GREATER MEKONG SUBREGION
CORE AGRICULTURE SUPPORT PROGRAM

ADB Project Document

Livestock Information and Traceability System: Inception Report

September 2015

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ABBREVIATIONS[1]

ADB – Asian Development Bank
ASEAN – Association of Southeast Asian Nations
CASP – Core Agriculture Support Program
CBTA – Cross-Border Transport Agreement
CDM – Clean Development Mechanism
EWEC – East-West Economic Corridor
FAO – Food and Agriculture Organization
FMD - Foot and Mouth Disease
GHG – greenhouse gas
GMS – Greater Mekong Sub-region
GMS-AINS – Greater Mekong Sub-region - Agriculture Information Network Service
ICT – information and communication technology
LITS – Livestock Identification and Traceability System
MDGs – Millennium Development Goals
NSEC – North – South Economic Corridor
PRC – People's Republic of China
SEC – Southern Economic Corridor
SMEs – small and medium-sized enterprises
SPS – sanitary and phytosanitary
WGA – Working Group on Agriculture

[1] A glossary of technical terms is available in an appendix at the end of this document.

I. EXECUTIVE SUMMARY

1. Increased cross-border livestock trade in the Greater Mekong Sub-region (GMS) is changing disease risk landscapes, including higher incidence to tainted meat and meat fraud in regional markets. This report presents a rapid assessment of recent trends in animal movement and disease reporting. As part of ADB's GMS Core Agriculture Support Program, Phase II (CASP 2), this work supports a regional livestock identification and traceability system (LITS) that can more effectively manage and mitigate regional disease risk. If successful, this project will not only improve animal and public health outcomes, but contribute to higher value agrifood trade and regional poverty reduction.

2. In addition to more detailed information on patterns of GMS animal movements and disease reporting, our general finding is that conditions are ripe for improved oversight and trade facilitation. At the transboundary level, informal animal flows predominate in many areas, leading to higher transactions cots and significant uncertainties regarding health status and other product quality characteristics. These market failures promote adverse selection, limited supply chain engagement, and underinvestment, undermining public trust and leaving this category of regional agrifood development far below its potential to contribute to regional livelihoods.

3. The following report summarizes the inception activities for this project, including introductory consultations with national counterpart teams in the three participating countries, Cambodia, Lao PDR, and Myanmar. Based on this initial dialog, the project is now proceeding. In addition to the mission summaries, the next sections provide overviews of the project's background, policy motivation, methodology, and estimated timetable.

II. Project Background

4. Increased demand for livestock and their products in the GMS presents a large transboundary disease risk due to the informal supply chains that cross borders. As part of ADB's GMS Core Agriculture Support Program, Phase II (CASP 2), this project addresses the challenges associated with expanding cross-border trade working towards the goal of helping the GMS become a leading producer of high-quality agriculture products. This goal can partially be achieved through a region-wide Livestock Information and Traceability System (LITS), which can identify and trace all animals as they move through supply chains. Traceability is a necessary component in the reactive control system of disease risk management as it can trace outbreaks to their source and remove any potentially contaminated animals from the supply chain, effectively containing the outbreak. The potential benefits however of a LITS go beyond disease risk identification and containment by improving animal quality and providing reliable information to end users. Traceability allows producers to be recognized for higher quality products and encourages increased product quality and market access. Because market access is the primary gateway out of poverty for rural poor majorities in the GMS, traceability can be strongly pro-poor, supporting improved livelihoods for small farmers and enterprise intermediaries.

5. The LITS project, funded under Regional Technical Assistance (RETA) 6390: Transboundary Animal Disease Control for Poverty Reduction in the GMS, will be undertaken through a firm which will be tasked to conduct a synthesis of international best practices in agrifood supply chain traceability that is tailor-fitted to the institutional, geographic, and economic realities of livestock flows in the GMS. The private sector will be involved in establishing the traceability system in selected border areas in the GMS (Myanmar-Thailand, Lao PDR-People's Republic of China, and Cambodia-Viet Nam). This regional IT-based livestock traceability system and market-based transboundary disease management system will be used to build the capacity of smallholders, inform policy makers, relevant government agencies and the private sector. It is also intended to be scaled-up as a regional investment project under the GMS Regional Investment Framework (RIF), eventually. Work on the LITS will be implemented from June 2015 and to 31 December 2015.

