Kauta, CA, PC, Mr Ogawa
Oct 27, 2011	The 1st Technical Committee Meeting	Roles of 2 labs, Formation of Joint Evaluation Team, Information Exchange, animal health network between J-NADIC and DVOs	NADDEC, Epi Unit SVM-CDL (10), DVOs (15)
Dec 15, 2011	**3rd JCC Meeting**	**-Review of the minutes of the previous JCC meeting.**	**Chaired by Mr Rubarema**

		-Progress of the project activities. **-Mid-term evaluative review report**	**20 persons**
Mar 14, 2012	Evaluation Meeting for Dr. Anri's TOT on Mastitis Control and Milking Hygiene	Evaluative discussions and recommendations for prevention of mastitis at the field level.	DVO staff, and farmers: 30 persons
Mar 28, 2012	The 2nd Technical Committee Meeting	-Brief of project activities -Special presentation (Strengthening Vet Activities, Record-keeping) -Mid-term review report -Info exchange system: way forward	Chaired by Dr. Wampande, with opening remarks by Dr. Kabasa: 38 persons
Apr 25, 2012	The 1st Quarterly J-NADDIC meeting	-Purpose of launch of the committee. -Progress of project -Orientation of the committee.	Chaired by Dr. Owiny with opening remarks by Dr. Kabasa: 17 persons
May 18, 2012	The 1st JICA management committee meeting	-Communication from the chair -Communication from JICA -Communication from CDL-lab	Dr. Owiiny, Dr. Kanameda, Dr. Kurata, Dr. Mwiine, Dr. Wampande, et al.
May 29, 2012	CDL technical meeting	General issues for improvement of CDL	COVAB staff: 17 persons
May 30, 2012	**The 4th JCC Meeting**	**-Review of the minutes of the previous JCC meeting.** **-Progress of the project activities.**	**Chaired by Dr. Kauta** **15 persons**
Jun 12, 2012	CDL staff meeting	General issues on everyday-activities at the CDL	Chaired by Dr. Wampande: 15 persons
<3rd year of the Project>			
Jun 26, 2012	Preparative meeting for a consultative mission from Japan	Meeting mainly withCOVAB staff member to discuss the mission issue.	Chaired by Dr. Owiny: 8 persons
July 3, 2012	Meeting with the consultative mission.	-Mission member (Dr. Tada, Ms. Fujita, Mr. Asano, et al) with COVAB staff	10 persons
July 5, 2012	The 2nd Quarterly J-NADDIC meeting	-Recommendations from the consultative mission members -Progress of project	Chaired by Dr. Owiny: 16 persons

July 5, 2012	Final meeting with the mission	Final comments from the mission to the C/Ps personnel in the presence of Mr. Hoshi, JICA Uganda representative	14 persons
July 19, 2012	Technical meeting with dairy industry professionals	Purpose was to discuss how to create a practical manual for prevention of mastitis which is one of the selected disease in the project PDM	16 persons
Oct 3, 2012	The 3rd Technical Committee Meeting	-Brief of project activities -Special presentation (African Swine fever, New Castle disease) -Training in Japan	Chaired by Dr Kauta: 47 persons

2.(2), Management of Registrated Equipment and machinery

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

<Equipment>

No.	Equipment	Product No.	Qty.	Purpose of Use	Arrival Date	Installation Place	Serial No.	Responsible by:	Current Condition
1	Liquid Nitrogen Tank*	GT35	1	Virology	3-Mar-11	Makerere	10-3-002920	Saito	A
2	PH Meter	S 20	1	General	30-Mar-11	Makerere	10-3-002921	Dr. Kondo	A
3	Shaker	1900	1	Pathology	30-Mar-11	Makerere	10-3-002922	Dr. Kondo	A
4	Analytical Balance	ML 204	1	General	30-Mar-11	Makerere	10-3-002923	Dr. Kondo	A
5	Water Distiller	WSC 004	1	District	23-Mar-11	Wakiso	10-3-002929	Saito	A
6	Water Distiller	WSC 004	1	District	23-Mar-11	Mbale	10-3-002930	Saito	A
7	Precision Balance	ML 802	1	District/MAK	30-Mar-11	Makerere	10-3-002931	Saito	A
8	Precision Balance	ML 802	1	District/MAK	30-Mar-11	Mbale	10-3-002932	Saito	A
9	Precision Balance	ML 802	1	District/MAK	30-Mar-11	Wakiso	10-3-002933	Saito	A
10	Precision Balance	ML 802	1	District/MAK	30-Mar-11	Mbarara	10-3-002934	Saito	A
11	Liquid Nitrogen Tank	GT25	1	Virology/Bacteri	25-Aug-11	Makerere	11-3-001238	Saito	A
12	Thermal Cycler	TC 9600 G 230V	1	Virology/Bacteri	19-Dec-11	Makerere	11-3-001241	Dr. Kondo	A
13	Haematocrit Cemtrifuge	5415R	1	General	19-Dec-11	Makerere	11-3-001242	Dr. Kondo	A
14	Mircoplate Reader	FMR 500	1	Serology	19-Dec-11	Makerere	11-3-001243	Dr. Kondo	B
15	Store cabinet set for slide glass	5-fold	1	Pathology	19-Dec-11	Makerere	11-3-001244	Dr. Kondo	A
16	Gel Documentation System	GVM20	1	Virology/Bacteri	1-Feb-12	Makerere	11-3-001245	Dr. Kondo	A
17	Stomacher	Stomacher 80 Biomaster	1	Bacteriology	1-Feb-12	Makerere	11-3-001246	Dr. Kondo	A
18	Inverter system	KAS Uganda	1	General	24-Feb-12	Makerere	11-3-001247	Saito	A

(*): Equipment being controled by keeping record in a logbook.

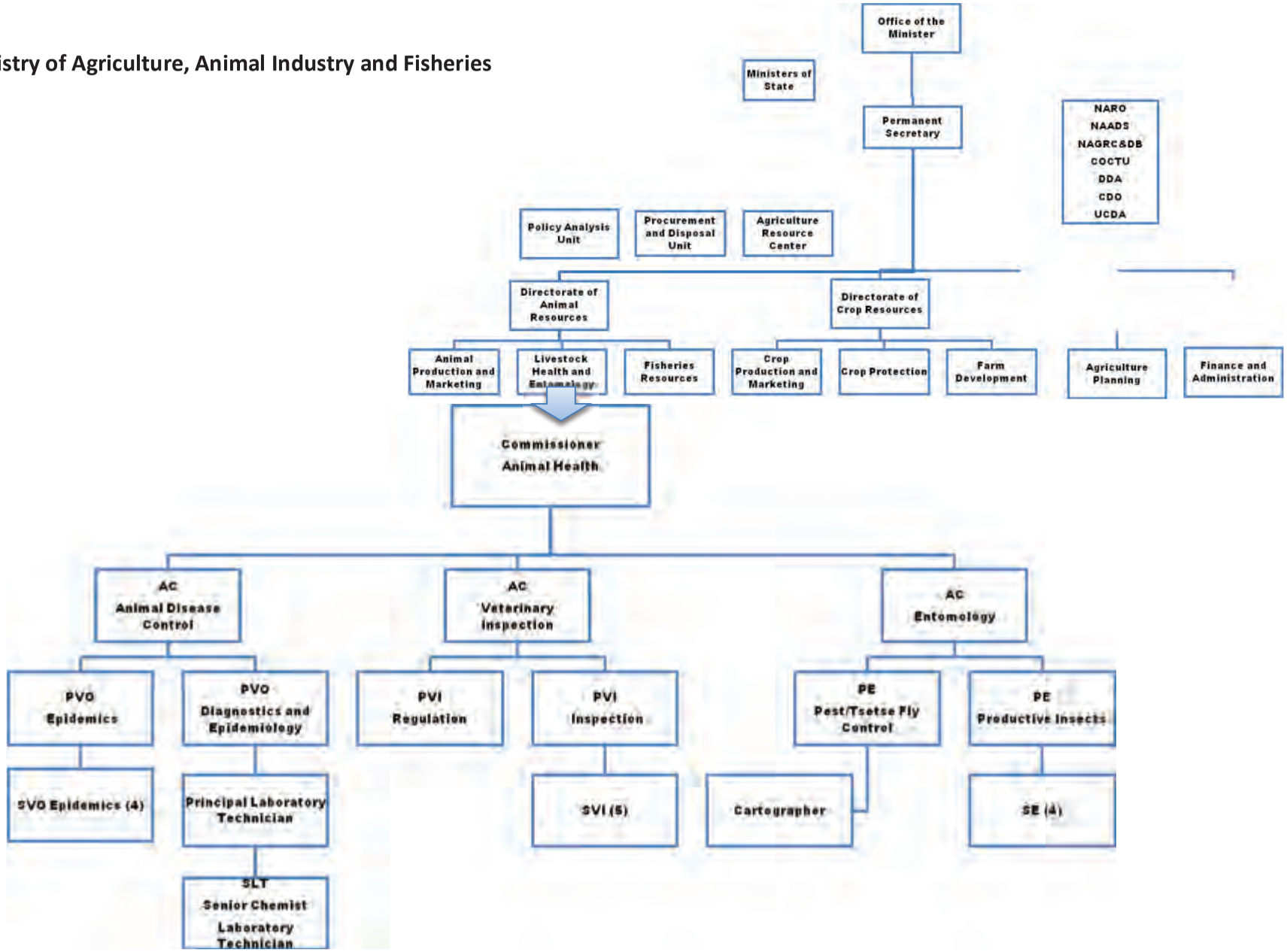
<Vehicles>

No.	Equipment	Product No.	Qty.	Purpose of Use	Arrival Date	Installation Place	Plate No.	Responsible by:	Current Condition
1	Mitsubishi 4WD	Pajero	1	Transport	Jun-2010	MAAIF	UG2130A	Saito and Mr. Enock	A
2	Mitsubishi 4WD	Pajero	1	Transport	Jun-2010	MAAIF	UG2131A	Saito and Mr. Frank	A
3	Nissan Pick-up truck	Double cab	1	Transport	Mar-2011	Makerere	UAJ574X	Saito and Mr. Matobu	A

Remarks: All the vehicles are under control by drivers regisrating the logbook.

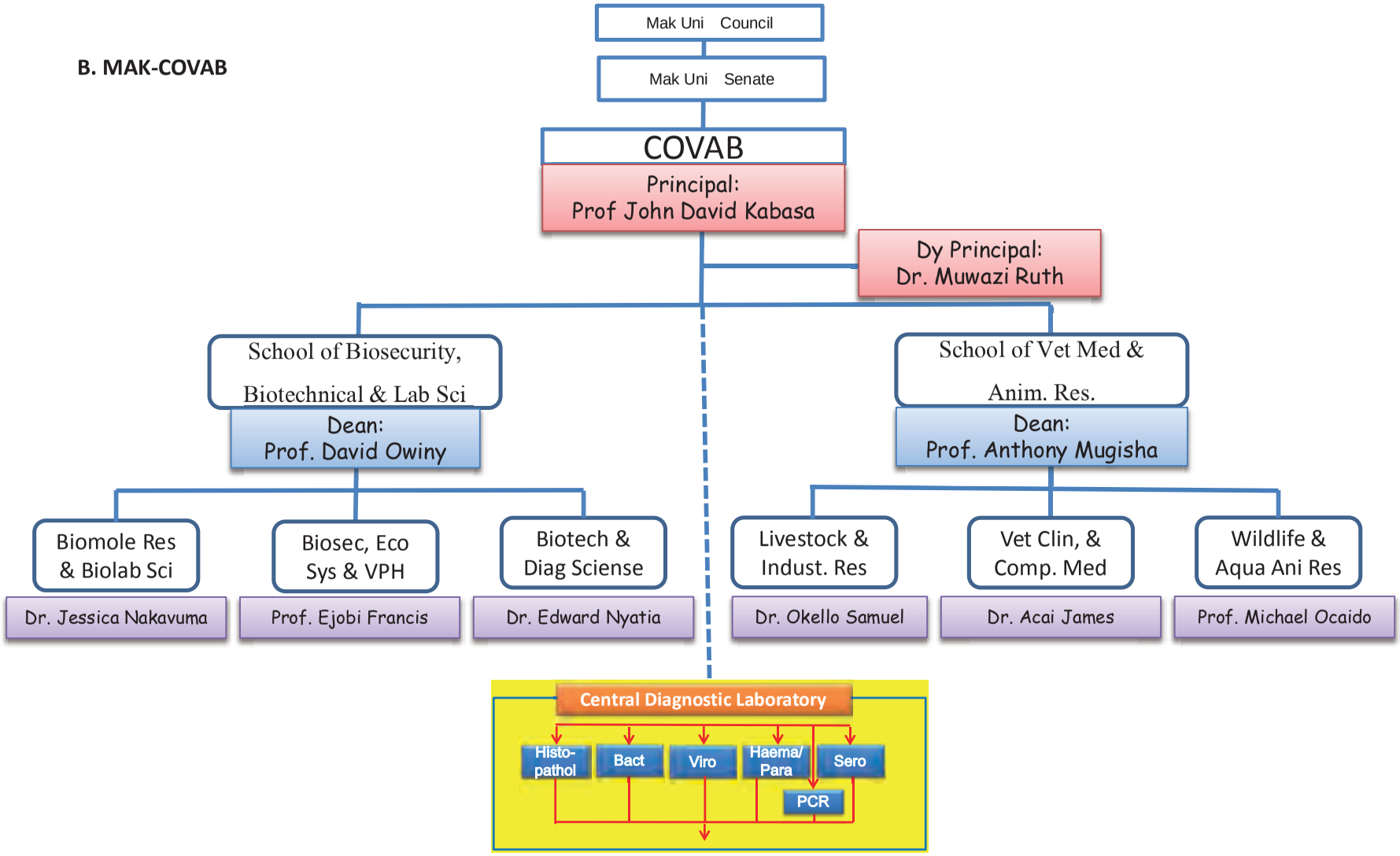
2.(3)-a Organization Chart of Implementing Agency

A. Ministry of Agriculture, Animal Industry and Fisheries



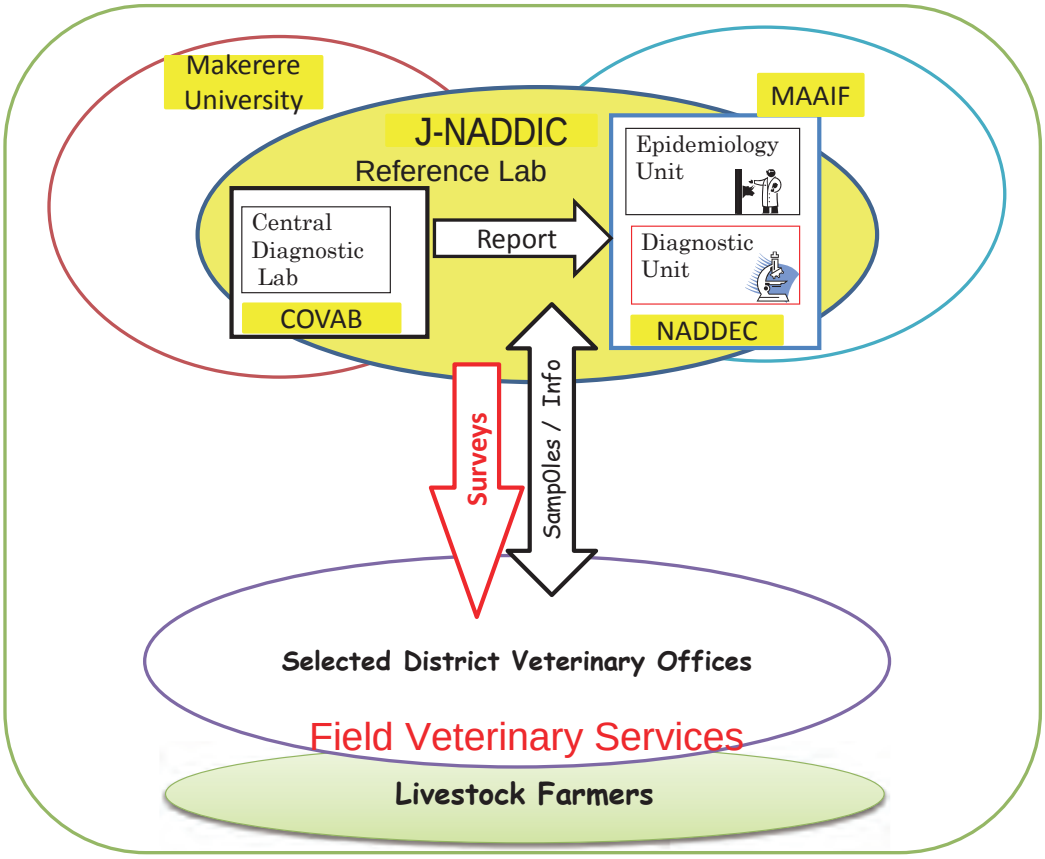
2.(3)-b Organization Chart of Implementing Agency

B. MAK-COVAB



Organization of College of Veterinary Medicine, Animal Resources and Biosecurity

2.(4). Implementation Structure of the Project



2. Implementation Process

2. (5) Report on Process of Project Activities

1 Project Strategies	
-Joint coordination (J-NADDEC)	Joint coordination method, in which both MAAIF and COVAB run "One Laboratory" together is, by definition, one of the most prominent features of this project. By doing so, the two institutions could minimize the costs and repetitions, consequently, maximizing the efficiencies.
-Technology transfer	Although it is a bit traditional, technology transfer is offered on a person-to-person basis, and is working quite well.
-Extension	In this project, "extension" could be defined as a necessary tool for the diagnostic technology transfer from J-NADDEC to DVOs. Based on this understanding, the project has been conducting Training of Trainers (DVO staff) by C/Ps in various training program.
2 Project Management	
-J-NADDEC	Meetings (Technical committee meeting)
-DVO support	Regular visits by J-NADDEC staff and JICA experts
-PR	Bulletin
3 Development of self-help among C/Ps	
-Meetings and get-together	Sharing a space with C/Ps in both laboratory and project office, and during the trips when making some visits to DVOs, experts are trying to spend more time with C/Ps to discuss not only technical issues but also themes about the future of the project activities, including the fade-out stages in which only the Ugandan side manages on your own account.

3-1 a. PDM 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
Overall Goals 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	
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.	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.
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.	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 by J-NADIC	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 MAK-COVAB	

3. An operational investigation system for emergency diseases is established.	3. Emergency disease outbreaks are investigated by joint investigation team of J-NADIC more than once during the project period.	3. Report of investigation and appropriateness of its contents	
4. An information exchange system for sharing between NADDEC and MAK-COVAB is developed.	4. All the Diagnostic data produced by J-NADIC are centralized, accumulated and shared by NADDEC-MAAIF and Central Diagnostic Laboratory of MAK-COVAB.	4. Developed information exchange system and opinion of persons concerned on practicability of the system	
5. Primary diagnostic and sample preparation techniques are improved at the selected District Veterinary Offices.	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.	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	

Activities	Inputs		Pre-condition
	Japanese side	**Ugandan side**	
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	1. Dispatch of experts 2. Dispatch of volunteers 3. Provision of equipment 4. Training of counterparts 5. Allocation of operational costs for the Project	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	MOU is approved by both MAAIF and MAK-COVAB. Security conditions in the target areas are maintained.

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			

Abbreviations:
NADDEC: National Animal Disease Diagnostic and Epidemiology Centre, **MAK-COVAB**: Makerere University-College of Veterinary Medicine, Animal Resources and Biosecurity;
MAAIF: Ministryof Agriculture, Animal Industry and Fisheries; **TC**: Technical Committee; **JCC**: Joint Coordinating Committee; **MM**: 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

3-1 b. Modified Plan of Operation

Prepared on 28 March 2012

No.	Project Activities	Target/Indicator	Responsible/ Supported by	Japanese Fiscal Year (JFY)														Input	Remark
				2010				2011				2012				2013			
				J	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ			
1	**Preparation of the action plan**																		
1.1	**Study on the appropriate diagnostic system in Uganda**	• Study reports submitted to the JCC	DLHE, MAK-SVM, Project Office															• OIE standards	
1.2	**Study on the current status of NADDEC and MAK-SVM**	• Study reports submitted to the JCC	DLHE, MAK-SVM, Project Office															• Colllaborative study	
1.3	**Identification of the duties to be conducted by the respective institutes**	• Study reports submitted to the JCC	NADDEC, MAK-SVM, Project Office															• Colllaborative study	
1.4	**Formulation of the framework of the Joint National Animal Disease Diagnostic Laboratory(J-NADDIC)**	• Finalised framework	DLHE, MAK-SVM, Project Office															•Meetings	
1.5	**Formulation of sample flow from the field to the J-NADDIC**	• Finalised sample flow chart	DLHE, MAK-SVM, DVOs, Project Office															•Meetings	
2	**Enhancement of the capacity of the J-NADDIC**																		
2.1	Establishment of the integrated diagnostic service functions in the J-NADDIC	• The diagnostic service functions established	DLHE, MAK-SVM, Project Office															• Meetings	
2.1.1	Identification of necessary diagnostic techniques at NADDEC and MAK-SVM	・Necessary techniques listed	DLHE, MAK-SVM, Project Office																
2.1.2	Introduce and improve the identified diagnostic techniques	・No. of introduced and improved techniques																	
2.2	Establishment of sample reception system from the field	• No. of samples received	DLHE, MAK-SVM, DVOs, Project															• Meetings	
2.3	Enhancement of the specialized diagnostic techniques	• Diseases newly become able to be diagnosed by the established techniques	NADDEC, MAK-SVM, Project office																
2.3.1	Identification of target diseases	• Study reports submitted to the JCC	NADDEC, MAK-SVM, Project office															• Japanese experts • Staff training • Supply of equipment	

No.	Project Activities	Target/Indicator	Responsible/ Supported by	Japanese Fiscal Year (JFY)													Input	Remark
				2010				2011				2012				2013		
				J	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ		
2.3.2	Establishment of molecular diagnosis for major infectious diseases	• No. of diseases that can be diagnosed by the	NADDEC, MAK-SVM, Project office														• Japanese experts • Staff training • Supply of	**Target diseases:**
2.3.3	Improvement of pathological and immuno-pathological diagnosis	• No. of samples processed & diagnosed	NADDEC, MAK-SVM, Project office														• Japanese experts • Staff training • Supply of	
2.3.4	Improvement of bacterial diagnosis	• Kinds of bacteria newly enabled to be isolated and identified	NADDEC, MAK-SVM, Project office														• Japanese experts • Staff training • Supply of equipment	**Target disease:**
2.3.5	Improvement of parasitological diagnosis	・Kind of parasite infection enabled to be diagnosed	NADDEC, MAK-SVM, Project office														・Japanese experts ・Staff training ・Supply of equipment	**Target disease:**
2.3.6	Establishment of virus isolation technique and serum neutralisation test	• No. of cell lines established • No. of reference virus strains stored	NADDEC, MAK-SVM, Project office														• Japanese experts • Staff training • Supply of equipment	**Target disease:**
2.3.7	Improvement of selological techniques	・No. of introduced and improved techniques	NADDEC, MAK-SVM, Project office														• Japanese experts • Staff training • Supply of equipment	
2.3.8	Improvement of clinical biochemistry and hematology techniques	• No. of biochemical tests established	MAK-SVM, Project office														• Japanese experts • Staff training • Supply of	**Target tests:**
2.3.9	Development of diagnostic tools	• No. of diagnostic tools developed	MAK-SVM, Project office														• Japanese experts • Staff training	**Target diseases:**
2.3.10	Preparation of diagnostic manuals	• No. of manuals prepared	NADDEC, MAK-SVM, Project office														• Japanese experts • Meetings	
2.4	**Production of diagnostic reagents**		NADDEC, Project office															
2.4.1	Study on the necessary reagents and its production technology	• Study reports submitted to the JCC	NADDEC, Project office														• Japanese experts • OIE standards	**Example**: FITC conjugate for
2.4.2	Production and supply of the diagnostic reagents for brucellosis	• Kinds and quantity of reagents produced and utilised	NADDEC, Project office														• Japanese experts • Staff training	
2.4.3	Production and supply of the stock solution for sample preparation	• Kinds and quantity of solutions produced and utilised	NADDEC, Project office															

