OVERSEAS COMPARATIVE STUDY MISSION TOWARD INCLUSIVE, SUSTAINABLE, AND COMPETITIVE LIVESTOCK AND DAIRY DEVELOPMENT

29 November - 4 December 2015
Ho Chi Minh, Vietnam

MISSION REPORT
Batch 2
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EXECUTIVE SUMMARY

The study mission in Vietnam is a component of the project *Capacity Development under Livestock Research and Biotechnology Research and Development of the Carabao Development Program (CDP)*, which aims to enhance the capacity of the Philippine Carabao Center (PCC) to address the requirements of the Carabao sub-sector and enhance its full potential as a major player of the livestock industry and the region considering the ASEAN Economic Community (AEC) 2015 and greater globalization. It also aims for PCC to have the regional and international perspective and influence in setting the policy recommendations and developing the strategic framework toward a competitive and inclusive livestock sector.

By improving its capacity as an institution, PCC will become a stronger collaborator and better position itself as a leading research institution in ASEAN that will serve the needs of the national, regional, and global sectors.

The study mission also aims for the participants to: 1) identify relevant specific overseas public and private sector program concepts and strategies needed to strengthen the “i-REB” (Intensified Rural Enterprise Build-UP) framework and its operationalization; 2) forge stronger partnership with international research and development institutions that will enhance generation of major final output relevant to improving productivity through the application of relevant biotechniques, technology transfer, and policy reforms; and 3) prepare and submit an action plan to PCC’s Office of the Executive Director.

The study mission in Vietnam, the second in a series, was organized by the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) through the Training Unit of its Knowledge Management Department. The regional office of the International Livestock Research Institute (ILRI) in the Philippines, through Dr. Steve Staal, Regional Representative for East and Southeast Asia, and the ILRI Country Office in Vietnam, through its Senior Scientist and Country Representative, Dr. Hung Nguyen-Viet, served as co-organizers of the study mission.

Seven PCC officials participated in this study mission. They visited three institutions in Ho Chi Minh, Vietnam, with similar mandates as PCC. Two of these institutions were under the Ministry of Agriculture and Rural Development (MARD). The study mission gave the participants the opportunity for firsthand learning and furthering networks/linkages with the visited institutions.

Generally, the participants favorably evaluated the study missions in terms of its relevance to their current job position, their overall participation, and organization and arrangement of the activities.
Background and Objectives

The study mission in Vietnam is a component of the project Capacity Development under Livestock Research and Biotechnology Research and Development of the Carabao Development Program (CDP), which aims to enhance the capacity of the Philippine Carabao Center (PCC) to address the requirements of the Carabao sub-sector and enhance its full potential as a major player of the livestock industry and the region considering the ASEAN Economic Community (AEC) 2015) and greater globalization. It also aims for PCC to have the regional and international perspective and influence in setting the policy recommendations and developing the strategic framework toward a competitive and inclusive livestock sector.

By improving its capacity as an institution, PCC will become a stronger collaborator and better position itself as a leading research institution in ASEAN that will serve the needs of the national, regional, and global sectors.

The study mission also aimed for the participants to:

1. Identify relevant specific overseas public and private sector program concepts and strategies needed to strengthen the “i-REB” (Intensified Rural Enterprise Build-UP) framework and its operationalization;

2. Forge stronger partnership with international research and development institutions that will enhance generation of major final output relevant to improving productivity through the application of relevant biotechniques, technology transfer, and policy reforms; and

3. Prepare and submit an action plan to PCC’s Office of the Executive Director.

Specifically for the Vietnam study mission, the participants aimed to:

- Learn about the establishment and implementation of the National Dairy Development Plan, which lead to the reduction of milk imports, generation of rural employment, and increased incomes of rural farmers;

- Visit selected dairy entrepreneurs, which may include small holder, medium-scale, and large-scale dairy farmers to have hands-on experience and appreciation of the best practices and application of dairy technologies in the dairy farms; and
• Visit appropriate research laboratories and interact with scientists/researchers in the areas of breeding, nutrition and pasture development, animal production, reproductive biotechnologies and other related fields.