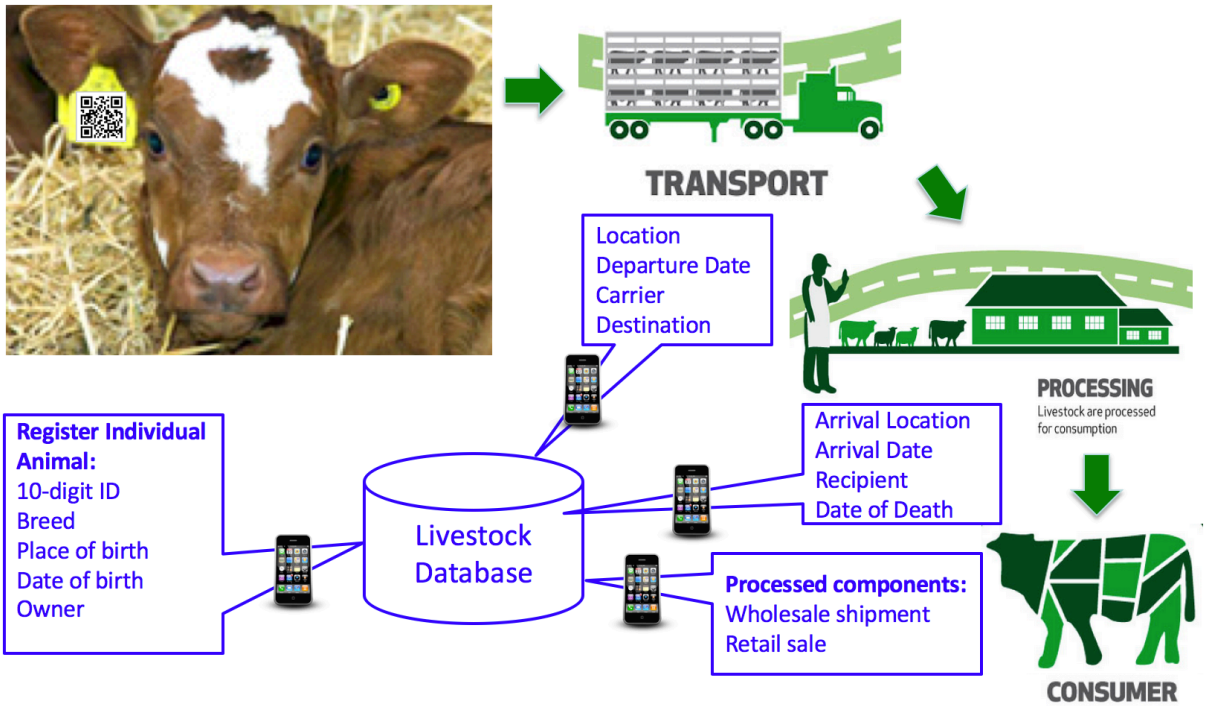
III. Project Motivation and Methodology

6. Traceability, which in this context is defined as the ability to follow the movement of a food item through specified stages of production, processing and distribution, is an essential mechanism to overcome information barriers that undermine product safety quality and value creation. In the case of livestock, traceability strengthens incentives to reduce disease transmission risks, and in the event of outbreaks, facilitate risk identification and containment. In addition to reducing direct and indirect costs associated with health risks, traceability contributes to livelihoods by improving safety standards, product quality and limiting adverse selection. Traceability is also now a requirement for exporters in developed countries.

7. More effective surveillance of food supply chains has the direct benefit of limiting disease propagation and food contamination, but it also has far reaching indirect effects that promote beneficial agrifood sector expansion. When producers can be recognized by higher quality products, they will make appropriate investments in both market participation and product quality. And since market access is a gateway out of poverty for smallholders, traceability can be pro-poor and support improved livelihoods for small farmers and business intermediaries. Within smallholder households, women allocate more labor to livestock-keeping than their male counterparts, and they in particular can benefit from more opportunities in this sector. With increased incomes, households spend more money on higher value food. Competitive improvements in the system will also reduce costs of food products to consumers and increase their benefits. This evolution of consumer demand becomes a core driver for innovation and value creation at each level in the chain leading to continuous improvements in the agrifood supply chain.