No.	Project Activities	Target/Indicator	Responsible/ Supported by	Japanese Fiscal Year (JFY)													Input	Remark
				2010				2011				2012				2013		
				J	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ		
3	**Establishment of an investigation system for emergency diseases**																	
3.1	**Study on an appropriate system**	• The system approved by the JCC	DLHE, MAK-SVM, Project office														• Colllaborative study • Meetings	
3.2	**Formulation of an operational system (Joint Disease investigation team)**	• The actual system established	DLHE, MAK-SVM, Project office, DVOs														• Japanese experts	
3.3	**Operation of the system (Investigation team)**	• No. of disease outbreaks investigated	NADDEL, MAK-SVM, Project office, DVOs, NaLIRRI														• Staff training	
4	**Development of an information exchange system**																	
4.1	**Study on an appropriate system**	• The system approved by the JCC	DLHE, MAK-SVM, Project office														• Colllaborative study • Meetings	
4.2	**Introduce the information sharing system of diagnostic results.**	• The actual system developed	DLHE, MAK-SVM, Project office														• Japanese experts	
4.3	**Operation of the system**	• Quantity and quality of the information shared	NADDEC, MAK-SVM, Project office														• Staff training	
5	**Capacity development of the selected District Veterinary Offices**																	
5.1	**Selection of collaborating District Veterinary Offices(DVOs)**	• No. of DVOs selected and approved by the JCC	NADDEC, MAK-SVM, Project office														• Colllaborative study • Japanese experts	
5.2	**Staff training on primary diagnosis and sample preparation**																	
5.2.1	Improvement of diagnostic capability of the laboratories in the selected DVOs	• Kinds of diagnostic tests established at the selected DVOs	NADDEC, MAK-SVM, Project office, DVOs, NaLIRRI														• Japanese experts • Supply of equipment	
5.2.2	Staff training	• No. of training courses held • No. of the DVO staff trained	NADDEC, MAK-SVM, Project office, DVOs, NaLIRRI														• JOCV members • Japanese experts • MAK-SVM staff • NADDEC staff	
5.3	**Enhancement of the field activities**																	

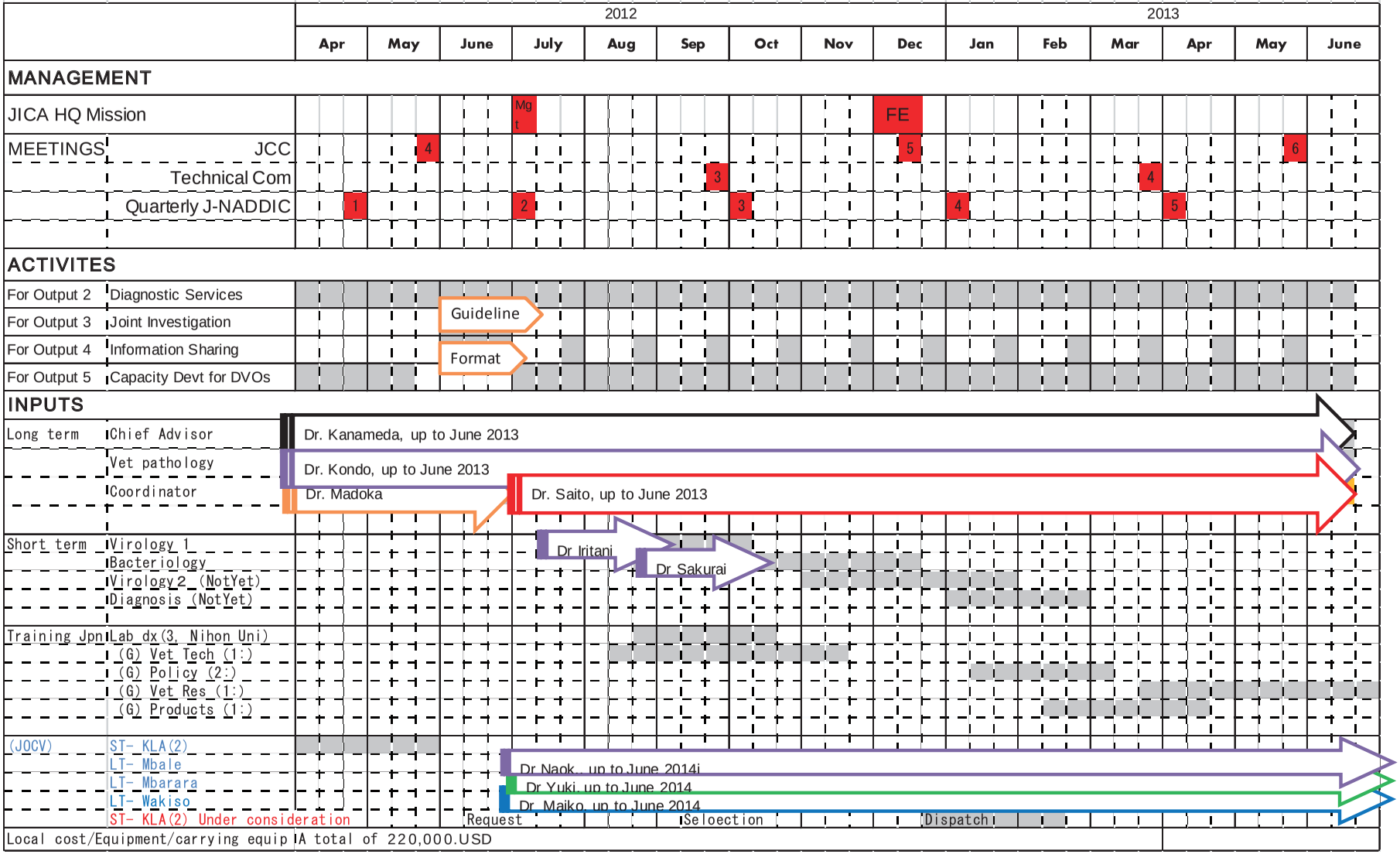
No.	Project Activities	Target/Indicator	Responsible/ Supported by	Japanese Fiscal Year (JFY)													Input	Remark
				2010				2011				2012				2013		
				J	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ		
5.3.1	Implementation of sample collection, preparation and diagnostic tests	• No. of samples collected and examined • No. of samples submitted to the J-NADDIC	Project office, DVOs, NaLIRRI						■		■		■				• JOCV members • MAK-SVM students	**Target diseases:**
5.3.2	Feeding back the diagnostic results to farmers	• No. of diagnostic results feeded back to farmers.	Project office, DVOs, NaLIRRI							■	■	■	■	■	■	■	• JOCV members • Japanese experts	
6	**Monitoring and evaluation of the Project activities**																	
6.1	**Holding Committee meetings**																	
6.1.1	Technical Committee (TC) Meeting	• No. of meetings held	Project Office, JICA,		■		■		■		■		■		■		• Participation of TC members	
6.1.2	Joint Coodinating Committee (JCC) Meeting	• No. of meetings held	Project Office, JICA,		■				■				■				• Participation of JCC members	
6.2	**Monitoring and evaluation**																	
6.2.1	Monitoring and evaluation of the activities	• No. of staff meetings held	Project office, DLHE, MAK-SVM		■	■	■	■	■	■	■	■	■	■	■	■		
6.2.2	Evaluation of the Project		MAAIF, MAK-SVM,												■		• Dispatch of mission team	

Abbreviations

DLHE: Department of Livestock Health & Entomology
MAK-SVM: MakerereUniversity, School of Veterinary Medicine
MAAIF: Ministry of Agriculture, Animal Industry and Fisheries
NaLIRRI: National Livestock Resources Research Institute, formerly known as LIRI: Livestock Health Research Institute
JICA: Japan International Cooperation Agency
HPAI: highly pathogenic avian influenza
ND: Newcastle disease
Entebbe Lab.: Animal Disease Diagnostic and Epidemiology Laboratory
CBPP: contagious bovine pleuropneumonia
ECF: east coast fever
NADDEC: National Animal Disease Diagnostic & Epidemiology Centre
DVO: District Veterinary Office
J-NADDIC: Joint National Animal Disease Diagnostic Centre
JOCV: Japan Overseas Cooperation Volunteers
ASF: African swine fever
FMD: foot and mouth disease
PPR: peste des petitis ruminants
CCPP: contagious caprine pleuropneumonia
LSD: lumpy skin disease

3.1.b. APO for the 3rd Year (up to the end of the Project)

(Presented at the 4th JCC, May 30 2012)



3(2), Achievement Level of Indicators (As of November, 2012)

Narrative Summary	Indicators	Achievements at the Final Evalution	Prospects for achievements
Overall Goal			
A functional joint national diagnostic system for animal disease control is established in order to improve the production and productivity of livestock.	Stakeholders and DVO staff will grade the diagnostic services provided by J-NADIC higher than 3 under 5-point rating system. All the selected DVOs by the Project are utilizing the J-NADIC for reference diagnosis.		
Project Purpose			
The national diagnostic capacity for animal diseases is improved by means of the close collaboration of NADDEC and MAK-SVM, leading to the platform for the joint institute.	A total of 25 animal diseases listed by the Project can be diagnosed by J-NADIC	A diagnostic manual for the 25 diseases has been prepared, and to date, 17 of the 25 diseases were diagnosed by J-NADIC. (The List to be attached)	Judging from the progress (>70% of achievement), prospects are quite promising.
Outputs			
<Output 1> Action plan for a functional diagnostic sytem on animal diseases through the close collaboration of NADDEC and MAK-FVM is drawn up.	1. Action plan is prepared and submitted to the JCC in first year for approval.	Action plan was submitted and approved by the 2nd JCC held on 28th April 2011, thus the Output 1 was accomplished.	Successfully accomplished
<Output 2> Comprehensive and specialized diagnostic services become available by lanching the Joint National Animal Disease Diagnostic Center.	2-1. No. of diagnostic samples received and analyzed by J-NADIC increase 15% by the 3rd year.	2-1: No. of samples has increased thereby accomplishing the requiment. (The Table to be attached)	2-1: Successfully accomplished
	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	2-2: Among the diagnostic techniques selected for CDL at MAK-COVAB, the followings were demonstrated and newly introduced to Ugandan staff by JICA experts: 1) Pathol/Histopathol techniques; 2) Serological techniques; 3) Bacteriological techniques such as isolation of Campylobacter, standard Salmonella, Bacillus anthrax (not wild strains); 4) Virological techniques such as Cell culture techniques, FAT for Rabies, Isolation of virus of African swine fever (wild strain), Newcasttle Disease, Sheep and goat pox (not wild strain); and 5) Molecular biological	2-2: Successfull accomplished
	2-3. Diagnostic tests for CBPP, CCPP, African swine fever, rabies and PPR can be conducted at NADDEC-MAAIF.	2-3: Dignosis at NADDEC continuously conducted. A new ELISA diagnosis was conducted for Rift Valley Fever (Oct 2011)	2-3: Fairly accomplished
	2-4.Diagnostic reagents for brucellosis are produced & utilized.	2-4: As shown in the Mid-term evaluation, NADDEC produces Brucellosis.	2-4: Fairy accomplished
	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	2-5: J-NADIC became capable of the preparation of over 4 lab reagents including bacteriology culture media, and supplied them to some of the DVOs based on their requests.	2-5: Sucessfully accomplished
<Output 3> An operational investigation system for emergency diseases is established.	3. Emergency disease outbreaks are investigated by joint investigation team of J-NADIC more than once during the project period.	A guideline was prepared for the joint survey in Apr 2012 In Oct and Dec 2012, two surveys were made with collaboration of 2 labs: 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 Luwere was detected by CDL and informed to NADDEC, then a CDL team sampled and submitted them to NADDEC. Besides, including preventive approaches, a team led by COVAB staff conducted a field campaign for mastitis which is one of the 25 diseases in the project list and, unlike other ailments, this requires different sort of attention and care, especially	Considering the progress, prospects are promising.
<Output 4> An information exchange system for sharing between NADDEC and MAK-FVM is developed.	4. All the Diagnostic data produced by J-NADIC are centralized, accumulated and shared by NADDEC-MAAIF and CDL of MAK-COVAB.	The Project has started implementing the current system since this is really feasible and practical for both the COVAB and NADDEC sides, in which all the diagnosis data gathered at COVAB are sent monthly to NADDEC, followed with some technical comments from NADDEC, when necessary.	Fairly promising.
<Output 5> Primary diagnostic and sample preparation techniques are improved at the selected District Veterinary Offices.	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 diagnostic and sample preparation technique 5-3. No. of samples submitted to the J-NADIC from the selected DVOs increase 15% by the 3rd year.	5-1: The number has increased. (The Table to be attached) 5-2: The training program has become a strong tool of the project to accomplish the task required in this Output, especially after the Mid-term mission. JICA experts and CDL sttaff s' visits to DVOs also contribute to capacity building. 5-3: The number has increased. (The Table to be attached)	Judging from the tendency of increase curve of samples, prospects are promising. Apart from accomplishing the duties mentioned in the Mid-term evaluation documents, namely, training workshop on mastitis control and milking hygiene, the project carried out another training course in Nov 2012. Thus, the task was successfully accomplished. Judging from the tendency of increase curve of samples, prospects are promising.

3.3.1. Activities and their Achievements

A: Progressing/On-going

B: a little behind schedule

C: far behind schedule

No.	Project Activities	Objective	Advance Degree	Achievement	Reason of delay	Further Plan
1	**Preparation of the action plan**					
1-1	Study on the appropriate diagnostic system in Uganda	• Study reports submitted to the JCC	A	Action Plan was completed and submitted to the 2nd JCC, April 2011.		
	Study on the current status of NADDEC and MAK-FVM	• Study reports submitted to the JCC	A	Described in the Action Plan		
	Identification of the duties to be conducted by the respective institutes	• Study reports submitted to the JCC	A	Described in the Action Plan		
	Formulation of the framework of the Joint National Animal Disease Diagnostic Laboratory (J-NADIC)	• Finalized framework	A	Framework of J-NADIC formulated and finalized in the Tech Com Meeting in Oct.2011		
	Formulation of sample flow from the field to the J-NADIC	• Finalized sample flow chart	A	Sample Flow proposed in the Tech Com Meeting in Oct 2011		Clear reception system
2	**Enhancement of the capacity of the J-NADIC**					
2.1	Establishment of the integrated diagnostic service functions in the J-NADIC	• The diagnostic service functions established	A	-Since April 2012, the results of diagnosis at CDL have been monthly sent to NADDEC. -Diagnostic results at CDL which require specific notice were immediately reported to principal vet officers of MAAIF.		Repeated practice of diagnosis

2.1.1	Identification of necessary diagnostic techniques at NADDEC and MAK-COVAB	・Necessary techniques listed	A	Major techniques were identified and described in the List of 25 Diseases and Diagnostic Techniques.		
2.1.2	Introduce and improve the identified diagnostic techniques	・No. of introduced and improved techniques	B	Fundamental techniques on Bacteriology and Virology were introduced to CDL by Japanese Experts. Training in Japan made the staff motivated for improving the current Ugandan situations.	Rather shorter period for practical works due to the long period of renovation of CDL. Very few staff experienced in these fields of science.	ELISA and PCR to be set up
2.2	Establishment of sample reception system from the field	• No. of samples received	B	Sample Reception Procedures are proposed and described in the CDL working procedures. Registration Book introduced in Apr 2012	Longer period for CDL renovation works No fixed staff for reception. Need more experience and repeated practice	Professional receptionist to be trained
2.3	Enhancement of the specialized diagnostic techniques	• Diseases newly become able to be diagnosed by the established techniques	B	Rabies (FAT) TB (histopathology) Rift Valley Fever (ELISA) Subclinical mastitis Newcastle disease African swine fever Entero-toxigenic E.coli infection in pigs Fowl typhoid Necrotic enteritis Swine streptococcosis Mareck's disease	Delayed onset of microbiological diagnosis	More cases to be expected by comprehensive diagnosis

2.3.1	Identification of target diseases	• Study reports submitted to the JCC	A	25 diseases were selected and described in the Action Plan		
2.3.2	Establishment of molecular diagnosis for major infectious diseases	• No. of diseases that can be diagnosed by the established test	C	Not yet routinized	Facilities installed in the 3rd year	Financially sustainable manners to be applied
2.3.3	Improvement of pathological and immuno-pathological diagnosis	• No. of samples processed & diagnosed	A	Gross- and histo-pathological exams are routinized and revealed several new findings in Uganda. Fluorescent antibody test for rabies is routinized.		New staff for the pathological diagnosis to be added
2.3.4	Improvement of bacterial diagnosis	• Kinds of bacteria newly enabled to be isolated and identified	B	*Salmonella typhimurium, S. heifa, S. enteritidis, S. gallinarum,* Enterotocigenic *E.coli, Manhemia hemolitica, Streptococcus disgalactiae* were newly isolated and identified. Causative pathogens of mastitis are identified	Relatively delayed input of expert	Repeated practice of comprehensive diagnosis
2.3.5	Improvement of parasitological diagnosis	・Kind of parasite infection enabled to be diagnosed	A	The former Vet Med Lab was well transformed into Haematology/Parasitology Unit of CDL. Blood parasites are routinely diagnosed.		
2.3.6	Establishment of virus isolation technique and serum neutralization test	• No. of cell lines established • No. of reference virus strains stored	B	Vero, HEK, MDCK, BHK, SK6, Neuro cell lines are subcultured. Primary cell culture (CEF, Macrophages) technique was established.. Virus strains of Newcastle disease (ND), African swine fever (ASF) were isolated and stored Virus neutralization test for ND was introduced. HAD tests for confirming ASF was introduced		Repeated practice required Virus isolation from sheep/goat diseases and cattle diseases

2.3.7	Improvement of serological techniques	·No. of introduced and improved techniques	B	HA/ HI and VNT tests for Newcastle disease were introduced. 3 serovar specific anti-Salmonella sera were prepared and used for diagnosing *S,heifa, entiritidis and typhimurium* Anti ND virus serum in Chicken was prepared	Prolonged renovation works of CDL Limited number of staff for bacteriology/virology Relatively delayed input of experts	Repeated practice Start of animal health consultation services More staff to be added for bacteriology/virology Anti-ASF serum to be prepared in rabbits
2.3.8	Improvement of clinical biochemistry and hematology techniques	• No. of biochemical tests established	B	-Automated analysis equipment of VetTest and VetScan were introduced	Delayed set-up due to prolonged renovation works of CDL Staff unfamiliar with the operation Poor publicity of the equipment	Promising income source of CDL Establish more collaboration with Small Anim Clinic of COVAB Establish a charging system
2.3.9	Development of diagnostic tools	• No. of diagnostic tools developed	B	Swine alveolar macrophages are cultured and used for HAD test for diagnosis of ASF.	Prolonged renovation works of CDL Limited number of staff for bacteriology/virology Relatively delayed input of experts	More tools to be developed according to the progress of Project

2.3.10	Preparation of diagnostic manuals	• No. of manuals prepared	A	Manual for cell culture Manual for immunological handling Diagnosis by PCR Postmortem (PM) procedures for Poultry, Goat. Charts for PM procedures for poultry. Diagnostic manual for 25 target diseases. General Bacteriological Exam Basic procedures for Anthrax diagnosis. Mastitis control & milking hygiene manual. Milking hygiene guide for Extension workers. Milking hygiene chart for dairy farmers.		More disease specific manuals to be prepared
2.4	Production of diagnostic reagents					
2.4.1	Study on the necessary reagents and its production technology	• Study reports submitted to the JCC	B	No reports submitted. Rabbits and chickens were raised and immunized for production of antisera according to the recommendation of short-term experts.	Delayed start of technical transfer due to prolonged renovation works of CDL	More reagents to be prepared according to the progress of Project
2.4.2	Production and supply of the diagnostic reagents for brucellosis	• Kinds and quantity of reagents produced and utilised	B	Rose Bengal Antigen reagent for brucellosis was self-prepared in Feb 2012. Besides Brucellosis, -Haemoagglutinin for HI test for ND was prepared. -Aniti-serum of ND for VNT was produced. -3 kinds of anti-Salmonella serovar sera were prepared and used for diagnosis.	Delayed start of technical transfer due to prolonged renovation works of CDL	Ant-ASF serum to be prepared
2.4.3	Production and supply of the stock solution for sample preparation	• Kinds and quantity of solutions produced and utilised	A	-10% buffered formalin is routinely prepared and supplied. -Giemsa stain solution is prepared and supplied. -Methylene blue solution for diagnosis of Anthrax.		