The study mission in Vietnam, which has two batches, is the second in a series organized by the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) through the Training Unit of its Knowledge Management Department. The regional office of the International Livestock Research Institute (ILRI) in the Philippines, through Dr. Steve Staal, Regional Representative for East and Southeast Asia, and the ILRI Country Office in Vietnam, through its Senior Scientist and Country Representative, Dr. Hung Nguyen-Viet, served as co-organizers of the study mission.

Highlights

Three institutions were visited during the study mission (see Attachment 1 for the itinerary and Attachment 2 for a complete list of experts met).

Below are the highlights of the study mission enumerated by institution visited. A short background on each of the three institutions that provided information relevant to the goals of the study mission is also included.

This report focuses on the following information gathered from each institution:

1. Livestock research and biotechnology;
2. Dairy farm animal management systems;
3. Community-based dairy entrepreneurship;
4. Policies/Regulatory and management framework of livestock development; and
5. Recommendations/suggestions to improve local and national Philippine livestock RDE programs, projects, and activities.

I. INSTITUTE OF ANIMAL SCIENCES FOR SOUTHERN VIETNAM (IASVN)

The IASVN is under the Ministry of Agriculture and Rural Development (MARD), merged from the Center of Animal Husbandry Research and Technology Transfer from the National Institute of Animal Sciences (NIAS), with the Animal Husbandry Division from the Institute of Agricultural Sciences for Southern Vietnam (IAS). Its mission is sustainable development of livestock production in Southern Vietnam. Its functions are
scientific research, technology transfer, keeping nucleus stocks, training, international cooperation, consultation, and livestock production services in Southern provinces.

In terms of organizational structure, it has a board of directors that oversees the functional departments, research departments and centers. The functional departments include the Department of Personnel and Administration, Department of Research Planning and Finance, and the Department of Scientific Management and International Cooperation. The research departments comprise the Department of Animal Breeding and Genetics, Department of Animal Health, Department of Animal Nutrition and Feedstuff, Department of Livestock Environment, and the Livestock Laboratory. The Institute maintains five specialized centers, namely: the Binh Thang Pig Research and Development Center, the Animal Bio-Technology Center, the Ruminant Research and Development Center, the VIGOVA Poultry Research and Development Center, and the Mekong Delta Livestock Research and Development Center. Presently, the IASVN has a total of 193 staff members.

The Institute links with several international organizations for their researches and technical exchange. Among the main partners of cooperation are the Cherry Valley Group (Great Britain), Animal Husbandry Institute and the I-Lan Duck Center (Taiwan) and pig research organizations from Belgium, Korea, Denmark and Taiwan. Japanese specialists have also visited the Institute.

Dr. Dinh Van Cai and Dr. Nguyen Huu Tinh, IASVN Deputy Director and Vice Director, respectively, briefed the PCC delegates on the projects and activities of the IASVN.
HIGHLIGHTS/OBSERVATIONS/KNOWLEDGE/INSIGHTS GAINED

- Research on Animal Nutrition, Probiotics, and Herbal Extracts
  - The IASVN is focusing research on herbal extracts not only for safe meat production but also for animal disease prevention and control.
  - Probiotics and prebiotic production are also being done and incorporated in animal rations, particularly for pigs and poultry.
- Animal Breeding and Genetics
  - Animal genetic resources conservation is being done on the Tay Nguyen Soc pig, Hoa Lan duck and Tau Vang chicken.
- Training and Extension
  - The National Extension Center of MARD, which collaborates with the IASVN, provides extension services.
  - There are provincial extension centers under the National Extension Center.
  - The government has tapped the services of an IASVN Dairy Training Center to give free training for technicians in Artificial Insemination (AI) in cattle for three weeks, which has an equivalent cost of 5-7 million Vietnam Dong (~USD238.00-333.00)
  - In every province, there are 20-30 AI technicians, which are enough for the moment. The AI technicians collect service fees in the amount of 100,000 Dong (~USD5.00). This excludes the cost of semen. Imported semen costs 70,000 Dong (~USD3.00).
  - The AI efficiency is two to three services per conception under the Buffalo Program in Southern Vietnam.
- Dairy Cattle Program
  - In contrast, the cattle population is 5.2M, 200,000 of which are dairy cattle, and with smallhold farmers. Farmers raise two to four head beef cattle and/or 6-10 head dairy.
  - The government has a modified and shorter dairy heifer loan program. The dairy heifers are loaned to farmers but after the first parity, the farmers get to keep the calves but turn over the cow after six (6) months.
  - According to the officers of IASVN, the milk yield of cows is five (5) tons/lactation/cow, which they were able to increase to seven (7) tons/lactation/cow. They were able to get 10 tons per lactation from Australian and Israeli dairy breeds.
  - Animal feed on total mixed ration (corn-based) and concentrates provided at a rate of 400 g per kg milk.
  - In the central Vietnam region, misting/cooling systems are installed.
- Milk/Dairy Industry
  - Vietnam has about 200,000 dairy cattle, which supply 20-25 percent of the country’s milk requirements. Eighty percent (80%) are imported.
  - The Ministry of Industry sets the quota for importation.
  - The milk/dairy per capita consumption is six liters/year.
II. Ruminant Research Development Center (RRDC), IASVN