8. The LITS traceability system builds on the best practices from other developing countries and features low cost, efficient, and globally standardized technology with open source software support that can be easily adapted across the GMS. The proposed system will rely on ear tags featuring QR codes and RFID chips. Using these technologies allows smart phones to act as scanners. For QR codes any smart phone with a camera and internet connection will be able to scan tags. This allows great flexibility for producers as many already own smart phones and there is no need for separate technology to be purchased. In addition, we will also deploy RFID scanners for certain users (such as checkpoint officials or other authorities). This system connects to a smart phone but allows quick scanning for large batches of cattle.

Figure 1: Schematic Traceability Pathway for Cattle



9. Scanning the tags will occur (1) when the tag is initially registered to the cattle and (2) when an event occurs. Events will include veterinary visits, sales, movement, and any other activities deemed relevant by the executing agencies. Upon scanning, individual cattle information will be automatically uploaded to web based database that will be programed with open source software. The web interface can be viewed or edited at anytime with data available for download. Collectively, this system represents a flexible, low-cost, state-of-the-art traceability system that we will be pilot under diverse conditions across the subject countries as detailed in this implementation plan.

IV. Proposed Project Timetable

N°	Activity	Months (March 1, 2015 – November 30, 2015)								
		1	2	3	4	5	6	7	8	9
Project Inception – 2 weeks										
1	Deliverable 1-1 - Project Inception Report									
2	Finalize three border regions									
i. Rapid Assessment of Initial Conditions – 4 weeks										
3	Conduct rapid assessment initial on conditions									
4	Deliverable 2 – Rapid assessment report									
ii. **Design and Development of a Livestock Identification and Traceability System (LITS) – 8** weeks										
5	Design LITS framework									
6	Deliverable 1-2 – Quarterly progress report									
7	Deliverable 3 – LITS design/implement plan									
iii. Training Manual on LITS – 6 weeks										
8	Design training manual on LITS									
9	Deliverable 4 – Training manual									
10	Deliverable 5 – Online training materials									
iv. User-Friendly Traceability Handbook for Farmers – 6 weeks										
11	Design handbook for farmers									
12	Deliverable 6 – Traceability handbook									
v. Conduct Training of Trainers on the Implementation of LITS – 6 weeks										
13	Design training of trainers									
14	Conduct training of trainers									
vi. Implementation Plan and Pilot Test the LITS in Cambodia, Lao PDR, and Myanmar – 16 weeks										
15	Draft implementation plan									
16	Pilot Implementation							*		
17	Deliverable 1-3 Quarterly progress report									
18	Deliverable 7 – LITS deployment evaluation									
vii. Roadmap for GMS Harmonization of LITS Standards and Regulatory Frameworks – 4 weeks										
19	Develop roadmap									
20	Deliverable 8 – Roadmap for harmonizing LITS regulatory framework									
viii. Regional Policy Forum – 5 weeks										
21	Draft plan for regional policy forum									
22	Hold regional policy forum									
23	Deliverable 9 – Regional policy forum summary									
Project Completion – 4 weeks										
24	Deliverable 10 – Policy brief summarizing results									
25	Deliverable 1-4 – Final assessment report									
26	Finalize project completion report									

V. Mission to Lao, PDR

A. General Information

a) Mission date(s) 22-25 July 2015

b) Mission to Vientiane, Lao PDR

c) Activity - Inception meetings with national counterparts

d) Mission member(s) - David Roland-Holst – Project Lead Economist

e) Mission's brief TOR - This mission was undertaken to initiate collaboration with a national counterpart team nominated by the Lao PDR Department of Livestock Development. The main objective of the mission was to secure cooperation for a pilot livestock traceability exercise.

f) Names, titles of individuals contacted during the mission

- David Salter, Sr. Natural Resources and Agriculture Specialist, ADB
- Dennis Ellingson, Project Management Specialist, VICA Consultants International Ltd.
- Sengphet (Anna) Lattanavong, National Secretariat Specialist, Working Group on Agriculture (WGA), ADB
- Dr. Syseng KHOUNSY, Deputy Director General of Department of Livestock and Fisheries, MAF
- Dr. Phachone BOUNMA, Head of Veterinarian Division, Department of Livestock and Fisheries, MAF
- Mr. Anousone FONGMANY, Technical Staff, Division of Veterinarian Division, Department of Livestock and Fisheries. Technical Focal Point (TFP)
- Mr. Keow CHOMMANY, Technical Staff, Animal Disease Research Center, Department of Livestock and Fisheries
- Mr. Phetnakhonexay KHAMPHOUMY, Technical Staff, Division of Livestock Management, Department of Livestock and Fisheries
- Mr. Sithasone XAYMOUNTRI, Technical Staff, Veterinarian Division, Department of Livestock and Fisheries.