3	**Establishment of an investigation system for emergency diseases**					
3.1	Study on an appropriate system	• The system approved by the JCC	A	A guideline was drafted and discussed in the Quarterly meeting.		
3.2	Formulation of an operational system (Joint Disease investigation team)	• The actual system established	B	A team of CDL made several surveys following to requests from owners, DVOs and MAAIF.	Lab diagnosis at CDL was not available until the half point of the project term due to the prolonged renovation	Dedicated staff to be recruited for this specific activities Funding to be prepared for emergency activities
3.3	Operation of the system (Investigation team)	• No. of disease outbreaks investigated	B	-Oct 2012, MAAIF requested CDL to conduct a survey of suspected brucellosis in Kibale. -Dec 2012 CDL conducted a survey of possible PPR in Luwero and the samples submitted to NADDEC.	Communication between 2labs was not established in the first half of the project term	Repeated practices
4	**Development of an information exchange system**					
4.1	Study on an appropriate system	• The system approved by the JCC	B	The concept of the system has been developing. Results of CDL diagnosis ensure the current quality of MAAIF reports.	Diagnostic results were very few in the first half of the project due to prolonged renovation of CDL	
4.2	Introduce the information sharing system of diagnostic results.	• The actual system developed	A	A monthly summary data of diagnostic results of CDL is sent to NADDEC. Newsletters of Disease Information have been non-periodically issued since May 2012		Repeated practice Dedicated staff for generating Information required
4.3	Operation of the system	• Quantity and quality of the information shared	B	Topics of lab diagnosis were reported as Disease Information newsletters in the second half of the project. Quarterly Bulletin contributed to inform the project activities.	CDL activities were too low in the first half of the project	Repeated practice Dedicated staff for generating Information required
5	**Capacity development of the selected District Veterinary Offices**					
5.1	Selection of collaborating District Veterinary Offices(DVOs)	• No. of DVOs selected and approved by the JCC	A	5 districts (Mbale, Kiboga, Wakiso, Mpigi, Mbarara) were selected.		
5.2	Staff training on primary diagnosis and sample preparation					

5.2.1	Improvement of diagnostic capability of the laboratories in the selected DVOs	• Kinds of diagnostic tests established at the selected DVOs	B	-Mastitis/milk hygiene by Bact exam & CMT -Anthrax-Capsule staining -Rabies sample submission	Delays at CDL supporting system	Repeated practice Improve Vet education with more practicals
5.2.2	Staff training	• No. of training courses held • No. of the DVO staff trained	A	-OJT by experts/CDL staffs encourage DVOs - 3Training Workshops on Sampling and Diagnostic Techniques for Vet lab was held at Mbarara, Mbale and NADDEC in Nov-Dec 2010. - 3 Training Workshop on Improved Meat Inspection was held at Mbale, Kiboga and Mpigi in Aug 2011. - 6 courses of TOT on mastitis control & milking hygiene were held COBAV, Kiboga and Mbarara in Jan-Mar 2012 -Workshop on Diagnostic Tech for Vet Labs was held at COVAB in Nov 2012		Repeated application of the techniques
5.3	Enhancement of the field activities					
5.3.1	Implementation of sample collection, preparation and diagnostic tests	• No. of samples collected and examined • No. of samples submitted to the J-NADIC	A	***2010: 2874; 2011: 2698; and 2012: 3063 (see attached table)*** ***2010: 83; 2011: 81; and 2012: 132 (see attached table)***		Continued practice
5.3.2	Feeding back the diagnostic results to farmers	• No. of diagnostic results fed-back to farmers.	A	Results of mastitis tests were always reported back to farmers.		Continued practice
6	Monitoring and evaluation of the Project activities					
6.1	Holding Committee meetings					
6.1.1	Technical Committee (TC) Meeting	• No. of meetings held	A	-3 meetings (Oct 2011, Mar 2012, Oct 2012)	Organized in the middle of 2nd year	
6.1.2	Joint Coodinating Committee (JCC) Meeting	• No. of meetings held	A	-4 meetings (Aug 2010, Apr 2011, Dec 2011, May 2012)		

3.3.2. LIST OF ACTIVITIES (Based on the ACTIVITIES in PDM)

1. Preparation of the action plan (Formulation of the frame work)

1-1 Study on the appropriate diagnostic system in Uganda

- A series of discussion and drafting the diagnostic system

1-2 Study on the current status of NADDEC and MAK-COVAB

- A series of discussion and observations

1-3 Identification of the duties to be conducted by the respective institutes

- A series of discussion

1-4 Formulation of the framework of the Joint National Animal Disease Diagnostic Centre (J-NADIC) by the collaboration of NADDEC and MAK-COVAB

- A series of discussion and drafting the framework

1-5 Formulation of sample flow from the field to the J-NADIC

- A series of discussion and drafting the sample flow

2. Enhancement of the capacity of the J-NADIC

2-1 Establishment of the integrated and specialized diagnostic service functions in the J-NADIC

- A series of discussion and drafting the diagnostic tests for the 25 diseases
- Conceptualization of Comprehensive diagnostic system

2-2 Establishment of sample reception system from the field

- A series of discussion and drafting the flow chart
- Preparation of Registration Book at CDL

2-3 Enhancement of the specialized diagnostic techniques

- OJT by experts (Dr. Kondo, Dr. Morita, Dr. Itou, Dr. Kashiwazaki, Dr. Anri, Dr. Iritani, Dr. Shibuya, Dr. Sakurai).
- Pls Refer the Expert's Report on Activities, Observations and Recommendations

2-4 Production of diagnostic reagents

- Rose Bengal reagent for Bovine Brucellosis
- Rabbit anti-sera against *Salmonella* Heifa, Enteritidis, Typhimurium for agglutination test

- Chicken antisera against Newcastle disease for virus neutralization test
- Haemagglutinin for HA/ HI tests for Newcastle disease

3. Establishment of an investigation system for emergency diseases

3-1 Study on an appropriate system

- A series of discussion on the appropriate system

3-2 Establishment of an operational system

- Preparation of Guideline for Joint Surveys

3-3 Operation of the system

- Survey on Brucellosis in Kibale in Oct 2012
- Survey on PPR in Luwero in Dec 2012

4. Development of an information exchange system

4-1 Study on an appropriate system

- A series of discussion

4-2 Development of an integrated system

- Drafting the information flow

4-3 Operation of the system

- Introduction of Registration Book for CDL
- Reception of samples and reporting of examination results
- Summarization of monthly diagnostic results
- Submission of CDL results to NADDEC
- Analysis of data and submission of a national report to OIE
- Publishing newsletters of Quarterly Bulletin, Disease Infromation

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

5-1 Selection of collaborating DVOs

- A series of discussion and proposing a draft plan

5-2 Staff training on primary diagnosis and sample preparation

- OJT by CDL staffs and experts
- Organizing workshops and training courses

- Preparation of materials

5-3 Enhancement of the field activities

- Collection of samples of milk/blood and diagnostic tests
- Organizing seminars for farmers to feed back the results

3.3.3. TRAINING, SEMINARS, EXTENSIONS AND RELATED ACTIVITIES

Date	Title	Target Group/Participants	Contents/Remarks	* PDM
The 1st Year of the Project				
24-27 Oct/2011	Sampling and Diagnostic Techniques for Vet Labs at NADDEC	13 people Vet officers, Anim hus officers	Lectures and Practicals on necropsy and sampling and exams by staff of NADDEC/ COVAB and Experts	Op 5
14-17 Nov/2011	Sampling and Diagnostic Techniques for Vet Labs at Mbale District	16 people Vet officers, Anim hus officers, Lab tech	As above	Op 5
5-8 Dec/2011	Sampling and Diagnostic Techniques for Vet Labs at Mbarara District	19 people Vet officers, Anim hus officers, Lab tech	As above	Op 5
The 2nd Year of the Project				
12-13 Aug/2011	Training Workshop on Improved Meat Inspection at Mbale	15 people Vet officers, Anim hus officers, Lab tech	Dr Morita's hands on practice and lectures, as well as government policy	Op 5
19-20 Aug/2011	Training Workshop on Improved Meat Inspection at Kiboga	10 people Vet officers, Anim hus officers	Dr Morita's hands on practice and lectures, as well as government policy	Op 5
26-27 Aug/2011	Training Workshop on Improved Meat Inspection at Mpigi	10 people Vet officers, Anim hus officers	Dr Morita's hands on practice and lectures, as well as government policy	Op 5
20-30 Aug 2011	Cell culture and Virological Diagnosis	5 MSc students of COVAB	Dr.Itou organized technical instuructions	Op 2
30 Aug 2011	Seminar on a survey of food-borne diseases in Southeast Asian countries	15 students and staff	Dr Morita's lecture on his expertise	Gen Op 2
31 Aug 2011	Seminar on Rabies: Recent advances	10 students and staff	Dr Itou's lecture on his expertise	Gen Op 2
27 Oct 2011	Benefits of Lab Diagnosis	40 officers (During the 1st TCM)	Mr. Musoke of Mpigi DVO introduced how he benefitted from Lab Dx	Op 2 & 5
	Histopathology Slide Seminar	10 staff and students Pathology department	Dr. Kondo's initiative to routinely organize an	Op 2

			opportunity to share experiences of colleagues	
8 Nov-16 Dec 2011	Technical Guidance on Cell Culture and Passage for Preservation	16 COVAB Staff, MSc students	Dr. Kashiwazaki's instruction on diagnosis in J-NADIC	Op 2
17 Jan - 6 Feb 2012	Technicak Guidance on Virus Titration and Virus Nuetralization Test	2 COVAB Staff, MSc students	Dr. kashiwazki's instruction on diagnosis in J-NADIC	Op 2
3 Dec 2011	Dr. Kondo's Presentation at the Annual Meeting of Uganda Veterinary Association	150 veterinarians	Summary of 2.5 year's accumulated data on Pathological diagnosis on livestock in Uganda	Op 2 & 5
14 Dec/2011	Vet Education in Japan	25 staff of COVAB	Prof Sakai (NU) presented social background and recent changes in Vet Education in Japan	Gen
23-27 Jan/2011	TOT Mastitis Control and Milking Hygiene at COVAB (I)	15 people COVAB staff (Scientiists/Lab Tech), VOs, Volunteer students	5-days workshop on conceptualization and practical procedures on simplified bacteriological methods	Op 2 & 5
30 Jan-2 Feb/2012	TOT Mastitis Control and Milking Hygiene at Kiboga (I)	7 people COVAB staff, VOs, AHOs	4-days workshop on practical procedures on examining sub-clinical mastitis in the area	Op 2 & 5
2 Feb/ 2012	Seminar for Farmers in Kiboga	10 farmers	TOT students presented a feed-back of the results during the course	Op 5
6-9 Feb 2012	TOT Mastitis Control and Milking Hygiene at Mbarara (I)	8 people COVAB staff, VOs, AHOs	4-days workshop on practical procedures on examining sub-clinical mastitis in the area	Op 2 & 5
9 Feb 2012	Seminar for Farmers in Mbarara	10 farmers and Executive members of Dairy Cooperatives	TOT students presented a feed-back of the results during the course	Op 5
20-23 Feb 2012	TOT Mastitis Control and Milking Hygiene at COVAB (II)	14 people DDA, HPI, VOs, AHO, COVAB staff, Volunteer students	4-days workshop on conceptualization and practical procedures on simplified bacterial exams	Op 2 & 5
23 Feb 2012	Seminar for Farmers in Wakiso	20 farmers	TOT students presented a feed-back of the	Op 5

			results during the course	
27 Feb - 1 Mar 2012	TOT Mastitis Control and Milking Hygiene at Kiboga (II)	7 people COVAB staff, VOs, AHOs	The second session of the previous one for the participants to be familiarized	Op 2 & 5
1 Mar 2012	Seminar for Farmers in Kapeke S/C, Kiboga	30 farmers	TOT students presented a feed-back of the results during the course	Op 5
5-8 Mar 2012	TOT Mastitis Control and Milking Hygiene at Mbarara (II)	8 people COVAB staff, VOs, AHOs	The second session of the previous one for the participants to be familiarized	Op 2 & 5
8 Mar 2012	Seminar for Farmers in Mbarara (Farmers' Union)	20 farmers and local news reporters	TOT students presented a feed-back of the results during the course	Op 5
14 Mar 2012	Final Evaluation WS for the Activities of Dr. Anri on TOT	35 people Proj Dir, Proj Mgr, COVAB staff, MAAIF, VOs, DDA, HPI	Review of the activities of TOT and discuss the way forward	Op 2 & 5
Mar 2012	Dr. Shibuya's seminar on Molercular pathology	10 COVAB staff, MSc students	Dr Shibuya reviews on recent advances in the field	Op 2
15 Mar 2012	Dr Shibuya's Seminar on the Case report on the Cases diagnosed in COVAB	10 COVAB staff, MSc students	Dr Shibuya reviews and comments on the cases recently diagnosed in COVAB	Op 2
28 Mar/2012	Record Keeping System at Mbarara DVO for 20 years	40 people In TCM 2	Dr. WM of MRA-DVO presented his 20 years' recording at MRA	Op 3 & 5
28 Mar/2012	What I have learned from Group Training Course on Vet Tech for Farm Animals	40 people In TCM 2	Dr. Tingiira presented contents of his Training in Japan	Op 5
1 Jun 2012	Seminar for Farmers in Mpigi (DVO)	20 people farmers, VOs and AHOs of Mpigi	Co-organized by DVO-Mpigi and Project. Feed-back of results and sensitization on milking hygiene	Op 5
The 3rd Year of the Project				
19 July /2012	1st Review Meeting for Farmers' Guide on Mastitis Control	DDA, HPI, UCCCU, Wakiso VO, COVAB staff	Presentation on the Position of COVAB and Draft Farmers' Guide with Discussion	Op 5
2 Aug	2nd Review Meeting for		Presentation of	Op 5

2012	Farmers' Guide on Mastitis Control	DDA, HPI, UCCCU, Wakiso VO, COVAB staff	Improved Version of Farmers' Guide and Discussion	
23 Aug 2012	3rd Review Meeting for Farmers' Guide on mastitis Control	DDA, HPI, UCCCU, Wakiso VO, COVAB staff, MAAIF	Presentation & discussion of Improved Version of Farmers' Guide	Op 5
25 Sep 2012	Meeting of Executive Directors in Agric Extension for Sharing the Farmers' Guide	NAADS, DDA, UCCCU, HPI, COVAB	Major Organizations agreed to publish the Farmers' Guide	Op 5 Gen
3 Oct 2012	Preparation of 3 antisera against Salmonella serovars	50 people In the TCM3	Mr. Dickson1 presented the tech transfer instructed by Dr Iritani	Op 2
3 Oct 2012	Confirmatory diagnosis of African Swine Fever in CDL	50 people In the TCM 3	Dr. Afayoa presented his innovative diagnosis of ASF in Uganda, which was instructed by Dr. Iritani	Op 2
3 Oct 2012	Training in Japan	50 people In the TCM 3	Dr. Bigirwa presented, on behalf of the group who participated in 2-months Training in Japan	Gen Op 2
28 Nov 2012	Recent Activities of Kiboga DVO Lab	30 In WS on Diag.Tech for Vet Labs	Dr. Tingiira's efforts to operate local lab to tackle the improvement of milk quality	Op 5
28 Nov 2012	Current Movement of Mastitis Control: Post TOT Activities	30 In WS on Diag.Tech for Vet Labs	Dr. Joanne's introduction to the collaborated works on extension of proper animal health knowledge and skills	Op 5
30 Nov 2012	Case Report of Swine Sterptococcosis	30 In WS on Diag.Tech for Vet Labs	Dr. Mutebi's report on the swine disease which was originally thought to be Swine Erysipelas	Op 2
30 Nov 2012	Case Report of Avian osteoblastic osteosarcoma	30 In WS on Diag.Tech for Vet Labs	Dr. Naoki (JOCV)'s report on a rare case of chicken disease	Op 2
30 Nov 2012	Recent Activities of Wakiso DVO Lab	30 In WS on Diag.Tech	Dr. Maiko (JOCV)'s briefing on how	Op 5

		for Vet Labs	laboratory activities are going in Wakiso	
30 Nov 2012	Training in Japan	30 In WS on Diag.Tech for Vet Labs	Dr. Mugimba`s report and proposal for changing the current veterinary education at COVAB	Gen
30 Nov 2012	Case Report of Entero-tocxigenic E.coli infection in piglets	30 In WS on Diag.Tech for Vet Labs	Dr. Eneku's presentation on a result of comprehensive diagnosis of J-NADIC	Op 2 & 5
6 Dec 2012	Report of Subclinical Mastitis and Major Factors in Kiboga District: A student's application of the techniques learnt from Dr Anri during TOT	150 vets In Annual Meeting of Uganda Vet Assoc	A volunteer student, with collaboration of Dr. Tingiira, carried out a survey in Kiboga with feeding back the results to farmers in Aug 2012	Op 2 & 5
12 Dec 2012	Action Plan Presentation Seminar	8 COVAB staff	Dr. Benard Agwai's plan for taking an action after his training in Japan	Gen

Gen: general; Op 2: Output 2; Op 5: Output 5

3.4. SELF-EVALUATION

<Relevance>

Relevance to the policy of Government of Uganda (GOU):

As mentioned in the report prepared in 2010 by the fact-finding mission for setting up this Animal Disease Control (ADC) project, GOU has long been putting emphasis on Livestock farming, paying special attention to animal disease control[1]. Furthermore, GOU has recently described the importance of livestock again in its newly revised national plan[2], as an income generating tool, especially in rural areas. Therefore, relevance of the scope of this project is highly secured. Also, important is the fact that MAAIF and MAK-COVAB signed on the Memorandum of Understandings (MOU) in September 2009 to strengthen the collaboration between the two institutions, giving every reason for the ADC project design in which both institutions should work jointly and efficiently.

Consistency with the ODA policies of the Japanese Government:

Poverty reduction and minimization of the poverty gap among the different strata of the society in the world have been emphasized as priority issues of Japan's ODA policy. For Uganda, as the country assistance policy, agricultural and rural development is considered as one of the vital cooperation strategies for poverty reduction. Likewise, 1) Income generating activities in the rural areas, and 2) Infrastructure improvement for economic growth, both of which consist of the project objectives, are two of four aims of the JICA Uganda charter. Thus, the project is consistent with the Japan's aid policies.

Relevance of the project design:

Although there are some points which should be considered in achieving the goal of the project, such as a lack of infrastructure in general, surrounding socio-economic issues of livestock faming, etc., on the whole, the project design should be regarded as justifiable because both domestic and cross-border epidemics are so rampant, thus, causing damage to the livestock industry, and, by implication, hindering every opportunity for economic growth in trade. Also, noteworthy is that Japan's experiences and technologies in animal health service network which is crucial to disease control,

[1] Plan for modernization of agriculture: Eradicating poverty. (2000). Ministry of agriculture, animal industry and fisheries, Republic of Uganda.

[2] Agriculture for food and income security: Agriculture sector development strategy and investment plan: 2010/11 – 2014/15. Ministry of agriculture, animal industry and fisheries, Republic of Uganda (2010).

are highly recognized worldwide, thereby making the project more relevant.

<Effectiveness>

Achievement of Project Purpose:

As shown in the documents 3.(2), to date, the project staff has developed practical diagnostic methods for 18 diseases out of 25 selected ones (>70%), and fulfilled 7 indicators out of 11 for the Project *Outputs*. Judging from these results in consideration of the situation of the beginning of the project and the time span the staff members could take for the diagnostic trial[3], the progress is by definition commendable. Therefore, in terms of achievement of the project purpose, the project activities were quite effective.

Contribution of project activities to project purpose achievement:

Concerning the contributions in terms of activities at the laboratory level, namely, Project *Outputs* 2, 3, and 4, it would be safe to say that almost all the achievements were done by the direct contribution from the project. This is because, before the project launched, there had been a few, if any, really systematic diagnostic mechanisms available in Uganda, at least at the CDL. Concerning the ones at the field level, however, it is quite difficult to draw the line because the amount of time Japanese experts spent with field staff was quite limited and the environments of field staff are well diversified. Thus, although the project has successfully increased the sample numbers both diagnosed at the DVO offices and sent to CDL as shown in the document 3.(2), it is obviously not appropriate to give the project all the credit for these changes. Nevertheless, nor would it be true to say no contribution was made by the project since the project provided, on top of technical assistance, with machinery and equipment for the diagnosis.

<Efficiency>

Japanese experts:

As shown above (See the document 1.(1)), although there was a delay and some change, Japanese experts both long-term and short-term were dispatched almost as planned. And as mentioned in the document 3.(2) and reports by the short-term experts, they have accomplished their missions successfully.

Timing of the inputs, especially machinery and equipment:

[3] As stated in the article of *Self-Evaluation* of the Mid-term Evaluation report, there was a considerable delay in renovation of the CDL and dispatches of experts.

Although the project faced considerable delays in procurement process due to a variety of reasons, some of which were obviously beyond control, to date almost all the purchased items are now properly installed, functional and in use for the project activity, thereby justifying the efficiency. Details are given in the document 1.(4).

Inputs from Ugandan side:

Regarding inputs from Ugandan side, as stated in R/D, provision of the office space with some office equipment (shelves, desks, etc.), the laboratory space with some equipment (distilled water systems, etc), water and electricity facility has contributed to the smooth implementation of the launch of the project activities. Thus, Japanese side makes up for things which are supposedly to be provided by Ugandan side but could not be done so due to, mainly, financial constrains.

<Impact>

Impact on the overall goal level:

Assessment of the project's impact on the overall goal should be done in the light of its very aim which is "establishment of a functional joint national diagnostic system". Here, since this aspect will be evaluated in due course by the various project activities, obviously it would be still early to look into it, and in fact there has been no such tangible impact either. Nevertheless, it is noteworthy to mention that the diagnostic technique of CDL has improved tangibly as a direct consequence of empowerment of individuals trained by Japanese experts, which should be the nucleus of the future diagnostic system.

Positive impacts:

Among other things, two of the most ideal impacts which could be a direct result of the Project would be, firstly, an increase of requests, bringing samples not only from model DVOs but also from other sources such as local vets, para-vets and even farmers, and the other the case in which participants, mainly farmers, in the project-organized field training course for mastitis prevention, spoke clearly the appreciation of the event as long-awaited activities for the rural communities from universities, thereby making Dr. Kabasa, project manager, the principal of the MAK-COVAB, contemplate that this could be one of the ideal outreach extension methods promoted by university in the future.

Negative impacts:

To date, fortunately, no negative impact has been informed. Nevertheless, the project

staff has long been talking about the collection of fee for the diagnosis at the CDL since, both Japanese and Ugandan staff thinks, the free of charge practice, like “free lunch”, may spoil the users, thereby deteriorating the joint diagnostic system and eventually creating negative impacts at all.

<Sustainability>

Policy and Institutional sustainability:

As mentioned before, GOU has recently proclaimed the new strategy. Thus, with this upward trend in livestock development policy, it appears that sustainability from this is aspect is assured.

Organizational and financial sustainability:

Even though the policy and institutional sustainability is being assured as shown before, this does not guarantee necessarily organizational and financial sustainability. In fact, even though the technique and knowledge at the individual level has improved both at the CDL and DVOs as shown before, organizational and financial stability is quite fragile both at central and regional levels. Nevertheless, according to the some reports[4], the same is true of the cases in any other public institutions in Uganda or even worse in other African countries, the project should consider this situation as a premise.

Technical sustainability:

Closely related to the financial sustainability, technical sustainability should be considered carefully, especially when the project approaches the end, or the fade-out stage because, in the majority of the cases, modern techniques go with a lot of tools. To date the project has been providing with machinery and equipment for the diagnostic activities including some prohibitive items and making up for almost all the maintenance, laboratory consumables and running costs which supposedly Ugandan side should care of. Thus, in terms of finance, it may not be sustainable. The main reason to do so was that the Japanese side thought, to start with, timely demonstration was essential for the technology transfer. Nevertheless, as mentioned just before, getting closer to the final stage of the project, the project should shift its modality for the technology transfer practice to both technically and financially sustainable one for Uganda side, probably, by reducing the costs in consumables, trying to buy more and more locally available and accessible items, managing with what they already have, and trying to introduce techniques which are really practical and financially affordable.

[4] Calderisi, R. (2007) and Collier, P. (2007).