The Ruminant Research and Development Center is one of the five Centers of the IASVN. It is located in Binh Duong province with an area of 160.7 ha, of which 6.4 ha are allocated for offices, while 50 ha are for livestock housing and pasture. It was formerly called Murrah and Forage Center. It is manned by 31 staff members.

The center is tasked to: 1) carry out applied research and technology transfer on ruminant, fodders and pastures, 2) keep and multiply purebreds, 3) train technicians and farmers in ruminant production, and 4) establish models and transfer technology in ruminant production. The main products of the Center are Purebreeds of Drought Master and Brahman; crossbreeds of Cross-Sind, Brahman x Sind and Charolais x Sind; and pure and crossbred Murrah. Presently, the center has 501 head pure cattle breeds, cross-Sindhi and 60 head Murrah buffalo. The Center also produces and sells forage grass and legume varieties like *Panicum maximum*, Ruzi, Mombasa, Hamill, *Stylosanthes guinensis* and Pinton.

Prof. Phi Nhu Lieu and Dr. Pham Van Quyen, RRDC Director and Vice-Director, respectively, welcomed the PCC delegates.
**HIGHLIGHTS/OBSERVATIONS/KNOWLEDGE/INSIGHTS GAINED**

- Forage Management and Sustainable Forage Seed Production
  - New high yielding varieties of forage grasses were imported from Thailand and other countries, which they tested for adaptation and propagation.
  - The institute harvests forage/foliage twice a year and the third season is devoted to seed production.
  - An entire area has been dedicated and maintained solely for massive forage seed production which are being sold to farmers at USD35 per kilo.
  - They sell harvested seeds to farmers.
  - Participants witnessed RRDC workers/laborers separating the seeds.
  - Harvested forage are ensiled for feeding to cattle and buffalo herd.
  - Cassava by-products (from tapioca manufacture) are incorporated in the ration, and results are promising.
  - Fresh herbage yields obtained as presented were as follows:
    - Panicum maximum – 250-300 tons/ha/year
    - Mombasa – 250-300 tons/ha/year
    - K280 – 200-220 tons/ha/year
    - Ruzzi – 220-250 tons/ha/year

- Herd Management
  - The center maintains large herds of Drought Master, Brahman, Red Sindhi and Charolais breeds of cattle and 60 heads of Murrah buffalo.
  - The breeds are housed separately.
  - The government allocated funds for the purchase from dairy farmers of dairy male calves at 2-5 days old, and raised/fattened for meat production. This would allow the farmers to focus mainly on the maintenance of lactating cows and milking.

- Waste Management
  - Animal wastes are being collected and gathered in one place, including excess forage grasses in the feeding trough to decompose. These are plowed back into the forage area when fully decomposed as organic fertilizer.