B. Description of Mission Achievements/Tasks Completed

10. This visit firmly established our collaborative relationship with national counterparts for the Lao PDR pilot study, including the nominated Technical Focal Point, Mr. Anousone Fongmany, and a team of co-workers nominated by Deputy Director General Dr. Khounsy. The active leadership of our meeting by Dr. Khounsy reinforces confidence that we will be able to carry out an expedient and locally supported pilot in this country.

C. Agenda Summary

- Introductions
- Presentation on LITS by Dr. Roland-Holst
- Discusssion of specific issues by Lao side
- Presentation by the Lao side of national livestock data resources and summary of on-going activities.
- Coffee break

D. Specific issues

11. The DDG recommended the Vientiane area for the pilot project. We replied that ADB was interested in the Luang Prabang area, where attention could be given to new transport infrastructure and recent commitments to modernized livestock development. Our counterparts agreed to consider this option.

E. Brief Description of Next Steps and Recommended Follow-Up Actions:

Assessment and recommendations regarding counterpart requests

- Because of time constraints, all training activities should be focused on the LITS implementation.
- It may be desirable to support vaccination as an incentive for smallholder participation, but this will be determined in the field.
- Restraining equipment should be part of the overall tagging/scanning package, to be detailed separately in the Report on the Rapid Assessment and Proposed Framework and Design of the LITS.
- Field staff estimates appear realistic, but must ultimately be decided upon implementation.

Specific Follow-Up Actions for Allied Projects

- We are now arranging visits to Nay Pyi Taw and Phnom Penh to carry out the counterpart meetings for the other two pilot countries. On this basis we will complete and submit the Report on the Rapid Assessment and Proposed Framework and Design of the LITS.
- The report will be our blueprint for negotiating specific pilot implementation in each country.

F. Additional Information, Lessons Learned, Partnership Possibilities Emerged as A Result of Networking Activities

Additional information

12. On the basis of this mission, dialog, and data resources acquired, we believe complete the program as set forth in the draft timetable (Annex 1) below.

Partnership possibilities

13. Based on this mission, we recommend ongoing consultation, on an as-needed basis, with Dr. David Salter and Mr. Dennis Ellingson. Both exhibited a very high level of awareness and expertise regarding Lao national livestock policy, sector issues, and its relation to agricultural development generally.

On-line resources

14. An online workspace is being established for document and data exchange on this project. It will also include presentation materials as these become available.

VI. Mission to Cambodia

A. General Information

a) Mission date(s) 9 – 12 August 2015

b) Mission to Phnom Penh, Cambodia

c) Activity (if applicable) Inception meetings with national counterparts

d) Mission member(s)

- *Dr. Joachim Otte*
- Dr. Sam Heft-Neal
- Ms. Tessa Emmer

e) Mission's brief TOR - This mission was undertaken to initiate collaboration with a national counterpart team nominated by the Cambodia Department of Animal Health and Production (DAHP). The main objective of the mission was to secure cooperation for a pilot livestock traceability exercise.

f) Names, titles of individuals contacted during the mission

- Dr. Suon Sothoen, Deputy Director, Department of Animal Health and Production (National Technical Focal Point)
- Mr. Peng Chanbena, Chief of Animal Health Office
- Mr. Mom Somuny, Vice Chief of Animal Production Office
- ADB
- Mr. Nat Chantola, National Secretariat Specialist, Implementing the GMS CASP2

B. Description of Mission Achievements/Tasks Completed

15. This visit firmly established our collaborative relationship with national counterparts for the Cambodia pilot study, including the nominated Technical Focal Point, Dr. Suon Sothoem, and team of co-workers. Dr. Sothoem expressed a high level of interest in working closely with the BEAR team. After receiving a proposal for the pilot, DAHP will carry out internal discussion and respond with suggestions for planning and implementation support.

C. Agenda Summary

- Introductions
- Presentation on LITS by Dr. Joachim Otte with demonstration of animal tag and QR technology
- Discussion of specific questions and issues by Cambodia side

- Presentation by the Cambodia side of national livestock data resources and a summary of on-going activities.