3.(5), List of Materials Prepared by the Project

#	Items	Purposes, Areas, Target Groups, etc.	Links with PDM	Prepared by:
1	Quarterly Bulletin of J-NADDIC (Newsletter)	Notification about project activities both technical and social.	General	Dr. Kanameda
2	Project Brief	PR in general	General	Dr. Kanameda
3	Project Calendar 2012	PR in general	General	Dr. Kanameda
4	Manual for Mastitis Control and Milking Hygiene in Developing Countries	Introduction of the concept of mastitis control and milking hygiene for the control of subclinical mastitis	Output 2 Output 5	Dr. Anri
5	Manual for cell culture	Introductory techniques for virological examination	Output 2	Dr. Kashiwazaki
6	Manual for immunological handling	Practical methods of immunological examinations	Output 2	Dr. Kashiwazaki
7	Diagnostic reagent for Brucellosis	To facilitate diagnosis in the field and economize on the governmental budget which otherwise would be spent a lot to import it.	Output 2	Dr. Kashiwazaki
8	Diagnosis by PCR	Fundamental techniques for molecular biological techniques	Output 2	Dr. Kashiwazaki
9	Protocol for Cell Culture	Important steps for cell culture	Output 2	Dr Iritani
10	Reference manual for bacteriological Exam	Fundamental bacteriological exam for identification of bacteria	Output 2	Dr Okubo Tora (JV)
11	Preparation of Chicken Embryo Fibroblasts (CEF)	Practical guide for identification of virological diseases in poultry	Output 2	Dr Iritani
12	Macrophage Culture	Procedures for isolating swine viruses	Output 2	Dr Iritani
13	HA and HI tests for Newcastle disease	Procedures for determining antibody titers in chicken against Newcastle disease	Output 2	Dr Iritani

14	Guideline for Joint Surveys	Procedures for implementing disease surveys under the framework of J-NADDIC	Output 3	Dr Mutebi Francis
15	Guidebook of Milking hygiene	Prepared mainly with a view to distributing among farmers as well as livestock officers to help them understand how to prevent infectious mastitis	Output 5	Dr. Joanne, Dr Gabriel
16	Chart of Milking hygiene for farmers	Basically aimed at the same group, but especially for the dairy farmers.	Output 5	Dr. Joanne, Dr Gabriel
17	Diagnostic Manual for the targeted 25 diseases of the Project	To facilitate quick diagnosis of 25 diseases selected by the project.	Output 2	Dr. Kanameda
18	Necropsy manual poster (Poultry)	Prepared mainly with a view to distributing among district officers to help them make diagnosis when they do necropsy in the field.	Output 5	Dr. Kondo
19	Work apron with JICA logo for postmortem examinations	Water proof apron for protecting workers during dissecting animals.	general	Dr Kurata, Dr Saito
20	Handout for Training workshop for District Staff for sampling and diagnostic techniques for veterinary laboratories	Prepared mainly with a view to helping laboratory technicians when make diagnosis by checking samples suspicious of Anthrax.	Output 3, and 5	Dr. Sakurai, Dr. Kondo Dr. Kanameda
21	Project uniform (Polo shirts)	PR	General	Dr. Saito
22	Procedures for isolation and identification of bacteria	Laboratory manual of standard methods of identification of bacteria	Output 2	Dr Sakurai
22	Procedures for diagnostic techniques for anthrax	Practical methods for identification of anthrax	Output 2	Dr Sakurai
23	Diagnostic Manual for 25 target diseases under the Project	Simple charts and descriptions for diagnosing the 25 diseases which are targeted in the project	Output 2	Dr. Kanameda
24	J-NADDIC Disease Information (newsletters)	Topic information (Case Report)of the diseases diagnosed in the CDL	General	Dr. Kondo, Dr. Kanameda, Dr. Sakurai

3.6.1. List of the 25 Target Diseases and Progress of Technical Developmento of Diagnostic Tests at J-NADIC (As of Nov. 2012)

		Pathology	Bacteriology	Virology	Hema/Chem/Para	Molecular	Diagnosis done in Project
State Control Diseases							
1	CBPP/CCPP		● CFT ○ Bovi test ● ELISA,			● PCR	v
2	Rabies	○ HP		○ FA			v
3	Trypanosomiasis				○ smear ○ HCT	● PCR	v
4	Tuberculosis	○ HP			○ skin test	△ PCR	v
5	Sheep (goat) pox	○ HP					
6	African swine fever	○ HP		○ isolation* ○ HAD*		△ PCR	v
7	Swine erysipelas	○ HP	△ isolation				
8	Blackquarter	○ HP	△ isolation ● stain, ● FA				
9	Brucellosis		△ isolation ○ RBT ○ ELISA			● PCR	v
10	Trichomoniasis				○ microscopic		
11	Campylobacteriosis		○ isolation ● FA			○ PCR	
12	Paratuberculosis	○ HP					
13	All tick-borne diseases	○ HP			○ smear		v
14	Lumpy Skin Disease			● VNT		● RT-PCR	
15	Newcastle disease (ND)	○ HP		○ isolation* ○ HI △ VNT*			v
16	Gumboro (IBD)	○ HP		● isolation ● ELISA			v
17	Fowl pox	○ HP					v
Other Diseases							
18	PPR			isolation ● VNT		○ PCR*	
19	Mastitis		○ isolation ○ Suceptiblity				v
20	Salmonellosis		○ isolation ○ Agg*				v
21	Colibacillosis	○ HP*	○ isolation				v
22	Anthrax		○ isolation ○ stain*				
23	Nutrition deficiency	○ HP			△ Chem		v
24	Parasitic diseases				○ fecal		v
Emerging Diseases							
25	RVF	△ HP		● VNT ○ ELISA			v

Tests were specified at the time of Mid-term Review, Dec 2011

( )*: Test newly added to the matrix after August 2012

NOTE: One count of whitecircle(○) is considered that the disease can be diagnosed

LEGEND:
- ● Not yet capable
- ○ Capable

3.6.2. Good Practice under J-NADIC Platform

a. Confirmatory Diagnosis of the Diseases

Application of comprehensive diagnosis has made possible to confirm the diseases in Uganda, which is indispensable to take any actions for control measures. The diseases confirmed were African swine fever, Newcastle disease, salmonellosis, colibacilosis, and anthrax, which might have been diagnosed as other diseases.

b. Quick Actions for Emergency Diseases

Increased activity of CDL has made it possible to carry out surveys on animal diseases which require urgent diagnosis and control. Recently, there were two cases of such occasion. In early Oct 2012, an officer of NADDEC informed the Project of bovine abortion case in a Kibale farm, which is under the NAGRIC-MAAIF. Two staff from the CDL was immediately sent to the farm to check the case and collected samples from the animals in the pen. Though the animals were tested negative to brucellosis, the farm got a great benefit of the quick response which was very rare in such a remote area.

Another occasion took place in early Dec 2012 when a CDL team carried out post mortem examination on a sheep which was transported from a Luwero farm. The animal showed pathognomonic features of PPR. On the following morning, the team got further information of another 4 moribund sheep in the same herd. CDL immediately called on NADDEC to join the survey. Though NADDEC was not able to join the team, the CDL submit the report and blood samples from the herd. This is a good example of emerging diseases which were made possible under the J-NADIC platform. NADDEC reports that the samples were tested negative to PPR on serology and wait for molecular diagnosis. Such collaboration and detailed examination will clarify the situation of state controlled diseases.

c. Development of Supporting System for DVOs

Under the current decentralization policy, many DVOs have been suffering from both poor financial and technical support. Technical support is particularly fragmented, which makes DVOs structure much lamed for disease control. In the past 3 years J-NADIC organized several opportunities of training of staff for the selected DVOs both locally and centrally (See 1.5. Training courses). These capacity building activities by J-NADIC will contribute largely to the commodity-wide Development Strategy and Investment Plan of MAAIF.

d. Collaboration with other Organizations in Agricultural Extension

Concept of mastitis control, coupled with simplified bacteriological methods, was introduced to Uganda. TOT on mastitis control and milking hygiene had an eye-opening effect among the veterinary staffs and dairy farmers. The project has recognized that there have been no institutes to create technical information on the issue. The trainers who were trained in the TOT initiated to draft farmer-friendly posters and guidebook on hygienic milking procedures to prevent mastitis. The related stakeholder organizations were invited to a series of meeting of the editing. The executive directors of NAADS, Dairy Development Authority (DDA), Uganda Crane Crematory Cooperative Union (UCCCU), Heifer Project International (HPI) gathered to discuss the effectiveness such standardized guidebook and poster and agreed to utilize them under their finances. As shown in this example, J-NADIC is expected to play complementary roles of other organizations.

3. 7. Intervention of the Project regarding the recommendations by the 2 mission teams

3. 7 .1. Improvement of the communication among NADDEC, COVAB and the expert team

Slow progress at the initial phase of the Project may have irritated the stakeholders. This was due largely to the very innovative nature of the J-NADIC organization and the slow development at the COVAB side. Thereby, the communication among the people concerned in the project was not progressed. The situation changed after the official inauguration of CDL in Dec 2011.

Staff who was supposed to work in CDL were the members of Project Operation Committee, who were mainly composed of lab technicians. However, the staff should understand concept of comprehensive diagnostic system. Working staff has been established gradually according to the progress of activities, including dispatch of short-term experts and their technical guidance.

Bi-weekly meeting of CDL staff and JICA experts were initiated in March 2012. In the 2nd meeting of Technical Committee, staff in-charge of project components were assigned and a quarterly meeting of J-NADIC was proposed and the first meeting was organized on 25th Apr 2012 to discuss the collaborated activities of the 2 labs, with some following working-group meetings. From the month of April 2012, the CDL initiated to record all samples received in the Registration Book to centralize all the diagnostic works of COVAB. A summary data of diagnosis of CDL was sent to the NADDEC since then. A series of discussion were made to initiate a joint-survey for the emergency diseases. A guideline was draft.

Through these discussions as well as the progress of diagnostic activities in the CDL, a better atmosphere has been generated and the communication among the related staff of the 2 lab and experts has been much improved.

3. 7 .2. Formation of the Detailed Plan of Project Activities

An introduction of a comprehensive diagnosis to CDL requires human resources and facilities. During the JCC4 (30th May, 2012), APO for the 3rd year of the project was presented by Dr. Kanameda, which was mostly Japanese inputs of experts and volunteers. Since the major activities of the Project were to transfer diagnostic techniques from experts, the recruitment of experts was the first priority. There was a difficulty to accord the dispatch of the experts and the availability of the counterpart staff because the latter has priority works of teaching and research. The concept of

comprehensive diagnosis has been establishing little by little. However, it is still premature to forecast detailed activities.

3. 7 .3. Assignment of Additional Personnel

In the CDL there are 4 major units, namely, Pathology, Virology, Bacteriology, and Haematology/parasitology, all of which should have 2 veterinary scientists assigned. Candidates for CDL staff were identified and sent for 2-months training course in Japan for laboratory diagnosis. There has been 9 COVAB staff who participated in the course in the past 3 fiscal years by Oct 2012. Some of them are actively involved in the diagnostic activities, and the others in the project related management activities. Another staff participated in the practical vet technology course for 3 months. One candidate is now in a 10-month advanced research course until Aug 2013. All these participants in Japanese training courses must be encouraged to contribute for the development of CDL.

Staff in-charge of each project activities is nominated during the 2nd TCM and considered to be assigned. In the CDL, the 4 participants in Japanese training are positively playing their roles.

The Project proposed the COVAB to recruit some full-time laboratory technicians for the effective management of CDL. Since Aug 2012, the Project has recruited 2 lab techs temporarily until the COVAB prepares the budgets.

3. 7. 4. Data Gathering and Recording

Registration Book for examination samples was introduced to regularly gather and record the data at the CDL and 5 DVOs. A monthly summary data of CDL diagnosis has been regularly submitted to NADDEC where the data is compiled with clinical data from the DVOs all over the country.

On the other hand, this is not an easy task for some DVOs, because of poor customary practice of recording information. The Project has been considering a format of summary for DVOs.

So far there has been no recommended domestic delivery system for sample in Uganda. Packaging information of the samples are described by the project and distributed to the DVOs.

3. 7. 5. Enhancement of the J-NADIC Initiatives

According to the promotion of activities at CDL, the concept of J-NADIC among the staffs has been gradually understood and extended to the stakeholders of the Project. This is the phenomenon which was not observed until the halfway point of the project.

Information of laboratory diagnostic data has been shared among the CDL and NADDEC since Apr 2012. The data are to be aggregated, analyzed and reported to the OIE as a national data twice a year. However, a creation of useful data from such results requires a specific care and, particularly, a dedicated specialist. The project has so far prepared several issues of Disease Information newsletter, featuring new findings from laboratory diagnosis, since May 2012 and distributed to related personnel and DVOs.

Since a communication has become available, sharing information of diagnostic results and consultations on surveys are now more frequent. Hopefully, counterpart fund of MAAIF will be used for this sort of activities.

3. 7. 6. Improvement in the common understanding of J-NADIC

As mentioned earlier, the concept of J-NADIC platform has been gradually spread according to the progress of activities at CDL. The stakeholders are now in the agreement that the works of CDL are the part of NADDEC. However, the budget allocation has not been realized in the COVAB. The counterpart fund of MAAIF was mainly used for the backstop surveys. It is also recommended to utilize the fund for strengthening the activities directly involved in Outputs 2, 3, 4 and 5.

A workshop of conceptualization of J-NADIC, originally planned in the COVAB in July 2012, was aborted due to the non-availability of related staff. This sort of the meeting will be indispensable for further establishment of COVAB's community services.

A draft charging system for diagnosis has been described at COVAB and become partially effective. However, the discussion of charging for samples for DVOs is not matured. This is a very sensitive issue and the attention must be paid fully.

3. 7. 7. Establishment of Closer Relationship between J-NADIC and DVOs

Situations of DVOs have been deteriorated under the current decentralization policy. It is urgent to establish the relationship between J-NADIC and the selected DVOs. Particularly, CDL has to establish new supporting system for the DVOs. Since the recommendation of an additional indicator

as 5-2 of the Output 5 (Capacity of staff of the selected DVOs), the Project implemented a series of TOT on mastitis, one of the diseases listed in one of the 25 target disease of the Project, in Jan-Mar 2012. The disease should be mainly tackled in the production sites. This is one of the model activities that COVAB should play the major roles in extension.

In this TOT, the expert instructed to organize seminars for farmers at Wakiso, Kiboga and Mbarara, in which the results of farms were well translated and consultation was made for the improvements of poor milk quality of farmers. This has encouraged the farmers to convince of the use of DVOs for themselves.

None of the DVO staffs have applied bacteriological examinations in their facilities due to plural reasons. However, Kiboga DVO lab is now capable of doing simple bacteriological exam and the test is now applied for monitoring subclinical mastitis at farms and hygienic conditions at milk collection centers in the area.

Staff in-charge of training at CDL has made a quick need survey for the selected DVOs and proposed a workshop on diagnostic techniques for vet labs, focusing on rabies and anthrax, which was implemented on 28-30 Nov 2012, with the participants of 25 staffs from 5 DVOs.
The questionnaire surveys at the end of these TOT and workshop revealed that these training organizations were very timely and expected to hold frequently. Thereby, the relationship between J-NADIC and DVOs are getting much closer.

3. 7. 8. Other Approaches for the Promotion of Project

- **Publicity of the Project**

Not many Ugandan staffs were familiar with the manners of technical cooperation of JICA, in which key actors are Ugandans. Therefore, it took some time for them to get involved in the activities of Project. Newsletters of Quarterly Bulletin was prepared since the second year of the project and circulated among the stakeholders.

- **Clarification of the role of CDL in the structure of COVAB**

J-NADIC is a central laboratory with little publicity among stakeholders. It is quite important that a central lab offers standardized services in diagnosis and referral. The role of diagnostic lab is to

support field activities of vets and officers. The supporting system has to be established as early as possible, even though the staffing of CDL is not sufficient. For the staffs of the selected DVOs, the project has organized (i) Sampling and primary diagnosis for vet laboratories (3 times), (ii) Training Workshop on improved meat inspection (3 times), (iii) TOT on mastitis control and milking hygiene (6 times), and (iv) WS on diagnostic techniques for vet labs. These hands-on training courses have contributed a lot to building up the reputation of the central laboratory.

COVAB has been re-structured for a new institution in order to contribute the development of community. However, the shift is slow and the changes are not visualized enough. Some training courses offered by the project were distinctively useful and the participants suggested the COVAB should follow such training. Based on the experiences of TOT on mastitis control and milking hygiene, COVAB staff started to draft the guidebook and poster on proper milking procedures for farmers and extension workers. The major stakeholders relating dairy extension were invited to edit the draft and the strategy of distribution was well discussed. Taking the leadership in technical aspects in livestock sector is one of the most expected areas.

5

3.8. PROPOSAL OF EXTENSION OF THE PROJECT TERM

3.8.1. Outlines of Activities to be Implemented during the Extension Period

Even though the cooperation period was rather short and the inputs from Japanese side was rather small, technical transfer of comprehensive diagnosis has been well progressing particularly after the halfway point and the indicators of the PDM have been well satisfied before the end of the project (June 2013). However, the management of the J-NADDIC has not been well established because of its' very innovative nature. It is very obvious that the current CDL and the consequent J-NADIC will be readily collapsed and devastated if any JICA supports will not continue after the end of the project, which means the Overall Goal will not be attained.

J-NADDIC requires the support from development partners continuously in terms of capacity building of the management and sustainability. This means that Ugandan side shall fully understand the benefit of the project activities to establish J-NADDIC and to take any necessary measures to strengthen the capacity of managing the CDL and J-NADDIC with allocation of sufficient staff and budgets.

3.8.2. Detailed Outputs/Activities and their Justifications

A. The Activities

<Activities necessary to establish the central functions>

a. Improvement of system on management of both NADDEC and COVAB, including more effective use of Counterpart Fund, clarification of mandates and activities of CDL within the COVAB

b. Familiarization and establishment of diagnostic techniques, particularly to increase its level to which can be applied to other diseases than the 25 target diseases (Output 2)

<Activities to further strengthen the collaboration between districts and the central and to activate the central functions of J-NADIC>

c. Increased collaboration between J-NADDIC and selected DVOs, which could be a model of other districts, (and increased involvement of some more districts) (Output 5)

d. Campaigns for improved animal health, including more involvement in livestock production, at

the selected DVOs, (Op 5)

B. The Justification

<Establishment of Central Functions>

Considering the very innovative nature of the CDL, continuous capacity building should be supported through the technical cooperation. It is needless to say that the vision of J-NADIC, particularly the CDL, should be clarified with its elaborated action plan within the structure of COVAB as well as staff allocation and funding.

It is considered that strengthened outputs 2 and 5 would lead to the increased activities of the Outputs 3 and 4. Earlier in the project implementation, it was pointed out that microbiological diagnosis is one of the weakest areas in the COVAB. As most of the staff for virology/bacteriology was shifted from other areas of science, there are limited numbers of staff. The project should focus on the human resource development in the field of virological and bacteriological diagnosis.

<Increased Collaboration between districts and the central>
Strengthening the capacity of DVOs through the technical support of CDL is indispensable for the functionalization of J-NADIC. The core role of diagnostic laboratory is to support the activities of field veterinary professionals, who are directly involved in production and productivities of farmers in the areas. Therefore, DVOs play a major role of extending proper animal health and production knowledge. The imprtance of DVOs is to be increased by offering proper functions in the area. It should be also noted that private sector veterinarians are appropriately involved under the umbrella of DVOs for complement the role of public veterinary officers. Therefore, any refresher training should be organized for them.

3.8.3. Special attention to monitor the efforts of COVAB for strengthening the capacity of managing CDL

The CDL is expected to play a major role in the community services of COVAB. Therefore, conceptualization of the activities is urgent tasks of the Management of COVAB. In this context, it is recommended to set any indicators to monitor the capacity of management of CDL, in terms of allocation of staff (even though not permanent), operational budgets (CP fund) and target activities.

MINUTES OF MEETING
ON
THE JOINT TERMINAL EVALUATION
ON
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, the Ministry of Agriculture, Animal Industry, and Fisheries and the College of Veterinary Medicine, Animal Resource and Biosecurity, Makerere University jointly organized the Terminal Evaluation Team from January 15 to January 31, 2013 in order to review the progress 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 Project, the Team prepared the Joint 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 January 31, 2013.

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

Kampala, January 31 2013

鍋屋史朗

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

Muwazi

Prof. Ruth T. Muwazi
For 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.

Appendix :Terminal Evaluation Report

Appendix

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

Kampala, 31st January, 2013

鍋屋史朗	
Mr. Shiro Nabeya Leader Japanese Terminal Evaluation Team Japan International Cooperation Agency	Mr. Fred Mayanja Leader Ugandan Terminal Evaluation Team Ministry of Agriculture, Animal Industry and Fisheries

Table of Contents

1. Introduction

1-1 Objectives of the Terminal Evaluation

(1) To review and evaluate the inputs, activities and achievements of the Projects, and to summarize the achievement.

(2) To execute a comprehensive evaluation on the achievement of the Projects 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 Projects and draw lessons learned from the Projects in the same field of technical cooperation.

1-2 Member of the Joint Evaluation Team

1-2-1 Japanese Evaluation Team

Job Title	Name / Position
Leader	Mr. Shiro NABEYA Senior Advisor to the Director General, Rural Development Department, JICA
Animal Disease Diagnoses	Dr. Takashi UMEMURA Specially Appointed Professor, Graduate School of Veterinary Medicine, Hokkaido University
Evaluation	Mr. Jun TOTSUKAWA Director, International Department, Sano Planning Co. Ltd
Program Officer	Ms. Akiko FUJITA Deputy Director, Arid and Semi-Arid Farming Area Division, Rural Development Department, JICA

1-2-2 UgandanEvaluation Team

Job Title	Name / Position
Leader	Mr. Fred Mayanja Planning Department, Ministry of Agriculture, Animal Industry and Fisheries
Member	Dr. Anna R Ademun Directorate of Animal Resources, Ministry of Agriculture, Animal Industry and Fisheries
Member	Dr. Ruth T Muwazi Deputy Principal, College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University

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 jointly by the Ugandan and Japanese terminal evaluation teams (the EvaluationTeam) based on materials showing the framework of the Project such as PDM, PO and the Record of Discussion (R/D). The evaluateactivities including analysis on reports, field surveys, and interviews with staff of the Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF),Makerere University, District Veterinary Offices, JICA experts, benefitted farmers in the project targeted sites and other concerned personnel in the Project. This terminal evaluation was conducted based on the following Five Evaluation Criteria.

1-4-2 Evaluation Criteria (Five 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 millions households) are engaged in livestock keeping for their farming activities.
MAAIF produced Livestock Department 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.

Ministry of Agriculture, Animal Industry and Fisheries 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 equipments. The Project has achieved some improvement of primary diagnostic capacity at National Animal Diseases Diagnostic and Epidemiology Centre (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 Faculty of Veterinary Medicine, Makerere University (MAK-FVM) (current title is College of Veterinary Medicine, Animal Resources and Biosecurity: MAK-COVAB[1]) 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 establishJ-NADIC 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

[1]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).

