

Country Name	The Technical Assistance to Improve National Diagnostic Capacity for Animal Disease Control in Uganda												
Republic of Uganda													
I. Project Outline													
Background	<p>Livestock industry accounted for 13% of agricultural domestic product in Uganda and more than 40% of rural farmers were engaged in livestock keeping for their livelihood (as of 2005). To improve the productivity and quality of livestock and its product, the prevalence of animal diseases and lack of system for livestock hygiene improvement were major bottlenecks. Local governments did not have sufficient skills and budget for livestock hygiene measures, and National Animal Disease Diagnostic and Epidemiology Center (NADDEC) under Ministry of Agriculture and Livestock Fisheries (MAAIF) was not functioning as a central disease referral laboratory. From 2007 to 2009, JICA implemented a technical cooperation project "Technical Assistance to Enhancement of Technical Capacity of Animal Disease Control in Uganda", which aimed to strengthen the animal disease control system through training of diagnostic techniques and development of diagnostic laboratory facilities at NADDEC and district veterinary offices (DVOs). Through implementation of this project, it was realized that shortage of diagnostic staff limited the capacity improvement of NADDEC. Meanwhile, MAAIF developed a concept of joint animal disease diagnostic system by means of collaboration of NADDEC and Faculty of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University (MAK-FVM), and requested for an assistance to JICA as a successor to the above- mentioned project.</p>												
Objectives of the Project	<p>The Project aimed at improvement of national diagnostic capacity for animal disease in Uganda by means of the close collaboration of NADDEC and MAK-COVAB (College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University; formerly known as MAK-FVM), leading to the platform for the joint institute, through (i) developing an action plan for functional diagnostic system of animal diseases, (ii) launching the Joint National Animal Disease Diagnostic Centre (J-NADIC)¹, (iii) establishing an operational investigation system for emergency diseases, (iv) developing an information exchange system for sharing between NADDEC and MAK-COVAB, and (v) improving primary diagnostic and sample preparation techniques at the selected DVOs, thereby establishing a functional joint diagnostic system for animal disease control.</p> <ol style="list-style-type: none"> Overall Goal: A functional joint national diagnostic system for animal disease control is established in order to improve the production and productivity of livestock. Project Purpose: The national diagnostic capacity for animal disease is improved by means of the close collaboration of NADDEC and MAK-COVAB, leading to the platform for the joint institute. 												
Activities of the Project	<ol style="list-style-type: none"> Project Site: MAK-COVAB Central Diagnostic Laboratory (CDL)² (Kampala), MAAIF-NADDEC (Entebbe) and five targeted DVOs (Central Region- Kiboga, Mpigi, Wakiso; East Region-Mbale; West Region-Mbarara) Main Activities: establishment of the integrated and specialized diagnostic service functions in J-NADIC and sample reception system from the field; establishment and operation of investigation system for emergency diseases; training on staff of collaborating DVOs and enhancement of the field activities, etc. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Uganda Side</td> </tr> <tr> <td>1) Experts: (long-term) 4 persons; (short-term) 26 persons.</td> <td>1) Staff Allocated: 38 persons (2 from MAAIF, 3 from NADDEC, 26 from MAK-COVAB (including 8 from CDL), 7 from 5 DVOs)</td> </tr> <tr> <td>2) Trainees Received: 24 persons</td> <td>2) Facilities: office space for experts at MAK-COVAB and old headquarters of MAAIF, laboratory space at MAK-COVAB (CDL) and NADDEC</td> </tr> <tr> <td>3) Equipment: vehicles, office equipment, equipment for laboratory</td> <td>3) Counterpart Budget</td> </tr> <tr> <td>4) Local Costs</td> <td></td> </tr> </table> 			Japanese Side	Uganda Side	1) Experts: (long-term) 4 persons; (short-term) 26 persons.	1) Staff Allocated: 38 persons (2 from MAAIF, 3 from NADDEC, 26 from MAK-COVAB (including 8 from CDL), 7 from 5 DVOs)	2) Trainees Received: 24 persons	2) Facilities: office space for experts at MAK-COVAB and old headquarters of MAAIF, laboratory space at MAK-COVAB (CDL) and NADDEC	3) Equipment: vehicles, office equipment, equipment for laboratory	3) Counterpart Budget	4) Local Costs	
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Project Period	June 2010 -June 2014 (Extension: June 2013-June 2014)	Project Cost	(ex-ante) 450 million yen, (actual) 357 million yen										
Implementing Agency	Department of Livestock Health & Entomology (DLHE), Directorate of Animal Resources and Fisheries, Ministry of Agriculture, Animal Industry and Fisheries (MAAIF); National Animal Diseases Diagnostic and Epidemiology Center (NADDEC), MAAIF; College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University(MAK-COVAB); District Veterinary Office (DVO)												
Cooperation Agency in Japan	Nihon University												