**III. NONG LAM UNIVERSITY (NLU) – HO CHI MINH CITY**

The Nong Lam University (NLU) is formerly the University of Agriculture and Forestry of Ho Chi Minh City, founded in 1955. It has a 118-hectare main campus 16 km north of Ho Chi Minh City downtown, and two sub campuses at the Gia Lai and Ninh Thuan provinces. Starting as school of agriculture and forestry, it evolved into a university from 1955 to 2000, offering many academic degree programs. Its vision by 2025 is a multi-disciplinary university in education and research, with international standard in educational programs, making efficient contributions to national development.
The Faculty of Animal Science and Veterinary Medicine is the oldest and one of the biggest faculties of NLU. It has six departments: Veterinary Clinical Sciences, Veterinary Biosciences, Infectious Diseases and Veterinary Public Health, Animal Nutrition, Animal Production and Animal Breeding. The faculty has one veterinary hospital, practice farms, and 13 laboratories in campus. It has strong relationships with companies, manufacturers, and farms in animal production and veterinary.

Being one of the first established center at Nong Lam University, the Research and Technology Transfer Center has three Departments: General Planning, Agriculture and Extension, and Husbandry. The Center has three farms for cow, swine, goat, and sheep raising. The activities and services of the center include:

1) Research and transfer of advanced technology on agriculture, forestry and fishery, environment and natural resources;
2) Organizing technical training courses for students, technicians and extension staff;
3) Cooperating with other organizations to carry out demonstration project on applied technology on probiotics, fertilizer, plant and livestock seed; and
4) Scientific and technology services: information, consultancy, technology transfer.

Dr. Nguyen Ngoc Thuy, Head of International Cooperation Office, and Dr. Duong Nguyen Khang, Associate Professor/Lecturer, Director, Center for Research and Technology Transfer, welcomed the PCC delegates to the NLU campus.
HIGHLIGHTS/OBSERVATIONS/KNOWLEDGE/INSIGHTS GAINED

- Research on Animal Nutrition, Probiotics and Vaccine Development
  - Similar to the IASVN, NLU is focusing research on isolation of bacteria for probiotics. The probiotics are incorporated in the feed concentrate and given to growing calves to enhance nutrient digestion and absorption thereby reducing the incidence of calf diarrhea.
  - Production of enzyme for animals feeds. This is in response to contract growing activities of Japan for corn cob silage in the country.
  - The Institute of Biotechnology also undertakes vaccine development.

- Problems on Animal Diseases
  - Lameness in cattle
  - Bird flu
  - BIRS in swine
  - FMD in cattle – there was an outbreak two to three years ago
  - Liver fluke – not much of a problem now
  - Acidosis

- Animal Breeding and Genetics
  - Dr. Nguyen Ngoc Thuy said that the university has limited facility on genetics

- Feeding Management – Use of Total Mixed Ration (TMR)
  - Feeding of TMR to cattle is being encouraged as it has been found to increase milk production by 10-20 percent from 8 to 15 liters per day.
  - This is practical for farmers raising at least seven (7) heads, but not advisable to those raising only one to five heads because the buying price for milk is low, hence, margin of profit is lower.

- University Dairy Cattle Project
  - Dr. Duong toured the participants around the dairy project facility where they conduct feeding studies using cassava cake to replace rice bran, and also studies on methane gas production.
  - Cooling by misting is practiced in the farm. Industrial fans are installed on all sides as this cooling system is claimed to increase milk production from 15 liters (by feeding TMR) to 22 liters per cow per day.

- Technology Transfer
  - Dr. Duong is very positive and totally committed in slowly turning around and developing his center alongside the many setbacks and limitations that developing countries have in common. He was very receptive to many concepts and possible collaborations pertaining to sustainable agriculture. His center is reminiscent of Vietnam’s history after the war. Uninhibited by many limitations, he is awakening the giant and setting the perspective of the best it can be.

- Buffalo Industry in Vietnam
  - Buffalos were raised primarily for power but are now being slowly replaced by machines, hence they are now being raised for meat.
• Buffaloes are easier to raise – being allowed to graze in the field and more resistant to diseases compared to cattle.
• Buffalos are kept mainly in the central coast of Vietnam – around the Mekong Delta. But with 29M people around Mekong River, sustainability of beef supply may become a problem, according to Dr. Khang.

**Recommendations for Philippine Livestock RDE**

Based on the discussions within the three-day study mission in Ho Chi Minh, the following are worth undertaking for livestock RDE in the Philippines:

1. **Sustainable forage seed production.** This is highly applicable in the Philippines since forage is one of the weakest areas in the local livestock industry. A focal center totally dedicated to forage research, management, production and technology transfer will benefit the large ruminant industry.