"Animal Industry Promotion Program" in Uganda. Therefore, JICA dispatched a Detailed Planning Study Team in August 2009 in order to confirm the project's relevance and to formulate the project framework and this technical cooperation project started from June 2010 until June 2013.

2-2 Summary of the Project

The framework of the project was decided in the R/D signed on January 25, 2010. TheProject was modified and agreed as PDM version3 in the fourthJCC onMay 30, 2012. The project 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.

(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 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) pathologicaldiagnosis, and 7) microbiology. For details, see Annex 3.

(2) Training in Japan

By the time of the terminal evaluation, 15 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 wasaround 543 thousand US dollars as of November 2012. For details, see Annex 5.MAK-COBAV's old laboratory was renovated and renamed as CDL with new diagnostic equipment in December 2011.

(4) Local Cost Allocated by Japanese Side

Local cost allocated by JICA for the implementation of the project activities is 1,997 million UGX (equivalent to 2,664 USD) as of November 2012. For details, see Annex 6.

3-1-2 Ugandan Side

(1) Assignment of Ugandan Counterparts

Currently, 22 counterparts in total are assigned, i.e. 3 persons of MAAIF as project director, project manager and coordinator, and 2 persons of MAK-COVAB as project manager and coordinator. For details, see Annex 7.

(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.

(3) Provision of Facilities
Office spacesfor Japanese experts and diagnostic laboratory at the MAK-COVABhave 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".**

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".
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 2nd 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 between "almost high" and "moderate".

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 2012 is more than three times of that in 2010.

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

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) viological techniques such as cell culture techniques, FAT for rabies, isolation of virus of African swine fever, Newcastle disease,sheep and goat pox. In addition, molecular techniques such as PCR are also partially introduced.

Regarding 2-3, diagnosis have 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

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

Regarding 2-4, both NADDEC and MAK-COVAB areactually producing diagnostic reagents of brucellosis.

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.

Most of these indicators were satisfied as described above, though, special attention should be paid onto "quality"aspect of diagnosis. Judging from the observation by the joint evaluation team and interviews from the Project experts and counterparts, the current levels of diagnosis still require improvement particularly in virology and bacteriology.
Since the evaluation team recognizethe importance of quality, the evaluation result of its achievement is placed between "almost high" and "moderate", even though the indicators were mostly satisfied. In this line, the current PDM needs to add indicator enable to evaluate the quality of diagnosis as well.

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".

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 Luwere 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.
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 "moderate".
MAK-COVAB is now sending diagnosis data monthly to NADDEC. It is, therefore, evaluated that information exchange from MAK-COVAB to NADDEC has started to function. On the other hand, the contrary information flow from NADDEC to MAK-COVAB has not been developed fully yet. In addition to information sharing by use of such quarterly meeting, systematic and/or regular basis information from NADDEC is expected.

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".
Comparing the status before and after theimplementation of the Project, the satellite 5 DVOs show capacity development in primary diagnostic and sample preparation techniques.However, there are still gaps between the current technical level and the necessary level which can assure the quality. 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 3: 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 DVOsdue to their own various backgrounds such as duration that they received technical assistance from the Project.

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

Table 4: Number of samples collected and examined by DVOs

Districts	Year			
	2010	2011	2012	Change between 2010-2012
Kiboga	55	32	469	853%
Mbale	31	21	70	226%
Mbarara[1)]	2,670	2,454	2,270	85%
Mpigi	118	143	130	110%
Wakiso[2)]	N/A	48	124	258%
Total[2)]	2,874	2,698	3,063	114%

1) The figure of Mbarara includes serological test of brucellosis.
2) The data of Wakiso and Total are compared between 2011 and 2012.

Regarding the indicator 5-3, number of samples submitted to J-NADIC has increased by nearly 60 % between 2010 and 2012.

Table 5: Number of samples submitted to J-NADIC

Years	2010			2011			2012		
Institutes	MAAIF	COVAB	Total	MAAIF	COVAB	Total	MAAIF	COVAB	Total
Kiboga	50	1	51	0	1	1	20	26	46
Mbale	12	0	12	0	0	0	0	10	10
Mbarara	0	0	0	0	2	2	0	3	3
Mpigi	20	0	20	14	13	27	0	33	33
Wakiso	0	0	0	8	43	51	0	40	40
Total	82	1	83	22	59	81	20	112	132

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 1. 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 between "almost high" and "moderate".

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, J-NADIC has already diagnosed 16 of the 25 diseases actually at CDL.
This performance should be highlighted as a significant achievement of the Project, though, it is necessary for the Project to make another step towards the level as "comprehensive diagnosis", which requires multi perspective diagnosis.
The progress of diagnostic capacity at bacteriology and virology are behind pathology. In order to fully achieve the requirements of the Project purpose, which is comprehensive diagnosis, further capacity development is required.

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

In this line, the achievement status at present is evaluated between "almost high" and "moderate".

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 terminal evaluation, communication between both organizations become basically smoother in comparison with the beginning period in general.

It should be worthwhile pointing out in here about the necessity to enhance moreinformation 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 by monthly. On the other hand, the frequency of information sending from NADDEC to MAK-COVAB and DVOs is actually limited.

3-4-2 Monitoring system
The Project has been trying to activate and monitor the Project activities through establishing several committees/meetings such as Technical committee, 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. These efforts have gradually contributed to growing the realization of CDL in public.

Ugandan side successfully secured counterpart fund (200 million UGX) from the year of 2012. The fund is expected to encourage and promote the Project activities. As of the evaluation period, both sides of NADDEC and MAK-COVAB are discussing the effective usage of the counterpart fund.

3-4-4 Modification of PDM
PDM has been modifiedappropriately through mid-term review and another JICA's mission.

4. Results of Evaluation
4-1 Relevance
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 guardagainst future invasions, much better diagnosis isrequired", then, also mentions that "building capacity for diagnosis is required along with needs assessment study

forlaboratory services including veterinarydispensaries".
In this line, the Project's contents are 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 diseasediagnosis. Under the resource scarceenvironment, district veterinary officers had fewer chances to develop their own knowledge and skills;therefore, they are frequently faced with difficulties in proper consulting with livestock farmers. In this connection, DVOs had strong needs to improve on 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 and laboratory personnelin 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. Remaining challenges are to upgrade diagnosis techniques towards "comprehensive diagnosis" which requires multi perspective diagnosis.

4-2-2 Contribution factors
Trainings in Japan provided opportunities for counterparts to observe not only how to conduct diagnosis but also how to teach and learn diagnostic techniques at university. Administrative system in Japan for animal disease control also gavecounterparts some ideas how to apply the essence into Ugandan administrative system.

4-2-3 Inhibition factors
The delay of completion of CDL facilities caused the postpone oftechnical transfer ondiagnosis.
The delay of Japanese experts' dispatch also influenced on the progress of technical transfer as well.

4-3 Efficiency
4-3-1 Input (Manpower)
(Japanese side)
Dispatch of Japanese experts, chief advisor and pathological diagnosis expert, were delayed by nearly one year. The first year of the Project, therefore, had to conduct technical transfer only by short term experts. In this line, there are inefficient manpower inputs for the Project.

(Ugandan side)
MAK-COVAB has tried to allocate as many staffs as possible at CDL, but the number itself has not reached the sufficient level to function. For the purpose of reinforcement of staffs, the Project welcomed volunteers of university students as well. It is evaluated as an effective countermeasure for manpower inputs.
Under the limited number of staffs at NADDEC, caused difficulties in allocation manpower to the Project activities.

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.
It is noted, however, that there are some equipment which areunder-utilizedat CDL and DVOs as of now. In CDL, the usage frequency of some equipment such as hematology differential counter is limited. As to DVOs, autoclaves are utilized. These facts indicate the technical transfer from Japanese experts to CDL and DVOs is still incomplete.

It is expected for CDL and DVOs to utilize fully these equipment along with the growth of technical capacity of diagnosis because one of the reasons of less use at present is a gap between capacity at present and required skills/knowledge.

4-3-3 Input (Training in Japan)
As described in "contribution factor", training in Japan has contributed to enhancing the Project's outputs.The participants are highly motivated and contribute to the Project。

4-3-4 Input (Budget)
Counterpart fund from Ugandan side was secured. 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 US-AID. NADDEC is now expected to utilize effectively these 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.

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 site, Mpigi, 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.

4-5 Sustainability

4-5-1 Policy aspect

Animal disease control is regarded as a crucial issue in order to sustain and/or boot 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 (page 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 among others, limited number of officers. Comparing with the working volume that NADDEC requires, the current number is insufficient.

NADDEC is now in the process of recruiting some of the veterinary doctors and laboratory technicians. NADDEC is expected to succeed in this employment process for reinforcement of the current understaffing situation.

(MAK-COVAB)

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 charging system. These issues have been already discussed in MAK-COVAB and the basic framework has already gained consensus within the College Board.

These are now in the process of official authorization within Makerere University. In addition, the proper set up of evaluation system of staffs at CDL also has to be carried out. If these concerned issues under discussion 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, staffs at the laboratory are difficult to accumulate diagnosis experiences under the current condition. Since diagnosis techniques can be developed on the basis of accumulation of experiences,this situation may give influence on their diagnosis techniques later on.

(MAK-COVAB)

Technical sustainability of MAK-COVAB is solely depending on the counterparts' continuity of engagement in the laboratory works. The staffs at MAK-COVAB have successfully developed their diagnosis capacity by the Project. However, the technical level at present still requires further trainings until reaching the level with assured quality.

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 budgetfor 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 and commercial farmers. Social acceptance is evaluated very high.

4-6 Conclusions

The Evaluation Mission confirms that the recommendations of the Mid-Term Review and the Consultation Study Mission on July 2012 have been running steadily. The Evaluation Mission could also recognizethat the necessarystepto ensure the sustainability of the J-NADICis about to carry out through the staff recruitment and budget allocationof NADDEC, and the organizationalstructuringof CDL at Makerere University.

CDL is ready for the comprehensive and specialized diseasediagnostic services, and the technical capabilities of CDL stafffor 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 ready to function. But in order to provide the comprehensive and specialized diagnostic serviceswithout the Japanese Experts, it takes little more time.

There are several important issues to be addressed in order to have better outcomes of the Project. These issues are explained as recommendations.

5. Recommendations

In accordance from above mentioned conclusion, the Evaluation Team recommends one-year extension of the project period to ensure sustainability. 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.

5-1 Recommended Actions to be takenby the Project

(a) Before ending the original term of the Project in June 2013

- **Project activities plan**

The Project has to prepare and authorize the plan to sustain the J-NADIC by June 2013. The Project is required to implement the strategy securely during one-year extension period.

(b) During the extension period of the Project

- **Comprehensive diagnostic service**

As the current diagnosis technical level,particularly in virology and bacteriology, needs further improvement. In case of extension of the period, the current PDM needs to add indicator enable to assess the quality of diagnosis as well.

5-2 Recommended Actions to be taken by the Ugandan Side

(1) Makerere University

- **Legal framework of CDL**

The legal framework of DCL was approved in November 2012. Discussion on CDL structure has been done and permanent core staff of two technicians and one clinician are going to be recruited.

It is highly desirable to assign those core staff by end of February and allocate budget to CDLfrom July 2013.

- **Fee collection and Allocation Rules**

As Action Plan(page 12)mentioned, and as consultation study mission suggested on July 2012, MAK-COVAB is required to establish the clear fee collection and allocation rules for disease diagnoses to keep the transparency and ensure the sustainabilityby the end of the Project Period.

(2) **Selected DVOs**

- **Reliable diagnosis**

Laboratory technician contributes to DVO's diagnosis capacity, under the situation, strong and proper supervision of veterinary officers'is expected to improve primary diagnosis and sample preparation more accurate and reliable.

(3) **MAAIF/NADDEC**

- **Staff recruitment and budget allocation**

More full-time staff and budget allocation by NADDEC is desired for the Project. It is hoped that four veterinary officers will be recruited and assigned to NADDEC and allocation of a part of 200 million UGX counterpart fund to J-NADIC by June 2013.

- **Data aggregate, analyses, and management**

After the diagnostic report is shared by DVO and MAK-COVAB, NADDEC is responsible to aggregate,analyze the data anddisseminate the results. It is expected for J-NADIC to enhance information feedback from NADDEC to MAK-COVAB and DVOs.

- **Enhancement of DVOs**

For sample collection and comprehensive grasp of national animal disease incidence, DVOs play important role. It is hoped that the Project could reach a consensus on the function of the 5 selected DVOs among other DVOs under J-NADIC.

6. **Lessons learned**

- **Delay of inputs**

As already mentioned, the delay of completion of CDL facilities, dispatch of the long-term experts, assignment of the C/Ps., made a negative impact on the Project implementation.More accurate design in thepreparation stage is crucial.

- **Communications**

In order to accelerate theProject and maximize its outputs, the communication among NADDEC, MAK-COVAB and Japanese experts should be encouraged by frequent and regular meetings.

- **Relationship among MAAIF, Makerere University and Local Government**

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

ANNEX1

Schedule of the Terminal Evaluation

Date	Day	Consultant	Evaluation Team
14-Jan	Mon	13:00 Arrive Entebbe (QR536) **15:00** Interview to Japanese Exp.,at COVAB	
15-Jan	Tue	**09:00** Interview to Japanese Experts **14:00** Interview to C/Ps in NADDEC	
16-Jan	Wed	**09:00** Interview to C/Ps in COVAB-MAK	
17-Jan	Thu	**08:30** Move to Mbale **14:00** Mbale DVO	
18-Jan	Fri	Mbale DVO Back to Kampala	
19-Jan	Sat	Preparing Evaluation Grid,Joint Evaluation Report	
20-Jan	Sun	Preparing Evaluation Grid,Joint Evaluation Report	
21-Jan	Mon	08:00 Move to Kiboga, Wakiso DVOs 17:00 Meeting with Joint Evaluation Members	17:00 Meeting with Joint Evaluation Members
22-Jan	Tue	**09:00** Meeting with Project Experts at JICA **14:00** Meeting with C/Ps in NADDEC, etc.	
23-Jan	Wed	**09:00** Move to Mpigi DVO **12:00** Move to Mbarara	
24-Jan	Thu	**09:00** Mbarara DVO **17:00** Dairy Coop (UCCCU) PM: Back to Kampala	
25-Jan	Fri	**08:00** Meeting with Project Experts, C/Ps in COVAB-MAK, etc at COVAB Visit Donnors (USAID)	
26-Jan	Sat	Docuentation	
27-Jan	Sun	Drafting Joint Evaluation Report, Miniutites of Discussion	
28-Jan	Mon	Drafting Joint Evaluation Report, Miniutites of Discussion	
29-Jan	Tue	Joint Evaluation Meeting(Drafting Joint Evaluation Report, Miniutites of Discussion) at MAK-COVAB	
30-Jan	Wed	National Holiday	
31-Jan	Thu	**10:00** 5th JCC (including signning of MD) at MAK-COVAB 14:30 Report to EoJ 16:00 Report to JICA Office	

ANNEX 2

PDM 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
Overall Goals 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	
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.	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.
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.	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	

3. An operational investigation system for emergency diseases is established.	by J-NADIC 3. Emergency disease outbreaks are investigated by joint investigation team of J-NADIC more than once during the project period.	MAK-COVAB 3. Report of investigation and appropriateness of its contents
4. An information exchange system for sharing between NADDEC and MAK-COVAB is developed.	4. All the Diagnostic data produced by J-NADIC are centralized, accumulated and shared by NADDEC-MAAIF and Central Diagnostic Laboratory of MAK-COVAB.	4. Developed information exchange system and opinion of persons concerned on practicability of the system
5. Primary diagnostic and sample preparation techniques are improved at the selected District Veterinary Offices.	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.	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

Activities	Inputs		Pre-condition
	Japanese side	**Ugandan side**	
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	1. Dispatch of experts 2. Dispatch of volunteers 3. Provision of equipment 4. Training of counterparts 5. Allocation of operational costs for the Project	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	MOU is approved by both MAAIF and MAK-COVAB. Security conditions in the target areas are maintained.

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			

Abbreviations:
NADDEC: National Animal Disease Diagnostic and Epidemiology Centre, **MAK-COVAB**: Makerere University-College of Veterinary Medicine, Animal Resources and Biosecurity;
MAAIF: Ministryof Agriculture, Animal Industry and Fisheries; **TC**: Technical Committee; **JCC**: Joint Coordinating Committee; **MM**: 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

Despatch of Expert

<Long-term experts>

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

<Short-term experts (Mission team included)>

#	Names	Field	Assignment Duration	Affiliation
1st Year				
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	2011/04/17～2011/04/30	JICA
5	Yukita SATO	Monoitoring&Survay	2011/04/24～2011/04/30	Nihon University
2nd Year				
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	
10	Kenichi SAKURAI	Bacteriology	2012/02/11 ~2012/02/23	
11	Yoshikazu IRITANI	Virology	2012/02/11~2012/03/11	
12	Hisashi SHIBUYA	Pathological Diagnosis	2012/02/18~2012/03/16	Nihon University
3rd Year				
13	Yoshikazu IRITANI	Virology	2012/07/10~2012/10/6	
14	Kenichi SAKURAI	Bacteriology	2012/09/12~2012/12/16	
15	Yoshikazu IRITANI	Microbiology	2013/01/13~2013/04/13	

C/Ps Training in Japan

	Name	Period of Participation	Field/Name of the Course	Contents	Implementing Instisution	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	JICATokyo, Nihon Univ.	Commissioner Animal Health & Entemorogy MAAIF	Commissioner Animal Health & Entemorogy MAAIF
2	David Kabasa		Technical Study visit	Study Visit for Animal Disease control system, University Curriculum in Japan	JICATokyo, Nihon Univ.	Dean Faculty of Vet.Med. Makerere University	Dean School of Vet.Med. Makerere University
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.	JICATokyo, Nihon Univ.	Assistant Lecturer,Faculty of Vet.Med. Makerere University	Assistant Lecturer,School of Vet.Med. Makerere University
4	Wilfred Eneku		Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,School of Vet.Med. Makerere University
5	Gabriel Tumwine		Laboratory diagnostic techniques		JICATokyo, 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 improvemant.	JICA Sapporo, Hokkodo Veterinary Assosiation	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.	JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
8	Bigirwa Godfrey		Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
9	Francis Mutebi		Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
10	Mugimba Kitizo	2012/08/13~2012/10/12	Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
11	Muzoora Saphan		Laboratory diagnostic techniques		JICATokyo, Nihon Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
12	Turyatemba James		Laboratory diagnostic techniques		JICATokyo, 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 improvemant.	JICA Sapporo, Hokkodo Veterinary Assosiation	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University
14	Karungi Fred		Veterinary Technology for Farm Animals	Clinical Training for farm animals for disease control, treatment and improvemant.	JICA Sapporo, Hokkodo Veterinary Assosiation	District Veterinary Officer Wakiso District	District Veterinary Officer Wakiso District
15	Patrick Vudriko	2012/10/20~2013/08/10	Advanced Research Course on Interanation Animal Health	Laboratory and management	JICA Obihiro, Obihiro Univ.	Teaching Assistant,Faculty of Vet.Med. Makerere University	Teaching Assistant,Faculty of Vet.Med. Makerere University

ANNEX 5

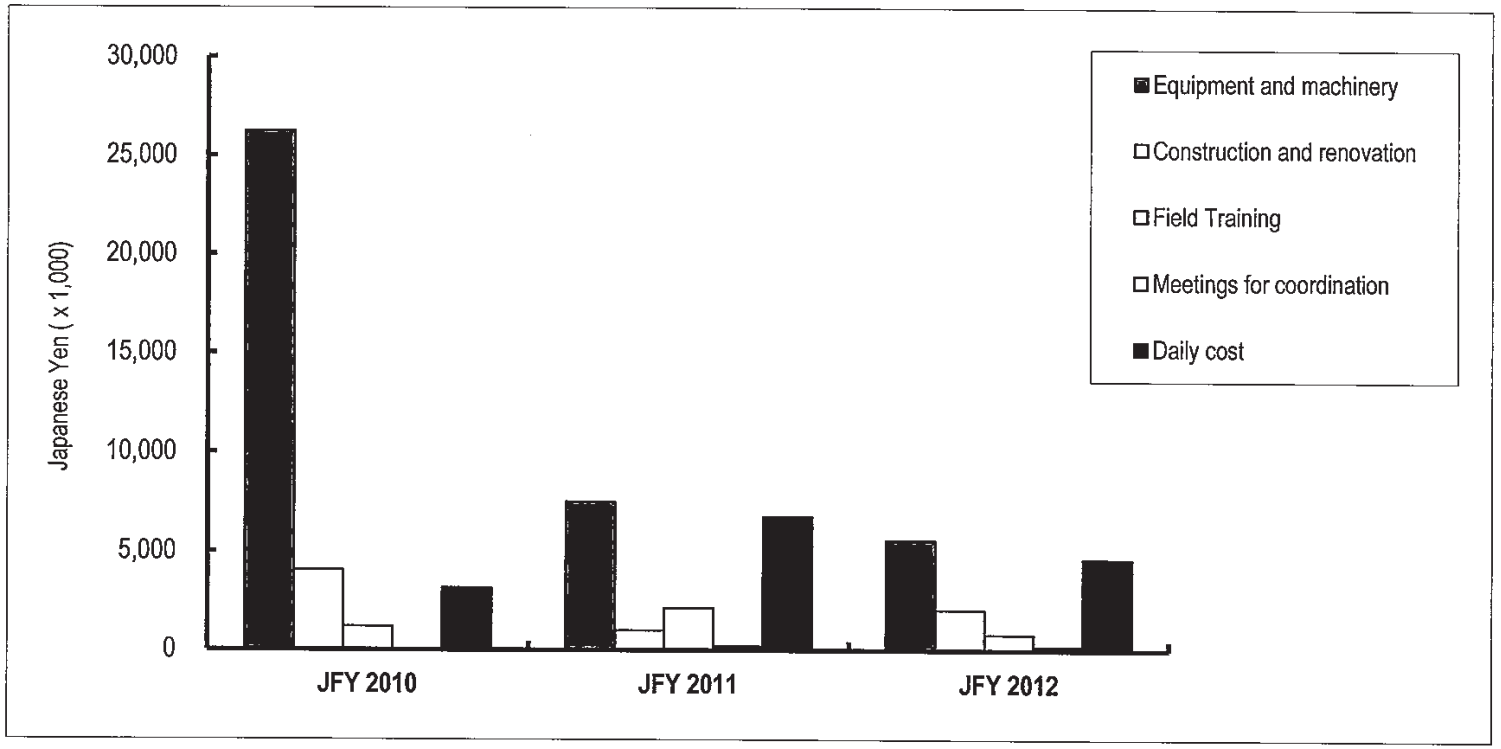
Equipment and machinery provided by Japanese Side