II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

- The status of achievement of selected Output Indicators at the time of ex-post evaluation were examined as Supplemental Information to confirm the operational status of the system established under this project.
- The target year for the Overall Goal is not specified in the Project Design Matrix (PDM). Since there is a statement in the Mid-term Review Report that the Overall Goal would be achieved three to five years after project completion, this evaluation regards year 2019, five years after the actual year

¹ J-NADIC is a system for diagnosing animal disease at the national level, which aims to function under the collaboration between NADDEC and MAK-COVAB, and there is no "center" as a building.

² MAK-COVAB's old laboratory was renovated and renamed as CDL with new diagnostic equipment provided by the project in September 2011.

of project completion, as the target year for the Overall Goal.

- The target number is not specified for the Indicator 2 of the Overall Goal. Since it is difficult to clarify the target number at the time of ex-post evaluation, exact level of achievement cannot be assessed. As alternative, whether or not the actual status is considered sufficient as “a functional joint national diagnostic system for animal disease control” as stated in the Overall Goal was examined with reasons for judgement.

1 Relevance

The project was consistent with Uganda’s development policies such as “measures against livestock diseases” as set forth in “Third Poverty Reduction Eradication Action Plan” (2004-2007) and “control of diseases in agriculture” in “National Development Plan 2010/11-2014/15 (NDP)” and development needs for improvement of productivity and quality of livestock through animal disease control, as well as a need for human resources in both the quality and quantity in the diagnostic system of the central government (especially NADDEC), at the times of both ex-ante evaluation and project completion. Also, the project was consistent with Japan’s ODA policy for Uganda as agreed in the economic cooperation policy dialogue in 2006 (which included agricultural development). Therefore, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. Almost all of the twenty-five animal diseases designated by the project became ready to be diagnosed by NADDEC and CDL combined (Indicator).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have continued at the time of ex-post evaluation. Both NADDEC and CDL combined are in position to diagnose the twenty-five diseases listed by the project. During the period from 2013 to 2016, the number of diagnostic samples received and analyzed by NADDEC and CDL has increased by 430% and 819%, respectively. The diagnostic manual developed by the project is being utilized by NADDEC and CDL during diagnosis, and NADDEC developed the Standard Operating Procedure based on the manual.

Regarding the five targeted DVOs, the survey in March 2018 found that most of the primary diagnosis and sample preparation techniques acquired through the project are maintained and utilized while some techniques (e.g., white blood cell and differential count) are not maintained at some DVOs depending on their technical capacities. At the same time, other DVOs enhanced primary diagnosis capacity by acquiring laboratory equipment or hiring technologists, which led to decrease of use of J-NADIC for primary diagnosis.

While sharing and exchange of information is regularly done between NADDEC and DVOs (through social networking services and the monthly reporting by DVOs to NADDEC) and between CDL and DVOs (through regional DVO annual meetings/workshops organized by MAAIF/NADDEC with CDL as an invited participant), the collaboration between NADDEC and CDL is more on ad-hoc basis than during the project implementation period³. However, joint handling of emergency disease outbreaks (e.g. foot and mouth disease, lumpy skin disease, etc.) continues: they are investigated by a joint investigative team consisting of NADDEC, CDL and DVOs, according to the guideline for joint survey prepared by the project.

Using the J-NADIC concept, a bigger platform, ‘ONE HEALTH PLATFORM’, coordinated by the office of the Prime Minister (OPM) and bringing together different stakeholders in animal health, including; Ministry of Agriculture/NADDEC, Ministry of Health, National Drug Authority, DVOs, MAK-COVAB, among other stakeholders was established in 2016 to manage animal disease outbreaks in a more coordinated manner.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved by the time of ex-post evaluation. According to the above-mentioned survey of the targeted DVOs, the average grade given to services provided by J-NADIC was higher than expected (Indicator 1). In general, DVOs send samples to J-NADIC (i.e., NADDEC or CDL) under two circumstances; (i) when they want confirmation on their diagnosis and (ii) when they don’t have the capacity to analyze the sample themselves. Both can be referred to as “sending of samples for reference diagnosis” as expected (Indicator 2). On average, the targeted DVOs sent 164 samples a year to J-NADIC for that purpose. Some DVOs indicated that the frequency of utilization of J-NADIC was sufficient while others thought otherwise.