D. Specific issues

Raised Questions:

- Dr. Sothoen requested clarification between ADB wanting to test a technology option (*using* Cambodia to develop a system) versus ADB wanting to implement an established system.
    - BEAR team responded that the objective of the project is to test an approach for its suitability across countries of the GMS at small-scale pilot level so that requirements and problems can be identified before larger scale investments are made. Ultimately, the project will include recommendations to implement a system at the national and regional level that satisfies ASEAN requirements.
- Dr. Sothoen emphasized that the pilot should take account of best practice learned from livestock identification and traceability systems in other countries.
    - BEAR team highlighted that design and operation of LITS in other countries had been reviewed and that essential specifications will be incorporated into our pilot system.
- Dr. Sothoen enquired about the security of the system if information items shown in the demonstration can be changed
    - BEAR team clarified that information items can be added to animal records, but other record information is protected. Access standards will have to be agreed between ADB and national counterparts.
- Dr. Sothoen appreciated the reasonable cost of tags, but pointed out that quality and longevity need to be considered.
    - BEAR team agreed, and pointed out that: numerous models / makes of tags are on the market which can be tested, and that a variety of QR scanner apps for mobile phones are freely available.
    - BEAR team explained that best method for attaching the tags is currently being explored.

Pilot Location:

- Dr. Sothoen expressed interest in identifying a good pilot location, and flexibility about where this could be. Gaining the participation of the farmers and / or traders was identified to be the most challenging component in pilot selection. After convincing farmers / traders, the team would need approval from local and provincial authorities.
- Dr. Sothoen was optimistic that the pilot could begin quickly if the aforementioned steps proceed swiftly.
- Dr. Sothoen highlighted ACIAR's new project, working in 5 provinces and 14 locations focused on disease prevention and biosecurity. Dr. Sothoen is responsible for managing implementation of this project. The project has just started running a series of pilots, and Dr. Sothoen presented the opportunity to integrate the tag technology into one of

this project's sites.

E. Brief Description of Next Steps and Recommended Follow-Up Actions:

Assessment and recommendations regarding counterpart questions and stated interest

- Dr. Sothoen reiterated that DAHP is highly supportive of the pilot, and the two teams (DAHP and BEAR) will need to collaborate on implementation.
- BEAR team was asked to prepare a short proposal for the pilot(s) outlining the technology, tag details, target group(s), training criteria, and timeframe for submission to DAHP
- After receiving the proposal, DAHP will carry out internal discussion and respond.

F. Additional Information, Lessons Learned, Partnership Possibilities Emerged as A Result of Networking Activities

Additional information

16. On the basis of this mission, dialog, and data resources acquired, I believe we can complete the program as set forth in the draft timetable (Annex 1) below.

Partnership possibilities

17. Based on this mission, I would recommend ongoing consultation with Dr. Sothoen and his team. Dr. Sothoen will be personally responsible for managing this project and his team are highly knowledgeable about the Cambodian livestock sector. Dr. Sothoen is also in charge of a number of other ongoing projects related to the cattle industry in Cambodia.

On-line resources

18. An online workspace has been established for document and data exchange on this project. It will also include additional materials as they become available.

VII. Mission to Myanmar

A. General Information

a) Mission date(s) 12 – 14 August 2015

b) Mission to Nay Pyi Taw, Myanmar

c) Activity (if applicable) Inception meetings with national counterparts

d) Mission member(s)

- *Dr. Joachim Otte*
- Dr. Sam Heft-Neal
- Ms. Tessa Emmer

e) Mission's brief TOR: This mission was undertaken to initiate collaboration with a national counterpart team nominated by the Myanmar Ministry of Livestock, Fisheries, and Rural Development. The main objective of the mission was to secure cooperation for a pilot livestock traceability exercise.

f) Names, titles of individuals contacted during the mission

- Dr. Than Naing Tun, Director, Administrative Division
- Dr. Soe Win, Director, Animal Health and Development Division
- Dr. Khin Myat New, Deputy Director, Animal Health and Development Division, project focal point
- ADB
- Myat Thuzar Thein, National Secretariat Specialist, GMS Working Group on Agriculture Secretariat, ADB

B. Description of Mission Achievements/Tasks Completed

19. This visit firmly established our collaborative relationship with national counterparts for the Myanmar pilot study, including the nominated Technical Focal Point, Dr. Khin Myat New, and supportive leadership from Dr. Than Naing Tun, Director of the Administrative Division, and Dr. Soe Win, Director of the Animal Health and Development Division. Dr. Tun will brief the DG of LBVD, and is optimistic that the pilot could start within a month's time, with committed local support from district chapters of the Myanmar Livestock Federation (MLF)'s.