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
1st Year										
1	4WD Vehicle	Mitsubishi	Pajero	2	General	Jun-10	¥9,183,756	MAAIF	Victoria Moters	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*5	Wak.Mba.Mbar.Mpi.MAK	Palin Diagnostic	A
8	Refrigirated 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	C
11	Pick Up Truck(Dubble Cab)	NISSAN	HARD BODY	1	General	Mar-11	$28,700	Makerere	Kampala NISSAN	A
12	Fluorsent 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*2	Makerere	Palin Diagnostic	A
17	Autoclave(midium size)	SANYO	MLS 3751L	2	Bac/Viro	23-Mar-11	$13,400*2	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*2	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*2	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
2nd Year										
34	Liquid Nitrogen Tank	Air Liquid	GT25	1	Virology/Bacteri	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	B
37	Thermal Cycler	LabNet Inc	TC 9600 G230V	1	Virology/Bacteri	19-Dec-11	$6,000	Makerere	Palin Diagnostic	A
38	Gel Documentation System	Synoptic Ltd	GVM20	1	Virology/Bacteri	1-Feb-12	$4,970.38	Makerere	Powelson	A
39	Stomacher	Seward	Stomacher 80 Biomaster	1	Bacteriology	1-Feb-12	$5,079.27	Makerere	Powelson	A
3rd Year										
40	Crush Ice Maker	Hoshizaki	FM 150KE	1	General	1-Jul-12	$7,500.00	Makerere	Palin Diagnostic	A
41	Clinical Microscope	Nikon	Eclipse Ci-S	1	Pathology	Jul-12	$15,026.57	Makerere	Palin Diagnostic	A
42	Digital camera system for inverted microscope	Micropix	9MP	1	Virology	Jul-12	$4,728.86	Makerere	Palin Diagnostic	A
43	Inverted Microscope (binocular)	Nikon	Nikon TS 100F	1	Virology	Jul-12	$9,825.21	Makerere	Palin Diagnostic	A
44	Inverted Microscope (trinocular)	Nikon	Nikon TS 100F	1	Virology	Jul-12	$11,034.34	Makerere	Palin Diagnostic	A
45	Refrigirated Centrifuge	Eppendorf	5804	1	Virology/Bacteri	1-Jul-12	$7,457.84	Makerere	Palin Diagnostic	A
46	Ultra pure Water purification System	Firstreeem	MultiPure Select	1	Virology	Jul-12	$9,423.22	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	2	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 Suppliers	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

Local Operation Cost Allocated by Japanese Side

Items	JFY 2010 Fom Jun/2010 to Mar/2011		JFY 2011 From Apr/2011 to Mar/2012		JFY 2012 From Apr/2012 to Nov/2012		Total	
	Amount(JPY)	Amount(UGX)	Amount (JPY)	Amount (UGX)	Amount (JPY)	Amount (UGX)	Amount (JPY)	Amount (UGX)
Equipment and machinery	26,247,077	771,972,851	7,500,000	234,375,000	5,561,017	179,387,645	39,308,094	1,185,735,496
Construction and renovation	4,045,689	118,990,864	1,000,000	31,250,000	2,055,259	66,298,673	7,100,948	216,539,537
Field Training	1,190,000	35,000,000	2,144,000	67,000,000	802,745	25,895,000	4,136,745	127,895,000
Meetings for coordination	47,600	1,400,000	200,000	6,250,000	180,907	5,835,700	428,507	13,485,700
Daily cost	3,165,967	93,116,676	6,755,000	211,093,750	4,622,883	149,125,248	14,543,850	453,335,674
Total	**34,696,333**	**1,020,480,392**	**17,599,000**	**549,968,750**	**13,222,810**	**426,542,266**	**65,518,144**	**1,996,991,408**



Assignment of Ugandan Cpunterparts

#	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	Commisioner, Department of Livestock Health and Entomology	Project Director	June 2010	At present
3		Dr. Deo B. Ndumu	Senior veterinary officer, veterinary epidemiology and diagnostic unit	Project Coordinator	June 2010	At present
4	Makerere University (COVAB=College of Veterinary Medicine, Animal Resource and Biosecurity)	Dr. John David Kabasa	Principal, COVAB	Project Manager	June 2010	At present
5		Dr. Eddie Wanpande	Assistant lecturer, COVAB	Project Coordinator	June 2010	At present
6		Dr. Wilfred Eneku	Teaching assistant, COVAB	C/P	June 2010	At present
7		Dr. Gabriel Tumwine	Teaching assistant, COVAB	C/P	June 2010	At present
8		Dr. Afayoa Mathias	Teaching assistant, COVAB	C/P	June 2010	At present
9		Dr. Bigirwa Godfrey	Teaching assistant, COVAB	C/P	June 2010	At present
10		Dr. Francis Mutebi	Teaching assistant, COVAB	C/P	June 2010	At present
11		Dr. Mugimba Kitizo	Teaching assistant, COVAB	C/P	June 2010	At present
12		Dr. Muzoora Saphan	Teaching assistant, COVAB	C/P	June 2010	At present
13		Dr. Turyatemba James	Teaching assistant, COVAB	C/P	June 2010	At present
14		Dr. Patrick Vudriko	Teaching assistant, COVAB	C/P	June 2010	At present
15		Dr. Joanne Kisaka	Teaching assistant, COVAB	C/P	June 2010	At present
16	District Veterinary Office (DVO): Kiboga, Mpigi, Wakiso, Mbale, Mbarara	Dr. Atikoro	Veterinary officer at Kiboga	Quasi-C/P	June 2010	At present
17		Dr. Tingiira Bosco		Quasi-C/P	June 2010	At present
18		Dr. Oine	Veterinary officer at Wakiso	Quasi-C/P	June 2010	At present
19		Dr. Karungi Fred		Quasi-C/P	June 2010	At present
20		Dr. Sekiwunga	Veterinary officer at Mpigi	Quasi-C/P	June 2010	At present
21		Dr. Were George	Veterinary officer at Mbale	Quasi-C/P	June 2010	At present
22		Dr. Mwebembezi William	Veterinary officer at Mbarara	Quasi-C/P	June 2010	At present

ANNEX 8

Table of Contents of the Action Plan

1. (5) Training Course

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.
Total					169		

Annex 10

Abbreviations

C/P	Counterpart
CDL	Central Diagnostic Laboratory
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
PDM	Project Design Matrix
R/D	Record of Discussion

Action Plan

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

March 2011

DLHE-MAAIF　　MAK-FVM　　JICA

Contents

Appendix:

1. Master Plan of the Project
2. Joint Coordinating Committee and Technical Committee
3. Diagnostic Techniques in J-NADIC
4. Sample flow in J-NADIC for diagnosis
5. Sample and Personnel Flow in MAK-FVM for Diagnosis
6. Project Design Matrix, Rev. 2-2
7. Tentative Plan of Operation (PO) Rev. 2-2
8. Tentative list of the diseases and diagnostic techniques covered by the Project
9. Disposables, chemicals and small equipment from the Project (as of Dec. 2010)

10-1. Equipment necessary for the diagnostic work
10-2. Necessary disposables and chemicals for cell culture and virus isolation
10-3. Necessary disposables and chemicals for ELISA and IFAT
10-4. Necessary disposables and chemicals for Brucella antigen production
10-5. Necessary disposables and chemicals for Neospora antigen production
10-6. Necessary disposables and chemicals for monoclonal and polyclonal antibody production

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: Makarere 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, Salmonelosis, 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 conductive 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 participates 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 indicaters. 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 introduces 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 Appendix8. 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 shoud 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.

Appendix 1

Master Plan of the Project

Master plan of the Project was agreed upon in the Record of Discussion signed by both sides of JICA, MAAIF and Makerere University on 25th January 2010.

1. Name of the Project

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

2. Period of Cooperation

   Three years from June 2010 to June 2013

3. Overall Goal

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

4. Project Purpose

   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.

5. Outputs

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

6. Activities

   1. Preparation of the action plan (formulation of the framework)
      1-1. Study on the appropriate diagnostic system in Uganda
      1-2. Study on the current status of NADDEC and MAK-FVM
      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 Center (J-NADIC) by the collaboration of NADDEC and MAK-FVM

1-5. Formulation of sample flow from field to the J-NADIC

2. Enhancement of the capacity of the J-NADIC

2-1. Establishment of the integrated diagnostic service function 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 reagent.

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

7. Inputs

1) Japanese Side

・Japanese Experts:

Japanese Experts, who will be in charge of the following field, will be dispatched. Detail of the fields, number and terms of the experts shall be determined.

Long term experts

Chief Adviser

Project Coordinator

Short-term experts

Short-term Experts will be dispatched, if necessary.

・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.

Laboratory equipments
Vehicle(s)
Other necessary equipment

・Counterpart training in Japan or in a third country:

2) Ugandan Side

・Assignment of counterpart personnel as follows

Project Director
Director, Directorate of Animal Resources and fisheries, MAAIF

Project Manager
Commissioner, Department of Livestock Health and Entomology, MAAIF
Dean, MAK-FVM

Deputy Project Manager
Assistant Commissioner, National Animal Disease Control, MAAIF
Deputy Dean1, MAK-FVM

Project Officers
Assistant Commissioner, Veterinary Inspection and Regulation, MAAIF
Principal Veterinary Officer, Diagnostic Unit, MAAIF
Principal Veterinary Officer, Epidemiology Unit, MAAIF
Deputy Dean 2, MAK-FVM
Coordinator of Central Laboratory Network, MAK-FVM

Other Project Staff
Staff of Diagnostic Unit and Epidemiology Unit, MAAIF
Staff of Central Laboratory Network, MAK-FVM
Veterinary inspectors, MAAIF
Staff of selected District Veterinary Offices

・Provision of facilities

Land, building and facilities necessary for the implementation of the Project in MAAIF and MAK-FVM
Rooms and space necessary for installation and storage of the equipment in MAAIF and MAK-FVM
Office space and necessary facilities for the JICA experts and related members
Other facilities mutually agreed upon as necessary

8. Important Assumption

Following matters are placed as important assumption to achieve the project purposes

・The policy advocating particular attention on animal disease control is not changed.

・Appropriate numbers of trained staff at the central and district levels are available for animal disease diagnosis and control

・The number of qualified staff at NADDEC and selected DVOs are increased.

・The communication between the personnel concerned is adequate.

・The appropriate budget for diagnosis and running costs is allocated from Ugandan side.

・Strong commitment to the Project is expected from the both sides.

9. Preconditions

Following matters are placed as pre-conditions for the project implementation

- MAAIF recognizes the necessity of enhancing the linkage between relating institutions for animal disease control.
- MoU is approved by both MAAIF and MAK-FVM
- Security conditions in the target areas are maintained.

Appendix 2

Project Sites

MAK-FVM
NADDEL
Selected Veterinary Offices (Kampala, Wakiso, Kiboga, Mpigi, Mbare, Mbarara)

Project Office(s)

MAK-FVM
DLHE-MAAIF

Project Staff

- Project director: Director, Directorate of Animal Resources, MAAIF
- Project co-director: Dean, MAK-FVM
- Project Manager: Commissioner, Department of Livestock Health and Entomology, MAAIF
- Project co-manager: Deputy Dean 1, MAK-FVM
- Deputy project manager:
  Assistant Commissioner, National Disease Control, MAAIF
  Deputy Dean 2, MAK-FVM
- Project Officers
  Assistant Commissioner, Veterinary Inspection & Regulation, MAAIF
  Principal Veterinary Officer, Diagnostic Unit, MAAIF
  Principal Veterinary Officer, Epidemiology Unit, MAAIF
  Deputy Dean 2, MAK-FVM
  Coordinator of Central Laboratory Network, MAK-FVM
- Other Project Staff
  Staff of Diagnostic Unit and Epidemiology Unit, MAAIF
  Staff of Central Laboratory Network, MAK-FVM
  Veterinary Inspectors, MAAIF
  Staff of selected District Veterinary Offices

Joint Coordination Committee (Steering Committee)

The Joint Coordinating Committee meets at least once a year and whenever the necessity arises. Functions of Joint Coordinating Committee are; (1) To approve the Annual Plan of Operation under the framework of the Project and (2) To review achievements of the Annual Plan of operations and overall progress of the Project.

The Joint Coordinating Committee consists of following members.

- Chairperson: Permanent Secretary (or a person nominated by P.S.)
- Members:

Ugandan Side

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

Japanese Side

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

Notes:

- Officials of the Embassy of Japan may attend Joint Coordinating Committee meeting as observers
- Persons who are nominated by the chairperson may attend Joint Coordinating Committee meeting as observers.

Technical Committee

The Technical Committee will be held regularly and whenever the necessity arises. Functions of the Technical Committee are; 1) To develop and improve detailed activities, 2) To monitor, coordinate and evaluate activities, and 3) To summarize the proceeding of activities. The Technical Committee is consists of following members.

・Ugandan side

Director, Directorate of Animal Resources, MAAIF
Commissioner, Department of Livestock Health and Entomology, MAAIF
Dean, MAK-FVM
Assistant Commissioner, National Animal Disease Control, MAAIF
Assistant Commissioner, National Disease Inspection and regulation, MAAIF
Deputy Dean, MAK-FVM
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

・ Japanese Side

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

Notes:

・ Officials of the Embassy of Japan may attend Technical Committee meeting as observers.
・ Persons who are nominated by the chairperson may attend Technical Committee meeting as observers.

Appendix 3

Diagnostic Techniques in J-NADIC

(as of September 2010)

Diseases	Techniques recommended by OIE	Currently available tests			Target diagnostic techniques by the Project
		CVL (Entebbe)	Makerere	Districts	
Rinderpest	ELISA, SNT	ELISA	NA	NA	
FMD	ELISA, SNT	ELISA, PCR?	NA	Clinical diagnosis	SNT, RT-PCR
PPR	ELISA, SNT	ELISA (no kit)	NA	Clinical diagnosis	SNT, RT-PCR
CBPP	ELISA, CFT	ELISA (no kit)	NA	Clinical diagnosis	PCR?, isolation
CCPP	ELISA, CFT	ELISA (no kit)	NA	Clinical diagnosis	PCR?, isolation
Lumpy Skin	SNT	NA	NA	Clinical diagnosis	SNT, RT-PCR
Rift Valley Fever	ELISA, HI	NA	NA	NA	SNT, RT-PCR
ASF	ELISA	ELISA (no kit)	NA	Clinical diagnosis	PCR
HPAI	HI	Rapid test	HI, isolation, PCR	NA	
ND	HI	NA	NA	Clinical signs + Autopsy	HI, histopathology
Anthrax	NA	Bacteria staining	Isolation, staining	Clinical diagnosis	Pearl test, isolation
Aujeszky's Disease	ELISA, SNT	NA	NA	NA	SNT
Leptospirosis	MAT	NA	NA	NA	
Rabies	ELISA, SNT	FAT	NA	Clinical diagnosis	FAT, histopathology
Heartwater	NA	NA	NA	Clinical diagnosis	Histopathology
Brucellosis	Rose Bengal, ELISA, CFT	Rose Bengal, ELISA	NA	Rose Bengal	Rose Bengal, ELISA
TB	Tuberculin skin test	NA	NA	NA	Tuberculin test, histopathology
Tick-borne Diseases	NA	Blood film	Blood film	Blood film	Blood film (DVO level)
Trypsnosomosis	NA	Blood film	Blood film, PCR, CATT	Blood film, HCT	Blood film, HCT, Ag-ELISA?
Bacterial Infections*	NA	only partially	Isolation & identification	Antibiotics sensitivity test	Isolation & identification, PCR
Internal parasites**	NA	Fecal examination	Fecal examination	Fecal examination	Fecal examination (DVO level)
Viral infections	NA	NA	NA	Clinical diagnosis	Virus isolation, SNT, PCR

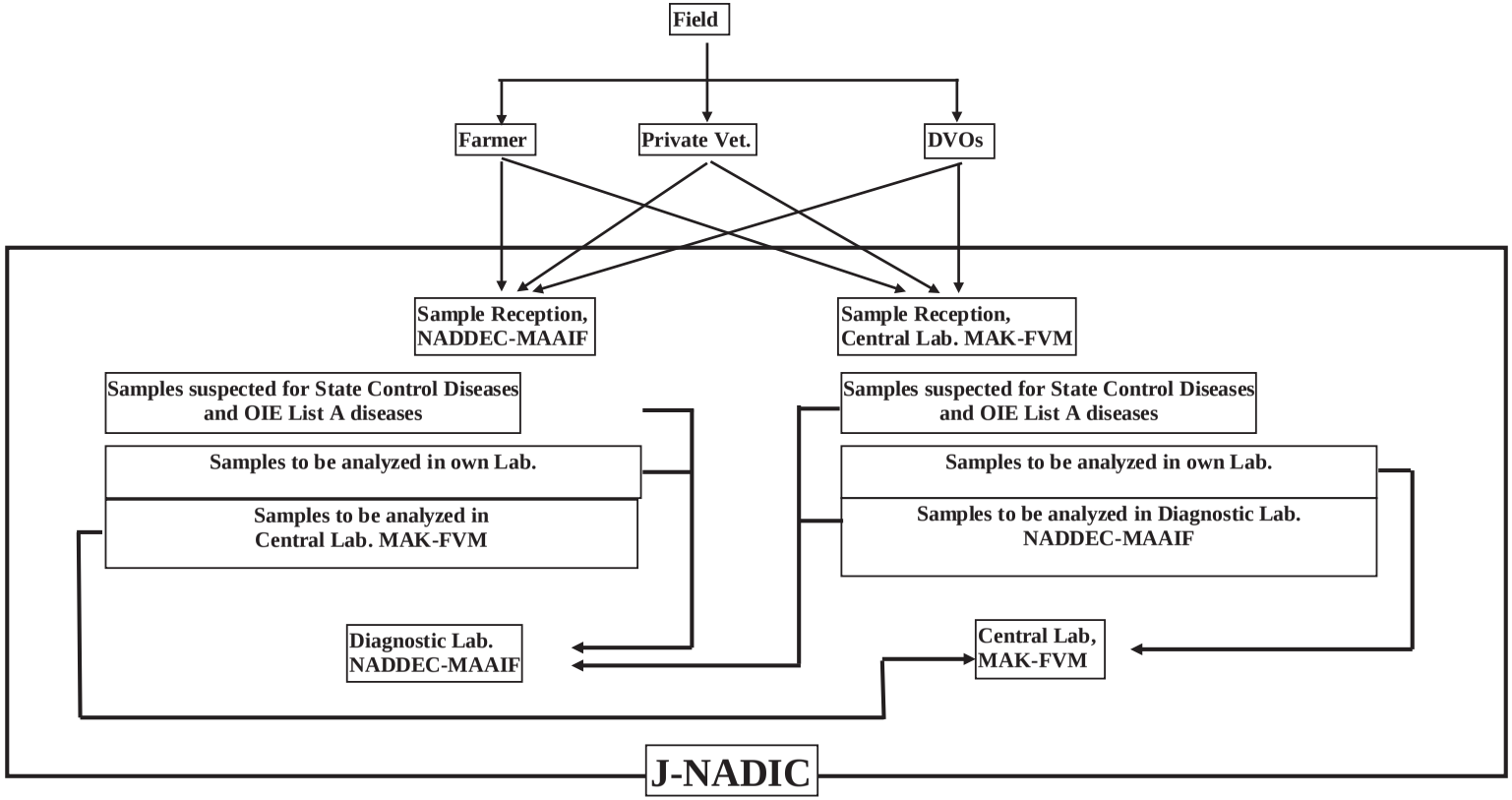
NA: not available or not applicable

SNT: serum neutralization test

	* Bacteria which can be isolated and identified	** Available parasitological techniques
MAK-FVM	*Salmonella* sp. *Pseudomonas* sp. *E. coli*	Flotation Sedimentation Thin blood smear (Giemsa staining)

MAR-PVM	*Bacillus anthracis* *Clostridium* sp. *Brucella* sp. ?	Haematocrit centrifuge technique (HCT)
NADDEC	?	Flotation Sedimentation Thin blood smear (Giemsa staining) Haematocrit centrifuge technique (HCT)
DVOs	Antibiotics sensitivity test for mastitis	Flotation Sedimentation Thin blood smear (Giemsa staining) Haematocrit centrifuge technique (HCT)

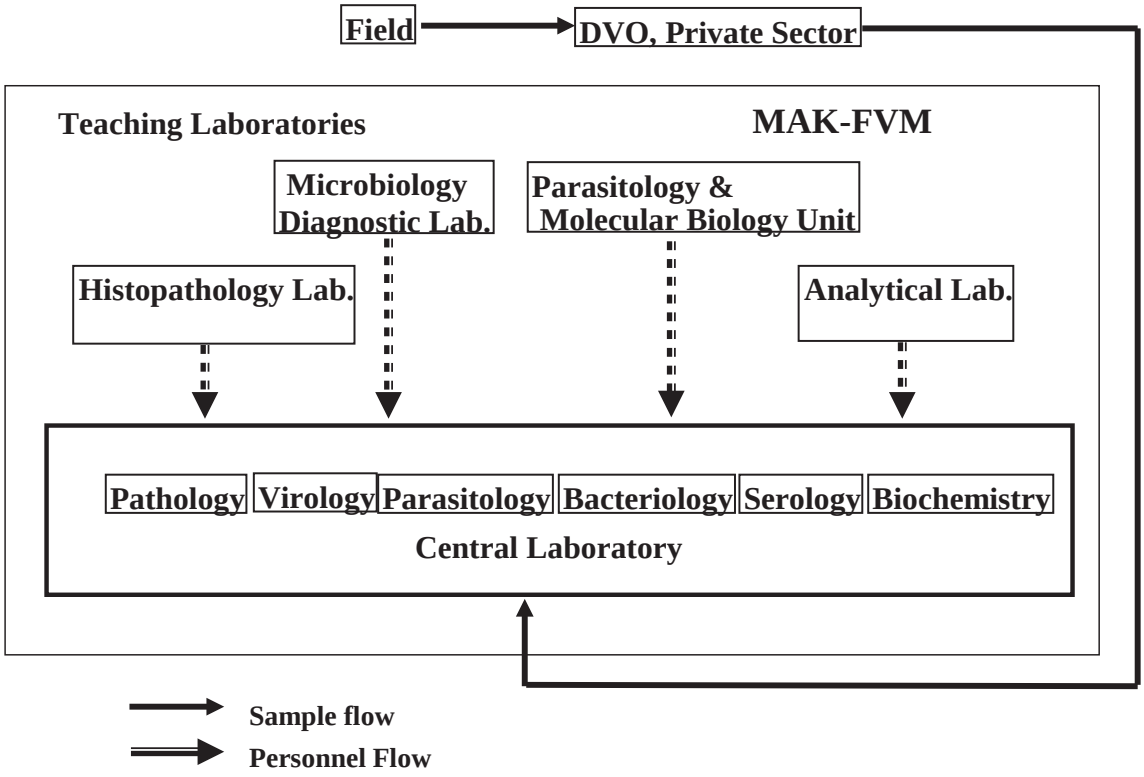
Sample Flow in J-NADIC for Diagnosis



- When received samples are sent to another lab, the samples may be analyzed in collaboration of specialists from both institutes.
- When received samples are analyzed in its own lab. , respective institute may invite specialists from another institute for the collaborative laboratory analysis of the samples.