Prospects for the target year (2019) vary among DVOs. Some of the targeted DVOs expect the same trend, while some⁴ may use J-NADIC less frequently due to their increased capacities with private practitioners being expected to work together with a DVO, acquisition of new laboratory equipment and hiring of laboratory technologist at some DVOs. It should be noted that even with less frequent use by some DVOs, CDL and NADDEC are still essential as the central reference laboratories as DVOs still have to refer to them for confirmation on several occasions. Therefore, it is considered that the good status of achievement of the Overall Goal will continue until the target year.

<Other Impacts at the time of Ex-post Evaluation>

No negative impacts of the project were observed. As to positive impacts, neighboring districts are benefiting from the services provided by project-supported laboratories (at the targeted DVOs). Also, the project-supported laboratories are being upgraded to regional laboratories supporting more districts in the respective regions.

<Evaluation Result>

In light of the above, through the project, the Project Purpose was achieved by the time of project completion. The project effects have been continued and the Overall Goal has been achieved at the time of ex-post evaluation. Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) The national diagnostic	A total of 25 animal diseases listed by the Project can be	Status of the Achievement: achieved (continued) (Project Completion)

³ Information exchanges from NADDEC and CDL on diagnosis results still exist though at a lesser level compared to the project period – most of the exchanges are on suspected cases of notifiable diseases. Exchanges on non-notifiable diseases are usually based on demand from NADDEC.

⁴ Mbarara and Mbale DVOs noted that the frequency of utilization could have been higher hadn’t it been for the limited courier system for transporting more samples as well as the limited awareness on the part of the farmers.

capacity for animal disease is improved by means of the close collaboration of NADDEC and MAK-COVAB, leading to the platform for the joint institute.	diagnosed by J-NADIC.	The project prepared a diagnostic manual for the 25 diseases, and J-NADIC (i.e., NADDEC and CDL combined) became able to diagnose 24 diseases. (Ex-post Evaluation) NADDEC can diagnose all 25 diseases listed by the project. CDL can diagnose 21 diseases. For the 4 diseases CDL alone does not handle, CDL refers suspected cases to NADDEC or jointly diagnoses cases with NADDEC.																																									
	(Supplemental Information) Number of diagnostic samples received and analyzed by J-NADIC	(Project Completion) (Ex-post Evaluation) Number of diagnostic samples received and analyzed by J-NADIC <table border="1"> <thead> <tr> <th></th> <th>2010</th> <th>2012</th> <th>2013</th> <th>2014</th> <th>2015</th> <th>2016</th> </tr> </thead> <tbody> <tr> <td>CDL</td> <td>280</td> <td>388</td> <td>519</td> <td>3,271</td> <td>4,375</td> <td>4,768</td> </tr> <tr> <td>NADDEC</td> <td>2,105</td> <td>5,799</td> <td>3,767</td> <td>20,000</td> <td>20,000</td> <td>20,000</td> </tr> <tr> <td>Total</td> <td>2,385</td> <td>6,187</td> <td>4,286</td> <td>23,271</td> <td>24,375</td> <td>24,768</td> </tr> </tbody> </table> <p>Note: Since 2014, NADDEC has handled wide-ranging samples from wildlife, livestock, pets and food security. CDL on the other hand has registered a decrease of samples coming from DVOs due to the fact that most of them currently deal with NADDEC – this is associated service fees charged at CDL, which do not exist at NADDEC. However, on the whole, samples received and analyzed by CDL have increased due to awareness campaigns conducted by MAK-COVAB targeting medium and large-scale livestock farmers.</p>		2010	2012	2013	2014	2015	2016	CDL	280	388	519	3,271	4,375	4,768	NADDEC	2,105	5,799	3,767	20,000	20,000	20,000	Total	2,385	6,187	4,286	23,271	24,375	24,768													
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(Overall Goal) 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.	(Ex-post Evaluation) achieved As of March 2018, the surveyed five targeted DVOs graded services provided by J-NADIC at 3.5 points. Note: The satisfactory level was rated as ‘EXCELLENT, HIGH, MODERATE, LOW, VERY LOW’ each of which accounted for different points – 5, 4, 3, 2 and 1 respectively, underlining the 5-point rating system. This survey targeted the five targeted DVOs only since they largely serve as intermediaries between other users and NADDEC/CDL.																																									
	2. All the selected DVOs by the Project are utilizing the J-NADIC for reference diagnosis.	(Ex-post Evaluation) mostly achieved Number of samples sent to J-NADIC for reference diagnosis <table border="1"> <thead> <tr> <th>DVO</th> <th>2014</th> <th>2015</th> <th>2016</th> <th>2017</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Kiboga</td> <td>12</td> <td>2</td> <td>4</td> <td>9</td> <td>27</td> </tr> <tr> <td>Mpigi</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Wakiso</td> <td>3</td> <td>-</td> <td>110</td> <td>27</td> <td>140</td> </tr> <tr> <td>Mbale</td> <td>2</td> <td>5</td> <td>52</td> <td>37</td> <td>96</td> </tr> <tr> <td>Mbarara</td> <td>8</td> <td>19</td> <td>46</td> <td>320</td> <td>393</td> </tr> <tr> <td>Total</td> <td>25</td> <td>26</td> <td>212</td> <td>393</td> <td>656</td> </tr> </tbody> </table> <p>Note: The increase in Wakiso in 2016 is due to disease outbreaks (Bird-flu). The increase in Mbarara in 2017 is due to a mass testing programme under operation of wealth creation, which is an agricultural input distribution programme of the Government of Uganda. Mpigi DVO didn't have documented record of the times it used J-NADIC since project end.</p>	DVO	2014	2015	2016	2017	Total	Kiboga	12	2	4	9	27	Mpigi	n/a	n/a	n/a	n/a	n/a	Wakiso	3	-	110	27	140	Mbale	2	5	52	37	96	Mbarara	8	19	46	320	393	Total	25	26	212	393
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Source: Terminal Evaluation Report; questionnaire and interview to NADDEC and MAK-COVAB/CDL; questionnaire to the five targeted DVOs