2. **Total Mixed Rations (TMR).** Some private entities in the Philippines are into this business now. However, the economics of using it under Philippine village setting, where farmers are even hesitant to buy concentrates for their lactating cows, have to be given consideration. Perhaps more emphasis should be put in identifying the available feed resources in the farm and teaching/coaching the farmer how to formulate his own TMR. What is important is that proper and adequate nutrition is provided to the animals.

3. **Waste management/environmental concerns.** Regional PCC centers should continue conducting research studies on manure utilization as well as monitoring methane/CO2 gas emissions from buffalo herd.

4. **Social mobilization.** Harmonious relationship among all agencies involved in rural development. The trip enhanced the need for sustained networking and synergy with academe, other government agencies, local government units as well as the private sector to sustain the much needed development of carabao-based enterprises in the country. PCC will continue to develop models and explore modalities for effective technology transfer to create well-meaning and sustainable small and medium enterprises.

5. **Collaboration with Nong Lam University and the IASVN.** The officials we met were interested and excited in having collaborative work with the PCC. Based on our initial encounter with IASVN officials, we felt that they were very much impressed with PCC’s programs.
Evaluation

At the end of the study mission, participants (see Attachment 3 for list of participants) filled out summative evaluation sheets. The evaluation sheet contains statements on general evaluation of the study mission, interpersonal relationships, logistics, and content, using a Likert-scale, where 1 meant very poor, 2 was poor, 3 was average, 4 was good, and 5 was very good.

In general, the participants favorably evaluated the study missions in terms of its relevance to their current job position, their overall participation, and organization and arrangement of the activities (see Table 1).

Overall, they also favorably viewed logistical preparations of the study mission and their interpersonal relationships (see Table 1).

The participants gave the lowest ratings on learning materials received, probably because some of the materials given in the institutions visited were written in the Vietnamese language. Collectively, however, the rating is good for the components that directly influence the study mission’s content.

As a whole, the participants felt that the study mission was very fruitful and educational. Participants suggested the following for consideration in future study missions of PCC:

1. The duration of the study mission was all right. However, longer duration would be better for more institutions to be visited.
2. The study mission would have been more complete if participants were able to visit a milk-related private company that could show models of large-scale dairy enterprise/business.

Participants thanked SEARCA and ILRI for facilitating the study mission and for the opportunity provided so they could learn about livestock development in Vietnam. One participant wrote the following comment: I am greatly impressed with the fast economic growth/development of Vietnam despite the war. Comparatively, the Philippines is much advanced with regard to buffalo program but the lessons learned from their experiences and programs on beef and dairy cattle provided us insights on how we can improve our program delivery.
Table 1. Participants’ evaluation of the study mission by component.

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>RATING</th>
<th>AVE.</th>
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<tbody>
<tr>
<td></td>
<td>Very Poor</td>
<td>Poor</td>
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<tr>
<td>GENERAL EVALUATION</td>
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<tr>
<td>Relevance to current job position</td>
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<td>3</td>
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<tr>
<td>Overall participation of the participants in the study mission</td>
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<td>3</td>
</tr>
<tr>
<td>Overall design of the study mission</td>
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<td>3</td>
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<tr>
<td>Organization and arrangement of the activities</td>
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<td>1</td>
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<tr>
<td>Overall achievement of the study mission objectives</td>
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<tr>
<td>Totality of study mission experience</td>
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<td>3</td>
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<tr>
<td>Duration of the study mission</td>
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<td>3</td>
</tr>
<tr>
<td>INTERPERSONAL RELATIONSHIPS</td>
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<td>Your relationship with co-participants</td>
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<td>5</td>
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<tr>
<td>Your relationship with the study mission management group</td>
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<td>4</td>
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<td>LOGISTICS</td>
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<td>Accommodation</td>
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<tr>
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<td>4</td>
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<td>Time management</td>
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<td>CONTENT</td>
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<td>Group discussions and workshops</td>
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<td>2</td>
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<tr>
<td>Subject matters discussed in relation with the study mission objectives</td>
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<td>4</td>
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<tr>
<td>Briefing and orientation on projects/institutions visited</td>
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<td>4</td>
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<tr>
<td>Amount of information gained</td>
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<tr>
<td>Learning materials received</td>
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<td>5</td>
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ATTACHMENTS
## ATTACHMENT 1. FINAL TRAVEL ITINERARY