Appendix 5

Sample and Personnel Flow in MAK-FVM for Diagnosis



PROJECT DESIGN MATRIX

Appendix 6

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-FVM and selected DVOs

Project Period: June 2010 through June 2013 (3 years)

Ver. 2-2: Prepared in February 2011

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goals A functional diagnostic system for animal disease control is established in order to improve the production and productivity of livestock.	Stakeholders and DVO staff will grade the diagnostic services provided by J-NADIC higher than 3 under 5–point rating system. All the selected DVOs by the Project are utilizing the J-NADIC for reference diagnosis.	Monitoring report, Questionnaire of stakeholders & DVO staff, Epidemiology and statistics data	The policy advocating particular attention on animal disease control is not changed.
Project Purpose 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.	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, Questionnaire of stakeholders, MM of TC and JCC meetings	Appropriate numbers of trained staff at the central and district levels are available for animal disease diagnosis and control.
Outputs 1. An action plan for a functional diagnostic system on animal diseases through the close collaboration of NADDEC and MAK-FVM is drawn up. 2. Comprehensive and specialized diagnostic services become available by launching the Joint National Animal Disease Diagnostic Centre. 3. An operational investigation system for emergency diseases is established. 4. An information exchange system for sharing between NADDEC and MAK-FVM is developed. 5. Primary diagnostic and sample preparation techniques are improved at the selected District Veterinary Offices.	1. Action plan is prepared and submitted to the JCC in first year for approval. 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-FVM - 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	1. Action Plan & study reports submitted to JCC, MM of JCC meetings 2. Manuals prepared, Monitoring report, Questionnaire of stakeholders, Diagnostic Laboratory records 3. Disease investigation system established, MM of JCC meetings, Results of disease surveys 4. Information exchange system established, MM of JCC meetings, Interviews 5. MM of JCC meetings, Questionnaire of stakeholders, DVO reports, Results of active surveys	The numbers of qualified staff at NADDEC and the selected DVOs are increased. The Communication between the personnel concerned is adequate. The appropriate budget for diagnosis and disease control is allocated from the Ugandan side. Strong commitment to the Project is expected from the both sides.

<table>
<tr><td></td><td>selected DVOs by J-NADDIC
3. Emergency disease outbreaks are investigated by joint investigation team of J-NADDIC more than once during the project period.
4. All the Diagnostic data produced by J-NADDIC are centralized, accumulated and shared by NADDEC-MAAIF and Central Diagnostic Laboratory of MAK-FVM.
5-1. No. of samples collected and examined by DVOs increase 15% by the 3rd year.
5-2. No. of samples submitted to the J-NADIC from the selected DVOs increase 15% by the 3rd year.</td><td></td><td></td></tr>
<tr><td rowspan="2">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-FVM
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-FVM
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</td><td colspan="2">Inputs</td><td rowspan="2">Pre-condition
MAAIF recognizes the necessity of enhancing the linkage between relating institutions for animal disease control.

MOU is approved by both MAAIF and MAK-FVM.

Security conditions in the target areas are maintained.</td></tr>
<tr><td>Japanese side
1. Dispatch of experts
2. Dispatch of volunteers
3. Provision of equipment
4. Training of counterparts
5. Allocation of operational costs for the Project</td><td>Ugandan side
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</td></tr>
</table>

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			

Abbreviations: **NADDEC**: National Animal Disease Diagnostic and Epidemiology Centre, **MAK-FVM**: Makerere University, Faculty of Veterinary Medicine, **MAAIF**: Ministry of Agriculture, Animal Industry and Fisheries, **TC**: Technical Committee, **JCC**: Joint Coordinating Committee, **MM**: Minutes of Meeting, **MOU**: memorandum of understanding. **J-NADIC**: Joint National Animal Disease Diagnostic Centre, **DVO**: District Veterinary Office

Tentative Plan of Operation (PO) Rev.2-2 Feb. 2011

No.	Project Activities	Target/Indicator	Responsible/ Supported by	Japanese Fiscal Year (JFY)													Input	Remark
				2010				2011				2012				2013		
				J	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ		
1	**Preparation of the action plan**																	
1.1	**Study on the appropriate diagnostic system in Uganda**	• Study reports submitted to the JCC	DLHE, MAK-FVM, Project Office														• OIE standards	
1.2	**Study on the current status of NADDEC and MAK-FVM**	• Study reports submitted to the JCC	DLHE, MAK-FVM, Project Office														• Colllaborative study	
1.3	**Identification of the duties to be conducted by the respective institutes**	• Study reports submitted to the JCC	NADDEC, MAK-FVM, Project Office														• Colllaborative study	
1.4	**Formulation of the framework of the Joint National Animal Disease Diagnostic Laboratory(J-NADIC)**	• Finalised framework	DLHE, MAK-FVM, Project Office														•Meetings	
1.5	**Formulation of sample flow from the field to the J-NADIC**	• Finalised sample flow chart	DLHE, MAK-FVM, DVOs, Project Office														•Meetings	
2	**Enhancement of the capacity of the J-NADIC**																	
2.1	Establishment of the integrated diagnostic service functions in the J-NADIC	• The diagnostic service functions established	DLHE, MAK-FVM, Project Office														• Meetings	
2.1.1	Identification of necessary diagnostic techniques at NADDEC and MAK-FVM	・Necessary techniques listed	DLHE, MAK-FVM, Project Office															
2.1.2	Introduce and improve the identified diagnostic techniques	・No. of introduced and improved techniques																
2.2	Establishment of sample reception system from the field	• No. of samples received	DLHE, MAK-FVM, DVOs, Project														• Meetings	
2.3	Enhancement of the specialized diagnostic techniques	• Diseases newly become able to be diagnosed by the established techniques	NADDEC, MAK-FVM, Project office															
2.3.1	Identification of target diseases	• Study reports submitted to the JCC	NADDEC, MAK-FVM, Project office														• Japanese experts • Staff training • Supply of equipment	

No.	Project Activities	Target/Indicator	Responsible/ Supported by	Japanese Fiscal Year (JFY)												Input	Remark
				2010				2011				2012				2013		
				J	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ		
2.3.2	Establishment of molecular diagnosis for major infectious diseases	• No. of diseases that can be diagnosed by the	NADDEC, MAK-FVM, Project office														• Japanese experts • Staff training • Supply of	**Target diseases:**
2.3.3	Improvement of pathological and immuno-pathological diagnosis	• No. of samples processed & diagnosed	NADDEC, MAK-FVM, Project office														• Japanese experts • Staff training • Supply of	
2.3.4	Improvement of bacterial diagnosis	• Kinds of bacteria newly enabled to be isolated and identified	NADDEC, MAK-FVM, Project office														• Japanese experts • Staff training • Supply of equipment	**Target disease:**
2.3.5	Improvement of parasitological diagnosis	・Kind of parasite infection enabled to be diagnosed	NADDEC, MAK-FVM, Project office														・Japanese experts ・Staff training ・Supply of equipment	**Target disease:**
2.3.6	Establishment of virus isolation technique and serum neutralisation test	• No. of cell lines established • No. of reference virus strains stored	NADDEC, MAK-FVM, Project office														• Japanese experts • Staff training • Supply of equipment	**Target disease:**
2.3.7	Improvement of selological techniques	・No. of introduced and improved techniques	NADDEC, MAK-FVM, Project office														• Japanese experts • Staff training • Supply of equipment	
2.3.8	Improvement of clinical biochemistry and hematology techniques	• No. of biochemical tests established	MAK-FVM, Project office														• Japanese experts • Staff training • Supply of	**Target tests:**
2.3.9	Development of diagnostic tools	• No. of diagnostic tools developed	MAK-FVM, Project office														• Japanese experts • Staff training	**Target diseases:**
2.3.10	Preparation of diagnostic manuals	• No. of manuals prepared	NADDEC, MAK-FVM, Project office														• Japanese experts • Meetings	
2.4	**Production of diagnostic reagents**		NADDEC, Project office															
2.4.1	Study on the necessary reagents and its production technology	• Study reports submitted to the JCC	NADDEC, Project office														• Japanese experts • OIE standards	**Example**: FITC conjugate for rabies
2.4.2	Production and supply of the diagnostic reagents for brucellosis	• Kinds and quantity of reagents produced and utilised	NADDEC, Project office														• Japanese experts • Staff training	

No.	Project Activities	Target/Indicator	Responsible/ Supported by	Japanese Fiscal Year (JFY)													Input	Remark
				2010				2011				2012				2013		
				J	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ		
2.4.3	Production and supply of the stock solution for sample preparation	• Kinds and quantity of solutions produced and utilised	NADDEC, Project office															
3	**Establishment of an investigation system for emergency diseases**																	
3.1	**Study on an appropriate system**	• The system approved by the JCC	DLHE, MAK-FVM, Project office														• Colllaborative study • Meetings	
3.2	**Formulation of an operational system (Joint Disease investigation team)**	• The actual system established	DLHE, MAK-FVM, Project office, DVOs														• Japanese experts	
3.3	**Operation of the system (Investigation team)**	• No. of disease outbreaks investigated	NADDEL, MAK-FVM, Project office, DVOs, NaLIRRI														• Staff training	
4	**Development of an information exchange system**																	
4.1	**Study on an appropriate system**	• The system approved by the JCC	DLHE, MAK-FVM, Project office														• Colllaborative study • Meetings	
4.2	**Introduce the information sharing system of diagnostic results.**	• The actual system developed	DLHE, MAK-FVM, Project office														• Japanese experts	
4.3	**Operation of the system**	• Quantity and quality of the information shared	NADDEC, MAK-FVM, Project office														• Staff training	
5	**Capacity development of the selected District Veterinary Offices**																	
5.1	**Selection of collaborating District Veterinary Offices(DVOs)**	• No. of DVOs selected and approved by the JCC	NADDEC, MAK-FVM, Project office														• Colllaborative study • Japanese experts	
5.2	**Staff training on primary diagnosis and sample preparation**																	
5.2.1	Improvement of diagnostic capability of the laboratories in the selected DVOs	• Kinds of diagnostic tests established at the selected DVOs	NADDEC, MAK-FVM, Project office, DVOs, NaLIRRI														• Japanese experts • Supply of equipment	

No.	Project Activities	Target/Indicator	Responsible/ Supported by	Japanese Fiscal Year (JFY)													Input	Remark
				2010				2011				2012				2013		
				J	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND	JFM	AMJ		
5.2.2	Staff training	• No. of training courses held • No. of the DVO staff trained	NADDEC, MAK-FVM, Project office, DVOs, NaLIRRI														• JOCV members • Japanese experts • MAK-FVM staff • NADDEC staff	
5.3	**Enhancement of the field activities**																	
5.3.1	Implementation of sample collection, preparation and diagnostic tests	• No. of samples collected and examined • No. of samples submitted to the J-NADIC	Project office, DVOs, NaLIRRI														• JOCV members • MAK-FVM students	**Target diseases:**
5.3.2	Feeding back the diagnostic results to farmers	• No. of diagnostic results feeded back to farmers.	Project office, DVOs, NaLIRRI														• JOCV members • Japanese experts	
6	**Monitoring and evaluation of the Project activities**																	
6.1	**Holding Committee meetings**																	
6.1.1	Technical Committee (TC) Meeting	• No. of meetings held	Project Office, JICA,														• Participation of TC members	
6.1.2	Joint Coodinating Committee (JCC) Meeting	• No. of meetings held	Project Office, JICA,														• Participation of JCC members	
6.2	**Monitoring and evaluation**																	
6.2.1	Monitoring and evaluation of the activities	• No. of staff meetings held	Project office, DLHE, MAK-FVM															
6.2.2	Evaluation of the Project		MAAIF, MAK-FVM,														• Dispatch of mission team	

Abbreviations

DLHE: Department of Livestock Health & Entomology
MAK-FVM: MakerereUniversity, Faculty of Veterinary Medicine
MAAIF: Ministry of Agriculture, Animal Industry and Fisheries
NaLIRRI: National Livestock Resources Research Institute, formerly known as LIRI: Livestock Health Research Institute
JICA: Japan International Cooperation Agency
HPAI: highly pathogenic avian influenza
ND: Newcastle disease
Entebbe Lab.: Animal Disease Diagnostic and Epidemiology Laboratory
CBPP: contagious bovine pleuropneumonia
ECF: east coast fever
NADDEC: National Animal Disease Diagnostic & Epidemiology Centre
DVO: District Veterinary Office
J-NADIC: Joint National Animal Disease Diagnostic Centre
JOCV: Japan Overseas Cooperation Volunteers
ASF: African swine fever
FMD: foot and mouth disease
PPR: peste des petitis ruminants
CCPP: contagious caprine pleuropneumonia
LSD: lumpy skin disease

Appendix 8

Tentative List of the diseases and diagnostic techniques covered by the Project

March 2011

Name of diseases	Present technique	Techniques by the Project
(State Control Diseases)		
CBPP, CCPP	ELISA-Kit（NADDEC）	ELISA, CFT, PCR
Rabies	IFAT（NADDEC）	IFAT, histopathology
（Notifiable diseases）		
Trypanosomiasis	Microscopic, PCR (MAK)	Microscopic, HCT
Tuberculosis		Tuberculin test, histopathology
Sheep (Goat) Pox		Histopathology
African Swine Fever	ELISA Kit (NADEC)	PCR
Swine Erysipelas		Bacteria Isolation, histopathology
Blackquater	Bacteria isolation (MAK)	Bacteria isolation, histopathology
Brucellosis:	Rose Bengal（NADDEC）, ELISA(NADDEC)	Rose Bengal, ELISA, Bacteria isolation, PCR
Trichomoniasis	Microscopic	Microscopic
Campylobacteriosis		Bacteria Isolation, PCR, IFAT
Paratuberclosis		Histopathology
All tick-born diseases	Microscopic	Microscopic, histopathology
Lumpy Skin Disease		SNT, RT-PCR
Newcastle Disease		HI, histopathology
Gumboro Disease		Virus Isolation, ELISA, Histopathology
Fowl Pox:		Clinical and histopathology

1

(Other diseases)		
PPR	ELISA-Kit	ELISA, SNT
Mastitis		Bacteria isolation, Sensitivity test
Salmonellosis		Bacteria isolation
Colibacillosis		Bacteria isolation
Anthrax	Bacteria isolation, staining	Bacteria isolation, Pearl test
Nutritional Deficiency		Pathology, histopathology, biochemistry.
Parasitic Diseases	Microscopic	Microscopic, Pathology, histopathology
(emerging diseases)		
RVF		ELISA, SNT

2

Disposables, chemicals and small equipment from the Project (as of Dec. 2010)

Item	Number	Date	Stored in	Purpose
FALCON 15 ml-conical tube, 500/case	1 case	18/11/2010	Central Lab.	cell culture
FALCON 50 ml-conical tube, 500/case	1 case	18/11/2010	Central Lab.	cell culture
FALCON 96-well culture plate, 50/case	2 cases	18/11/2010	Central Lab.	cell culture
FALCON 24-well culture plate, 50/case	1/2 case	18/11/2010	Central Lab.	cell culture
FALCON 6-well culture plate, 50/case	1 case	18/11/2010	Central Lab.	Brucella Ag.
CELLSTAR, 75 cm2 culture flask, 50/case	2 cases	18/11/2010	Central Lab.	DVOs
OLYMPUS, microscope	2	18/11/2010	JICA	cell culture
Fetal calf serum, 500 ml	1	18/11/2010	Central Lab.	ELISA
ABTS, 10 g	1	18/11/2010	Central Lab.	cell culture
Streptomycin, 25 g	1	18/11/2010	Central Lab.	cell culture
Trypsin, 25 g	1	18/11/2010	Central Lab.	cell culture
Rose Bengal Reagent, 5 ml	30	18/11/2010	Central Lab.	diagnosis
BOVITUBER PPD, 5 ml	14	18/11/2010	Central Lab.	diagnosis
Gentamicin Injection, 40 mg/2 ml	19	18/11/2010	Central Lab.	cell culture
TMB substrate tablet, 50/box	1 box	18/11/2010	Central Lab.	ELISA
Reagents for Brucella ELISA		18/11/2010	Central Lab.	ELISA
Penicillin G Potassium, 1592 units/mg	1	18/11/2010	JICA	cell culture
Rose Bengal sodium salt, 25 g	1		JICA	Rose Bengal
Floating rack, 4/pkg	1 pkg		JICA	PCR
ASSISTANT Micropipette, 100-1000 ul	1		JICA	general
ASSISTANT Micropipette, 10-100 ul	1		JICA	general
Pipette Box	3		JICA	general
Spreader, Bacterial Cell, 25 mm	4		JICA	bacteria
DE52, 500 g	2		JICA	anion exchange
Cristaseal, 10 trays/box	2 boxes		JICA	hematocrit
Sodium periodate, 25 g	1		Yoshi's	conjugation
Sodium borohydride 25 g	1		Yoshi's	conjugation
Cellulose Nitrate Membrane Filters, 100/bo	1 box		JICA	filtration
Micro Hematocrit Tube Reader	1		JICA	hematocrit
Microscope cover glass, 10/box	4 boxes		JICA	cell count
Hemacytometer Set	4		JICA	cell count
Weigh Boats, small	1 box		JICA	weighing
Weigh Boats, medium	1 box		JICA	weighing
Weigh Boats, large	1 bag		JICA	weighing
Micro-mate hypodermic syringe, 5 ml	2		JICA	adjuvant mixture
Dialysis membrane	1		JICA	dialysis
Drumond Pipette-Aid	2		JICA	cell culture
Medium bottle, 100 ml, 10/box	6 boxes	20/11/2010	Central Lab.	general
Reagent bottle, 100 ml, 10/box	2 boxes	20/11/2010	Central Lab.	general
Medium bottle, 250 ml, 10/box	4 boxes	20/11/2010	Central Lab.	general
Reagent bottle, 250 ml, 10/box	3 boxes	20/11/2010	Central Lab.	general
Medium bottle, 500 ml, 10/box	1.5 boxes	20/11/2010	Central Lab.	general
Reagent bottle, 500 ml	4	20/11/2010	Central Lab.	general
Medium bottle, 2000 ml	5	20/11/2010	Central Lab.	general
Vortex Mixer	1	20/11/2010	Central Lab.	general
Cryogenic Vials, 2 ml, 500/box	2 boxes	20/11/2010	Central Lab.	cryopreservation
ELISA Plate, NUNC, MaxiSorp, 60/case	5 cases	20/11/2010	Central Lab.	ELISA
Carboy, 20 litre	2	20/11/2010	Central Lab.	general

Item	Number	Date	Stored in	Purpose
Mortar	4	20/11/2010	Central Lab.	virus isolation
Slideglass for IFAT, 24 wells/slide, 72/case	10 cases	20/11/2010	Central Lab.	IFAT
Cryobox, green	16	20/11/2010	Central Lab.	serum storage
Cryobox, yellow	20	20/11/2010	Central Lab.	serum storage
Cryobox, red	20	20/11/2010	Central Lab.	serum storage
Eppendorf tube, 1.5 ml, 1000/bag	9 bags	20/11/2010	Central Lab.	general
Eppendorf tube, 2 ml, 1000/bag	11 bags	20/11/2010	Central Lab.	general
Test tube rack, white, full size	10	20/11/2010	Central Lab.	general
Test tube rack, white, half size	3	20/11/2010	Central Lab.	general
Test tube rack, red, full size	12	20/11/2010	Central Lab.	general
Test tube rack, red, half size	6	20/11/2010	Central Lab.	general
Syringe driven filter unit, 100/box	4 boxes	20/11/2010	Central Lab.	cell culture
Autoclave tape	5	20/11/2010	Central Lab.	autoclave
Eppendorf tube rack	10	20/11/2010	Central Lab.	general
Washing bottle	7	20/11/2010	Central Lab.	DW, washing
Parafilm	2	20/11/2010	Central Lab.	general
Tupperware set		20/11/2010	JICA	storage
Tip, 1 ml, eppendorf, 2X500/box	5 boxes	15/12/2010	Central Lab.	general
Eppendorf tube, 1.5 ml, 1000/box	2 boxes	15/12/2010	Central Lab.	general
Tip, 1 ml, eppendorf, 5 racks/box	5 boxes	15/12/2010	Central Lab.	general
Tip, 1 ml, eppendorf, 5 trays/box	2 boxes	15/12/2010	Central Lab.	general
Tip, 10 µl, Finntip, 5 racks/box	2 boxes	15/12/2010	Central Lab.	general
Serum tube, screw cap, 2 ml, 1000/box	5 boxes	15/12/2010	Central Lab.	serum storage
Hotplate magnetic stirrer	1	15/12/2010	Central Lab.	general
Stirring bars in 3 different sizes	many	15/12/2010	JICA	general
Spatula, large & small	several	15/12/2010	JICA	general
Glass universal tubes	50	15/12/2010	Central Lab.	general
Tea sieve	3	15/12/2010	Central Lab.	fecal exam.
Autoclave bags, 100/bag	8 bags	15/12/2010	Central Lab.	Autoclave
Storage cane, 50 pcs/box	1 box	15/12/2010	Central Lab.	Liquid nitrogen
Plastic tray, green & blue	2	15/12/2010	Central Lab.	general
Finntip 300, 1000/bag	5.5 bags	15/12/2010	Central Lab.	general
Finntip 10, 1000/bag	2 bags	15/12/2010	Central Lab.	general
Finntip 300 rack, orange	3 racks	15/12/2010	Central Lab.	general
Finntip 200 rack, yellow	3 racks	15/12/2010	Central Lab.	general
Funnel for water	3	15/12/2010	Central Lab.	general
Tip rack from Nihon Univ., blue	6 racks	15/12/2010	Central Lab.	general
Plastic bottle, 100 ml	many	15/12/2010	Central Lab.	general
Plastic bottle, 250 ml	many	15/12/2010	Central Lab.	general
Serum tube with cap, 1000/bag	2 bags	15/12/2010	Central Lab.	serum storage
Resevoirs for ELISA	several	15/12/2010	Central Lab.	ELISA
Tubing for gas		15/12/2010	Central Lab.	Bunsen burner
Containers for CMT reagent, green & blue	1 each	15/12/2010	Central Lab.	CMT
Aerosol spray, red	1	15/12/2010	Central Lab.	Alcohol
Trai for CMT	1	15/12/2010	Central Lab.	CMT
Steelwool	1 bag	15/12/2010	Central Lab.	general
Syringe, 20 ml	2 boxes	15/12/2010	Central Lab.	general
Lens cleaning tissues	9 books	15/12/2010	Central Lab.	microscope
Whatman filter paper No. 1	1 box	15/12/2010	Central Lab.	filter
Merck filter paper No. 413	1 box	15/12/2010	Central Lab.	filter