3 Efficiency

While the project cost was within the plan (ratio against the plan: 80%), the project period was extended (ratio against the plan: 133%) due to reasons including delays of some inputs from both Japanese and Ugandan sides and thus delays of some activities. Therefore, the efficiency of the project is fair.

4 Sustainability

<Policy Aspect>

“Agriculture sector strategic plan (2015/16-2020/21)” sets out to reduce the prevalence of production and trade sensitive diseases. Also, "Second National Development Plan (NDP II)" (2015/16-2019/20) includes "Controlling pest, disease and vector" as the intervention of the objective (1. Increase agricultural production and productivity).

<Institutional Aspect>

The upgrading of NADDEC to Division level under Director of Animal Resource (DAR) of MAAIF in FY2016/17 is most likely to increase technical and operational capacity to sustain project achievements and fulfill the roles of NADDEC in animal disease control. One Veterinary Officer and ten laboratory technicians are allocated to the Epidemiology and Diagnostic Units of NADDEC, while filling of six vacant positions will ease overload of the staff⁵. The organizational structure and role of CDL remains the same as those during the project implementation. As recommended in the terminal evaluation, former project assistants and interns are continuously engaged at CDL. The current number of staff (eight Academicians and eight Technicians), which is more than the quota (i.e. six each), is enough to manage more than the current number of cases and CDL is small to accommodate a big number of staff. As mentioned above, technical exchanges between NADDEC and CDL are made but not regularly, depending on demand.

The structures of the DVOs remain the same as during the project days. Kiboga and Mbarara DVOs have recruited full-time laboratory technologists, and all the five DVOs have staff assigned to primary diagnosis and sample collection.

<Technical Aspect>

As mentioned in “Effectiveness/Impact” above, NADDEC and CDL have maintained their technical capacities to diagnose animal diseases designated by the project, and the five targeted DVOs have also mostly maintained or further strengthened the technical capacities with some variance. They all utilize/apply the manuals/techniques etc. developed and learnt under the project. All the counterpart personnel remain at NADDEC and CDL, and some CDL counterparts are currently undergoing PhD studies as a part of capacity building. While three of the senior counterparts (Mbale, Mpigi and Wakiso) have since retired from the DVOs, they were replaced by colleagues who had an understanding of and were engaged to the project, which has to an extent ensured continuity of project activities.

Most of the equipment provided under the project is well utilized and maintained. Kiboga, Mbarara and Mbale DVOs have acquired extra equipment from other development partners. This is, however, not the case with Mpigi district veterinary laboratory which suffers the

⁵ There have been promotions of some of the counterparts from NADDEC to MAAIF. Gaps have been created within NADDEC and most of the officers are in acting capacities while others are holding two portfolios which is not tenable.

problem of unstable power supply and subsequent break-down of some equipment, a situation worsened by the fact that the power back-up provided by the project also broke down. Nevertheless, The DVO is in the process of acquiring a solar back-up system. A requisition has already been made to the district leadership.