C. Agenda Summary

- Introductions
- Presentation on LITS by Dr. Joachim Otte with demonstration of sample animal tag and QR technology
- Presentation by Myanmar side of cattle identification and movement in Myanmar, and national livestock data resources
- Discussion of commercial farmer activity in Myanmar and opportunities for pilot

D. Specific issues

Cattle Identification in Myanmar:

- Estimated 30 million cattle and buffalo, 55% with commercial market potential. It would be impossible at this time to register all cattle
- Currently LBVD dispenses yellow ear tags with number identification (provided by OIE), but they are not consistently used; farmers do not appear to want ear tags on their cattle (hinted at both opposition to piercing hole in cattle ear and opposition to buying cattle with tags)
- Existing system for identifying cattle is very basic, predominantly paper records and only required for movement / trade purposes
- Each Township has a veterinary officer in charge of animal health aspects in relation to livestock movements

Cattle Movement in Myanmar:

- Cattle can only be moved by licensed traders
- Local protectionism – local authorities often appear reluctant to allow animals to move out of their jurisdiction (want to keep animal resources in own region)
- Substantial illegal trade / movement to overcome barriers posed by de jure and de facto regulation/restrictions
- Checkpoints at national borders, but none inside the country

Pilot:

- It was agreed that the pilot should focus on 'commercial' farmers already raising beef and / or draft cattle for commercial markets (dairy farms would not be considered given the low turnaround/mobiity of animals).
- Myanmar Livestock Federation (MLF), based in Yangon, manages the commercial livestock sector, holds information on numbers of commercial farmers and breeds of livestock throughout the country, and would thus be an important partner in setting up the pilot.
- Communications with MLF would be channeled through LBVD (Dr. Khin, TFP)

- Dr. Than made a phone call to MLF and the following candidate locations were proposed based on larger number of commercial farmers and active trade

  Mandalay Region, 3-4 identified townships (draft cattle)
  1. Meiktila Township
  2. Pyawbwe Township
  3. Sintgaing Township

  Yangon Region, 1 township identified (beef cattle for export)
  1. Taikkyi Township

Commercial farms should now all be registered with a numerical ID can could be paired with tag data
Mobile phone coverage is good and most commercial farmers and traders have smart phones

-

E. Brief Description of Next Steps and Recommended Follow-Up Actions:

Assessment and recommendations based on counterpart shared information

- Because of presumed difficulty in incentivizing farmers and traders participating in illegal trade / movements to join the pilot, we propose working with registered commercial farmers in the identified Mandalay and Yangon Regions for the pilot phase of LITS. The project would in this way benefit from support of the Myanmar Livestock Federation (MLF), with which commercial farmers are already registered.
- Since there are no checkpoints in the Myanmar interior, re-scanning would have to be done at destination point. Initial selection of participating farmers and traders will determine possible final destinations, which may include slaughter houses, cattle markets, or quarantine facilities.

Follow-up Actions

- BEAR team to share proposal for the pilot(s) with LBVD
- Dr. Tun will brief the DG of LBVD (on mission at the time of the visit) on the proposed pilot, who will seek endorsement by his Minister.

F. Additional Information, Lessons Learned, Partnership Possibilities Emerged as A Result of Networking Activities

- **Additional information**
  - On the basis of this mission, dialog, and data resources acquired, we have compiled a Report on the current status of LITS across the GMS and proposed a framework and design for the LITS to be piloted.

- **Partnership possibilities**
  - Based on this mission, we recommend working with MLF's Yangon and Mandalay district associations, with communication channelled through Dr. Khin. Both Dr. Khin and Dr. Tun exhibited a high level of expertise regarding Myanmar national livestock policy, as well as acute awareness of existing conditions, and expressed interest in promoting agriculture development and market access.
- **On-line resources**
  - An online workspace has been established for document and data exchange on this project. It will also include presentation materials as these become available.

VIII. REFERENCES AND SOURCE MATERIAL

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IX. Appendix 1 – Project Inception Presentation