Item	Number	Date	Stored in	Purpose
Long needle, 70 mm	4 boxes	15/12/2010	Central Lab.	general
Blades, 100 pcs/pkg	2 pkgs	15/12/2010	Central Lab.	autopsy
Mini vortex mixer from Nihon Univ.	3	15/12/2010	Central Lab.	general
CMT reagent, 1 litre/bottle	4 bottles	15/12/2010	Central Lab.	CMT
Petridishes, 500 pcs/box	1 box	15/12/2010	Central Lab.	bacteria culture
Sodium chloride, 500 g	3 bottles	15/12/2010	Central Lab.	general chemical
EDTA, 100 g	1 bottle	15/12/2010	Central Lab.	general chemical
Trisodium citrate, 100 g	4 bottles	15/12/2010	Central Lab.	general chemical
Yeast extract, 500 g	1 bottle	15/12/2010	Central Lab.	bacteria culture
L-glutamine, 100 g	1 bottle	15/12/2010	Central Lab.	cell culture
Sodium iodate, 100 g	1 bottle	15/12/2010	Central Lab.	hematoxylin
EGTA, 100 g	1 bottle	15/12/2010	Central Lab.	Brucella ELISA
Aluminium ammonium dodecahydrate, 500	2 bottles	15/12/2010	Central Lab.	hematoxylin
Sodium hydrogen carbonate, 500 g	1 bottle	15/12/2010	Central Lab.	general chemical
Tryptose phosphate broth, 500 g	1 bottle	15/12/2010	Central Lab.	cell culture
SDS, 500 g	1 bottle	15/12/2010	Central Lab.	ELISA
Glycine, 250 g	2 bottles	15/12/2010	Central Lab.	general buffer
Trichloroacetic acid (TCA), 500 g	1 bottle	15/12/2010	Central Lab.	Brucella antigen
Urea agar base, 500 g	1 bottle	15/12/2010	Central Lab.	bacteria culture
Tris, 250 g	2 bottles	15/12/2010	Central Lab.	general buffer
Nutrient agar, 500 g	3 bottles	15/12/2010	Central Lab.	bacteria culture
Sodium carbonate, 500 g	1 bottle	15/12/2010	Central Lab.	general chemical
Basic fuchsin, 25 g	1 bottle	15/12/2010	Central Lab.	bacteria stain
Bleach	1 bottle	15/12/2010	Central Lab.	kitchen chemical
Finnpipette, 0.5-10 µl	3	15/12/2010	JICA	general
Finnpipette, 5-50 µl	3	15/12/2010	JICA	general
Finnpipette, 20-200 µl	3	15/12/2010	JICA	general
Finnpipette, 100-1000 µl	3	15/12/2010	JICA	general
Finnpipette digital MCP, 8 channel, 5-50 µl	2	15/12/2010	JICA	serology
Finnpipette digital MCP, 8 channel, 50-300	2	15/12/2010	JICA	serology
Multichannel pipette, eppendorf, 30-300 µl	1	15/12/2010	JICA	serology
Pipette aid (drummond)	3	15/12/2010	JICA	general
Laboratory stool	8	15/12/2010	Central Lab.	general
Staining pot	10	15/12/2010	Central Lab.	pathology
Basket for staining pot	5	15/12/2010	Central Lab.	pathology
Lactic acid, 500 ml	1 bottle	15/12/2010	Central Lab.	Rose Bengal
Tween 20, 500 ml	1 bottle	15/12/2010	Central Lab.	ELISA
DMSO, 250 ml	1 bottle	15/12/2010	Central Lab.	cryopreservation

Equipment necessary for the diagnostic work

Item	Reference	Attachment	Purpose	Comment	Priority
Laminar flow bench	Bio Vertical, BIO 48-M (from VWR)	stand, wheel, UV light,sucktion pump, waste bottles, bunsen burner, pipette aid	cell culture, virus isolation, SNT, etc.	The safety cabinets to be provided this year are not big enough to accommmodate virological work.	A
Inverted microscope	Olympus	nothing special	cell culture, virus isolation, SNT, etc.	A high grade, multi-functional fancy model is not necessary, however, x400 objective lens is needed.	A
Distiller	Water stills, Aquatron (A4000D, stuart from VWR)	prefilter, large carboy (at least 40 liter water tank for reservoir)	production of double distilled water	The current one needs 3-phase line so check it first. If it does not work propery, then a new one should be bought.	B
Water purification system	Milli-DI, MILLIPORE, Simplicity 185 system	specific filters	production of high quality water	Cell culture, PCR and some special staining need high quality water.	C
Multichannel piptte	Finnpipette (Thermo)	tips and tip racks	ELISA	At least 3-4 pieces are needed.	A
Micropipette	Finnpipette (Thermo)	tips and tip racks	used for many tests or analysis	At least 5 sets consisting of 3-4 different quantities are needed.	A
pH meter	HORIBA (portable), SevenEasy pH S20 (bench)	standard solutions, spare electrode.	pH measurement	This will be utilised frequently in the lab. Both bench-top and handy tyeps should be equipped.	A
High-grade balance	Sartorius (from VWR)	spatula, weighing boat	weighing	A balance that can measure at least up to 1 mg is needed.	B
ELISA plate reader	Multiskan FC (Thermo)	at least the filters of 410 nm (ABTS), 450 nm (TMB), 492 nm (OPD)	reading OD for ELISA	If the diagnostic function is concentrated in Central Lab., a reader is necessary as ELISA will be the core of diagnosis.	A
ELISA plate washer	Ultrawash PLUS (from VWR)	nothing special	washing ELISA plates	The column-wise washing type may be better as the simultaneous type one can	A
Microplate shaker	Titramax 100, Heidolph (from VWR)	nothing special	acceleration of ELISA reactions	The one that accommodates 4 plates simultaneously is better.	B
Ultrasonicator	Vibra-Cell VCX 130 (from VWR)	several probes in different sizes	fragmentation of antigen and preparation	Not necessarily be required but useful if available as it's inexpensive.	C
Spectro-photometer	BioPhotometer, eppendorf (from VWR)	cuvets for 1 ml-samples, Filter for ultra-violet light (260-	quantitation of protein and DNA	Can be useful to quantify antigen, antibody or DNA, and applied for enzyme activity	C

Item	Reference	Attachment	Purpose	Comment	Priority
Lyophiliser (Freeze dryer)	FreeZone Triad Freeze Drying System, Labconco (from VWR)	small glass bottles for preservation	preservation of antigen, antibody, reagents, bacteria, etc.	Samples normally stored in a freezer can become preserved at room temperature.	C
High speed refrigerated centrifuge	ROTINA 420R (from VWR)	rotors, baskets and containers compatible with them	production of biological reagents, etc.	The one that accommodates a large volume (0.5-2 liters) at a time is required.	B
Ultraspeed centrifuge		rotor, special containers	preparation of viral	Necessary for the purification of viruses	C
Thermal cycler	Mastercycler ep gradient S, eppendorf	reagents and disposables for PCR,	PCR	An old model is available in Central Lab., but introduction of a portable one should be considered as it's inexpensive.	A
Gel image capture	PhotoDoc-It 60 Imaging System (from VWR)	compatible transilluminator, spare UV light	confirmation of PCR products	If available the onethat can work with ordinary digital cameras is better.	B
Refrigerator with freezer	Japanese product with large capacity	nothing special	storage of buffer, reagents, medium, etc.	Every unit needs one or two. A large family type is O.K.	A
Orbital Shaker	Standard 3500 (VRW)	異なる種類のプラットフォーム	Brucella cultuer, etc.	Frequently used when continuous shaking is	B
Stomacher	80 Biomaster, seward (from VWR)	異なる種類の専用のプラスチック・バッグ	extraction of bacteria from tissues	Frequently used for bacterial isolation.	B
Ice maker (flake type)	AF100 (Storage 32 kg, from VWR)	nothing special	treatment of biological samples at 4 degree.	Flake ice is often required for laboratory work so it's essential for the lab.	A
Mixer	Vortex Mixer	nothing special	mixing solutions	One for each table	B

Priority A: essential for the lab
Priority B: not essential but useful if there're
Priority C: necessary for special purposes

Necessary disposables and chemicals for cell culture and virus isolation

No.	Item	Provider	Catalogue number, Specifications		Reference Price	Use, Remarks	@
1	L-Glutamin	SIGMA	G 5763, 100 g	1	¥ 7,500	necessary for medium	1
2	Antibiotic Antimycotic Solution (100 x)	SIGMA	A-9909, 100 ml	2	¥ 4,000	antibiotics for medium (not necessary if penicillin and streptomycin are available	3
3	DMSO	SIGMA	D-5879, 100 ml	1	¥ 3,900	cryopreservation of cells	2
6	Cell culture flasks, 25 cm^2		Canted, 500/pk			cell culture	3
7	Cell culture plates, 6 well		50/pk			cell culture and virus isolation	1
8	Cell culture plates, 24 well		100/pk			cell culture and virus isolation	2
9	Cell culture plates, 96 well		F-bottom, Corning, 100/pk			serum neutralization test	2
10	Membrane filters		0.22 um pore size, 47 mm diameter, 100/pk			steralization of solutions	1
11	Membrane filters		0.45 um pore size, 47 mm diameter, 100/pk			steralization of samples	3
12	Fetal calf serum					necessary for medium	2
13	Tryptose phosphate broth					necessary for medium	1
14	Sodium bicarbonate					adjustment of medium pH	1
15	Trypsin					necessary for cell subpassage	1
16	Eagle's MEM					basic medium for cell culture	1
17	Penicillin G, 10,000,000 units	SIGMA	P-7794		$51	antibiotics for medium	1
18	Streptomycin sulfate salt, 25 g	SIGMA	S-9137		$81	antibiotics for medium	1
19	Other antibiotics such as gentamicin					antibiotics for medium	2
20	Anti-fungal drugs (amphotericin B					mycotics for medium	2

availability at Central Lab, MAK-FVM
1: available, 2: available but may not be enough, 3: not available

Necessary disposables and chemicals for ELISA and IFAT

No.	Item	Provider	Catalogue number, Specifications		Reference Price	Use, Remarks	@
1	3, 3', 5, 5'-Tetra-methylbenzidine (TMB)	SIGMA	T-2885, 1 g	1	¥ 3,700	Substrate (more sensitive than ABTS but more background problems)	1
2	Immunoglobulin [Rabbit Polyclonal Anti-Cow	DAKO	P-159, Peroxydase labeled, 2 ml	1	¥ 20,000	Conjugate for bovine samples (protein G conjugate can be used instead)	3
3	Immunoglobulin [Rabbit Polyclonal Anti-Mouse	DAKO	P-260, Peroxydase labeled, 2 ml	1	¥ 18,500	Conjugate for mouse samples (protein G conjugate can be used instead)	3
4	Immunoglobulin [Swine Polyclonal Anti-Rabbit	DAKO	P-217, Peroxydase labeled, 2 ml	1	¥ 20,000	Conjugate for rabbit samples (protein G conjugate can be used instead)	3
5	2, 2'-Azino-bis (ABTS)	SIGMA	A-1888, 2 g	1	¥ 8,200	Substrate (less sensitive than ABTS but less background)	1
6	Micro-mate Interchangeable Syringe	SIGMA	Z10,105-2, 5 cc capacity, Needle-lock Luer tip style, 6/pkg	1	¥ 20,000	Necessary for mixing antigens with adjuvant to make inoculum	1
7	2-Way Leur Lock	SIGMA	S-7396, 10/pkg	2	¥ 12,600	Necessary for mixing antigens with adjuvant to make inoculum	3
8	Brilliant Blue G	SIGMA	B-0770, 5g	1	¥ 4,900	reagent for protein assay	1
9	Phosphoric Acid	SIGMA	P-6560, 500 g	1	¥ 3,000	reagent for protein assay	3
	Ammonium sulfate					purification immunoglobulin (IgGs)	3
10	Caprylic Acid	SIGMA	C-2875, 100 ml	1	¥ 3,900	purification immunoglobulin (IgGs)	3
11	ELISA Plate	Dynatech	Imulon 2, 50/pkg, 96 wells, Flat Bottom	1	¥ 14,400	good for antigen detection ELISA	3
12	ELISA Plate	Nunc	Maxisorp Surface, 60/pkg, 96 wells, Flat Bottom	1	¥ 15,000	good for antibody detection ELISA	1
13	Peroxydase from Horseradish	SIGMA	P-6782, 5 mg	2		enzyme for making HRP conjugate	3
14	24 Well Culture Plate	SIGMA	M-9655, 24 wells, Flat Bottom, 50/pkg	1	¥ 18,000	convenient for serum dilution	2
14	Freund's Adjuvant, Incomplete	SIGMA	F-5506, 10 x 10 ml/box	1	¥ 13,900	boost immunization	3
16	Freund's Adjuvant, Complete	SIGMA	F-5881, 6 x 10 ml/box	1	¥ 8,500	primary immunization	3
17	FITC	Cappel	No. 55879, 100 mg	1	28,000	fluorescent dye for making FITC conjugate	3
18	Columms for Liquid Chromatography	SIGMA	Sigma C-4794, 2.5 x 20 cm, Bed vol. 98 ml, Luer lock	2	¥ 20,400	column for making FITC conjugate	3

19	Sephadex G-25	Pharmacia	No. 17-0034-01, 100 g	1	¥ 23,000	gel for making FITC conjugate	3
20	Anion exchanger (DE52)	Whatman				gel for purifying FITC conjugate	1
21	Triton X-100	SIGMA	SigmaUltra, T-9284, 500 ml	1	¥ 7,900	detergent for insoluble antigen	3
22	Tween 20					detergent for washing buffer	2
23	Bovine serum albumin (BSA)					blocking nonspecific reactions	1
24	Molecularpores Membrane Tubing		SPECTRA/POR, No. 132700, width 25 mm, diameter 16 mm, 3(		¥ 15,000	dialysis of solutions	1
25	Dialysorb	SIGMA	Z37,099-1, 50 mm, Red, 10/pkg		¥ 13,000	dialysis of solutions	1

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Necessary disposables and chemicals for *Brucella* antigen production

No.	Item	Provider	Catalogue number, Specifications		Reference Price	Use, Remarks	@
1	Brucella agar					Agar for Brucella culture	3
2	Yeast extract	Difco	500 g		$ 94	Necessary for Brucella culture	1
3	Aluminium ammonium sulfate	SIGMA	A-2140, 500 g		$ 273	chemical for hematoxylene (milk ring test)	1
4	Sodium iodate	SIGMA	S-4007, 100 g		$ 98	chemical for hematoxylene (milk ring test)	1
5	Rose bengal sodium salt	SIGMA	R-3877, 25 g		$ 154	chemical for rose bengal test	1
6	DL-Lactic acid sodium	SIGMA	L-6661, 500 ml		$ 310	chemical for rose bengal test	2
7	Ethyleneglycol-bis (aminoethyl ether) – N,N,N', tetraacetic acid	SIGMA	E-4378, 100 g		$ 700	chemical for ELISA	2
8	ABTS					chemical for ELISA	1
9	Rec-Protein G-Peroxidase (HRP-rec-Protein G) conjugate (EIA Grade)	Zymed	Code No.10-1223, 1 ml		$ 300	chemical for ELISA	2
10	ELISA Plate	Nunc	Maxisorp Surface, 60/pkg, 96 wells, Flat Bottom	1	¥ 15,000	plate for ELISA	1
11	Cell culture flasks, 75 cm^2					flask for Brucella culture (propagation)	1
12	Plastic petridishes		90x14 mm, sterile, 600/pk			Brucella primary culture	2
13	Molecularpores Membrane Tubing		SPECTRA/POR, No. 132700, width 25 mm, diameter 16 mm, 3(		¥ 15,000	dialysis of ELISA antigen	1
14	Dialysorb	SIGMA	Z37,099-1, 50 mm, Red, 10/pkg		¥ 13,000	dialysis of ELISA antigen	1
15							
16							

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Necessary disposables and chemicals for *Neospora* antigen production

No.	Item	Provider	Catalogue number, Specifications		Reference Price	Use, Remarks	@
1	MEM					medium for Neospora culture	2
2	L-Glutamin	SIGMA	G 5763, 100 g	1	¥ 7,500	supplement for medium	1
3	Antibiotic Antimycotic Solution (100 X)	SIGMA	A-9909, 100 ml	2	¥ 4,000	supplement for medium	2
4	MEM Vitamins Solution (100 X)	SIGMA	M-6895, 100 ml	2	¥ 2,400	supplement for medium	3
5	MEM Amino Acids Solution (50 X)	SIGMA	M-7020, 100 ml	4	¥ 3,800	supplement for medium	3
6	Non-Essential Amino Acids Solution (100 X)	SIGMA	M-7145, 100 ml	2	¥ 3,300	supplement for medium	3
7	DMSO	SIGMA	D-5879, 100 ml	1	¥ 3,900	cryopreservation of Neospora	2
8	Percoll	SIGMA	P-1644, 500 ml	1	¥ 22,700	purification of Neospora	3
9	Paraformaldehyde	SIGMA	P-6148, 500 g	2	¥ 1,700	fixation of Neospora	3
10	FITC Conjugate to Bovime IgG	SIGMA	F-7887, 1 ml	1	¥ 11,900	conjugate for IFAT	3
11	FITC Conjugate to Dog IgG	SIGMA	F-7884, 1 ml	1	¥ 12,500	conjugate for IFAT	3
12	Triton X-100	SIGMA	SigmaUltra, T-9284, 500 ml	1	¥ 7,900	detergent for washing buffer of IFAT	3
13	Horse Serum		500 ml	2	¥ 2,500	Supplement for medium	3
14	Slide Glass for IFAT	CEL-LINE	24 wells/slide, Diameter: 4 mm, HTC Super Cured (R), Black			IFAT	1
15	Cover Glass	SIGMA	C-9056, 24 x 60 mm (approx. 54/pkg), 10 pkg/case	1	¥ 22,500	IFAT	3
16	Motorized Microtiter Pipette (EDP-Plus)	RAININ	EP-1000, Volume Range: 25-250 ul, Smallest increment: 0.5 u	1	¥ 62,900	Distribution of Neospora onto IFAT slides (micropipette can substitute)	3
17	Battery Pack for EDP-Plus pipette	RAININ	6100-080, for cordless operation	2	¥ 20,000		3
18	Rapid Charge Stand for EDP-Plus pipette	RAININ	6101-049	1	¥ 20,000		3

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Necessary disposables and chemicals for monoclonal and polyclonal antibody production

No.	Item	Provider	Catalogue number, Specifications		Reference Price	Use, Remarks	@
1	8-Azaguanine	SIGMA	A-5284, 10 vials/pkg	1	¥ 6,000	selection of hybridomas	3
2	HAT Media Supplement	SIGMA	H-0262, 50 X, 10 vials/pkg	1	¥ 9,900	selection of hybridomas	3
3	••HT Media Supplement	SIGMA	H-0137, 50 X, 10 vials/pkg	1	¥ 6,800	growing hybridomas	3
4	NCTC 135 Medium	SIGMA	N-5138 , 10 X 1 litre	1	¥ 3,000	growing hybridomas	3
5	OPI Media Supplement	SIGMA	O-5003	5	¥ 17,800	growing hybridomas	3
6	Iscove's Modified Dulbecco's Medium	SIGMA	I-2510, 10X1 litre	1	¥ 16,600	growing hybridomas (usual MEM can be used)	3
7	Dimethyl Sulfoxide (DMSO)	SIGMA	D-2650, 5 X 10 ml	1	¥ 8,400	cryopreservation of cells	2
8	Gentamicin Solution (50 mg/ml)•	SIGMA	G-1397 10 ml		7300	antibiotics for medium	2
9	Polyethyleneglycol (PEG)	SIGMA	P-7181, 50% solution, 5 X 5 ml	1	¥ 7,700	fusion	3
10	L-Glutamin	SIGMA	G 6392, 100 g	1	¥ 7,500	necessary for medium	2
11	2, 6, 10, 14-Tetra-methylpentadecane	SIGMA	T-7640, 100 ml (Pristane)	1	¥ 5,200	priming mice for acites	3
12	3, 3', 5, 5'-Tetra-methylbenzidine (TMB)	SIGMA	T-2885, 1 g	1	¥ 3,700	substrate for Ab-ELISA (MAb screening)	1
13	Immunoglobulin [Rabbit Polyclonal Anti-Mouse	DAKO	P-260, Peroxydase labeled, 2 ml	1	¥ 18,500	Conjugate for mouse samples (MAb screening, protein G conjugate can be used instead	3
14	2, 2'-Azino-bis (ABTS)	SIGMA	A-1888, 2 g	1	¥ 8,200	substrate for Ab-ELISA (MAb screening)	1
15	Micro-mate Interchangeable Syringe	SIGMA	Z10,105-2, 5 cc capacity, Needle-lock Luer tip style, 6/pkg	1	¥ 20,000	Preparation of inoculum to immunize mice	1
16	2-Way Leur Lock	SIGMA	S-7396, 10/pkg	2	¥ 12,600	Preparation of inoculum to immunize mice	3
18	Brilliant Blue G	SIGMA	B-0770, 5g	1	¥ 4,900	Protein assay	3
19	Phosphoric Acid	SIGMA	P-6560, 500 g	1	¥ 3,000	Protein assay	3
20	Ammonium sulfate					purification immunoglobulin (IgGs)	3
21	Caprylic Acid	SIGMA	C-2875, 100 ml	1	¥ 3,900	purification immunoglobulin (IgGs)	3
22	Trypan Blue Solution	SIGMA	T-8154, 100 ml	1	¥ 1,500	counting live cells	3
23	Ammonium Chloride	SIGMA	A-4514, 100 g	1	¥ 1,500	lysis of erythrocytes	3
24	Multiwell Plate	SIGMA	M-9780, 96 well, flat bottom, sterile, 50/pkg	1	¥ 33,400	growing hybridomas	1

25	ELISA Plate	Nunc	Maxisorp Surface, 60/pkg, 96 wells, Flat Bottom	1	¥ 15,000	Ab-ELISA (MAb screening)	1
26	Isotyping Kit for Mouse Monoclonal Antibody	Seromed	MMT 1	2	¥ 28,000	determination of isotype of Mabs	3
27	Antibiotic Antimycotic Solution	SIGMA	A-9909, 100 ml, 100 X	2	¥ 4,000	antibiotics for medium (not necessary when gentamicin is used)	2
28	Fetal calf serum		500 ml	2		necessary for medium	2
29	Filter Membrane	SIGMA	N-8645, MF-Millipore, Pore Size: 0.22 um, Diameter: 47 mm	1	¥ 15,700	sterilization of solutions by filtration	1
30	24 Well Culture Plate	SIGMA	M-9655, 24 wells, Flat Bottom, 50/pkg	1	¥ 18,000	growing hybridomas	2
31	Cell culture flasks, 25 cm^2		Canted, 500/pk			growing hybridomas	3
32	Molecularpores Membrane Tubing		SPECTRA/POR, No. 132700, width 25 mm, diameter 16 mm, 3(		¥ 15,000	dialysis of antibodies	1
33	Dialysorb	SIGMA	Z37,099-1, 50 mm, Red, 10/pkg		¥ 13,000	dialysis of antibodies	1

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