<Financial Aspect>

The budget directly flows from MAAIF to DAR, and DAR allocates budget to its four divisions, of which NADDEC is one. Approx.. UGX50,000,000 is allocated to NADDEC annually. Budgetary allocation to MAAIF is insufficient which automatically negatively affects budget allocations to all Directorate divisions including NADDEC, to undertake their key activities including field work and disease surveillance. However, MAAIF fully provides for utility (power and water) costs and consumables. Furthermore, there have been some externally generated sources of funding from development partners which has usually come in the form of equipment and lab consumables. It is expected that the NADDEC's upgrading to Division level will come with some benefits in terms of increased human and financial capacity for improved operations.

Regarding CDL, there is a clear revenue collection and distribution system in place. The budget consists of allocations from MAK-COVAB (mainly in the form of utilities – water and electricity) and external revenue, and the total amount allocated for reagents, consumables, maintenance and staff salaries is USD25,000 in 2014 and, USD33,000 in 2015 and 2016. According to CDL, this amount is not sufficient to fulfill its J-NADIC roles which have been increasing over time. A business plan for CDL outlining its marketing, operational, human resource and financial strategies to boost its revenues for self-sufficiency through streamlining of lab operations was formulated and awaits implementation. Through the plan, CDL plans to offer a comprehensive package composed of disease diagnosis, research, consultancy and extension services.

DVOs are fully facilitated by NADDEC especially for consumables/reagents and occasionally in the form of equipment/maintenance which reduces their strain brought about by the limited budget allocation by their respective district local governments. Since the District veterinary laboratories are by law prohibited charging their clients for services provided, they have to depend majorly on NADDEC and their respective district local government. Utility costs (electricity and water) are provided for by their respective district local governments which also provide for field work for animal disease surveillance.

<Evaluation Result>

In light of the above, slight problems have been observed in terms of the institutional, technical and financial aspects of the implementing agency. Therefore, the sustainability of the effectiveness through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose and the Overall Goal: a national diagnostic system for animal disease control involving NADDEC and MAK-COVAB (CDL) was established and it has continued to provide services to DVOs. No major challenges were identified for the relevance, effectiveness/impact. In addition, slight problems were found in sustainability in terms of limited operational budget for NADDEC and CDL as well as insufficient human resource for the lab in DVOs. However, the policy background, the organizational status and technical capacities of NADDEC, CDL and some DVOs have been maintained or further strengthened. This surely contributes to the sustainable operation and management of each institution. For efficiency, however, the delays in some inputs from both Ugandan and Japanese side led to the delay in certain activities.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing Agency:

One of the key pillars of J-NADIC was technical coordination and interaction between NADDEC and CDL as well as a well-capacitated DVO structure. With this arrangement, it would be possible to achieve comprehensive diagnosis. However, in the current arrangement, despite the improved capacity at NADDEC, CDL and DVOs the extent of which satisfies the targeted level of the project defined through its indicators, there is still limited technical coordination and interaction between NADDEC and CDL, a situation further complicated by the partially limited operational capacity at NADDEC and technical and operational capacity at some DVOs, exacerbated by their inability to generate revenues while CDL is constrained by weak revenue management practices despite its ability to generate revenues. It is therefore recommended that in the next planning cycle;

1. NADDEC and CDL rejuvenate the regular information/technical exchange meetings.
2. Operational capacity at NADDEC and technical and operational capacity at some DVOs should be improved through extra budget allocations as well as recruitment of full-time lab technicians especially at District Veterinary Laboratories.
3. CDL should work according to the formulated business plan to streamline its revenue and cost management practices.
4. DVOs should share information and work closely with neighboring districts to bring the positive spill over.

Lessons Learned for JICA:

1. During the ex-post evaluation, it was possible to get updated information since most of the key counterparts to the project are still with their institutions. Before undertaking a development project, we should be sure of the commitment by the Implementing Agency to continue with the project activities for the achievement of the project goal.

2. However, the remaining counterparts are overstretched. Save for a few DVOs where lab technologists have been recruited, the situation remains tricky at NADDEC where there have been some staff retirements and corresponding shifts to higher positions (NADDEC to MAAIF) without replacements thus leaving the few staff overstretched. Additionally, the human capacity situation of the Implementing Agency should be assured to ensure sustainability of project achievements.



Some of the materials developed under the project currently being used by the target DVOs
(Photo taken on 21st February, 2018)



The service station at Kiboga District Veterinary Laboratory. All the equipment provided by the JICA project is in good condition
(Photo taken in 13th February, 2018)