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<th>Date</th>
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<th>Activity</th>
<th>Persons Met</th>
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<tr>
<td>29/11/2015</td>
<td>1:00 PM</td>
<td>Departure from NAIA Manila via PR597</td>
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<td></td>
<td>2:50 PM</td>
<td>Arrival Tan Son Nhat Intl Airport Ho Chi Minh City</td>
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<td></td>
<td></td>
<td>Travel to Bong Sen Hotel Saigon 3 117-123 Dong Khoi, Ben Nghe Ward</td>
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<td>District 1, HCMC</td>
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<tr>
<td>30/11/2015</td>
<td>11:30 AM</td>
<td>Briefing/Meeting with ILRI official</td>
<td>Dr. Hung Nguyen</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Senior Scientist &amp; Country Representative for Vietnam</td>
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<tr>
<td></td>
<td>1:00 PM</td>
<td>Travel to Institute of Animal Sciences for Southern Vietnam (IASVN)</td>
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<tr>
<td></td>
<td>2:00-4:00 PM</td>
<td>Visit IASVN/Discussion with officials</td>
<td>Dr. Dinh Van Cai</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Deputy Director</td>
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<td></td>
<td></td>
<td></td>
<td>Dr. Nguyen Huu Tinh</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Vice Director</td>
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<td></td>
<td></td>
<td></td>
<td>Ms Nguyen Than Van</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Researcher</td>
</tr>
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<td></td>
<td>4:00-5:00 PM</td>
<td>Back to Bong Sen Hotel</td>
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<td>1/12/2015</td>
<td>7:00 AM-12:00NN</td>
<td>Visit Ruminant Research Development Center</td>
<td>Prof. Phi Nhu Lieu</td>
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<td></td>
<td></td>
<td></td>
<td>Director</td>
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<td>Dr. Pham Van Quyen</td>
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<td></td>
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<td></td>
<td>Vice Director</td>
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<td>12:00NN-1:00 PM</td>
<td>Lunch</td>
<td>Dr. Hung Nguyen</td>
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<td></td>
<td>Senior Scientist &amp; Country Representative for Vietnam</td>
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<td></td>
<td></td>
<td></td>
<td>Ms Nguyen Than Van</td>
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<td></td>
<td>Researcher, IASVN</td>
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<td></td>
<td>2:00-4:00 PM</td>
<td>Visit Cu Chi Tunnel</td>
<td>with Dr. Hung Nguyen</td>
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<tr>
<td>Date</td>
<td>Time</td>
<td>Activity</td>
<td>Location/Participants</td>
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<td>2/12/2015</td>
<td>8:00AM-12:00NN</td>
<td>Visit Nong Lam University/ Briefing on Livestock and Veterinary Research</td>
<td>Dr. Nguyen Ngoc Thuy Head of International Cooperation Office, NLU</td>
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<td>Visit Dairy Farm and Center for Research and Technology Transfer</td>
<td>Dr. Duong Nguyen Khang Director, Center for Research and Technology Transfer, NLU</td>
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<td>2/12/2015</td>
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<td>Individual Report Writing &amp; Group Synthesis Workshop— led by Dr. Liza G. Battad</td>
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<td>3/12/2015</td>
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<td>Group Synthesis Workshop (cont’d)</td>
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<td>3/12/2015</td>
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<td>Visit Post Office &amp; War Museum</td>
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<tr>
<td>4/12/2015</td>
<td>11:00AM-</td>
<td>Check out at Bong Sen Hotel Saigon 3</td>
<td>Departure for Tan Son Nhat Intl Airport HCMC</td>
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<tr>
<td></td>
<td>3:50PM</td>
<td>Departure for NAIA Manila via PR598</td>
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<tr>
<td></td>
<td>7:25 PM</td>
<td>Arrival in NAIA Manila</td>
<td>Travel to individual work stations</td>
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</table>
## Attachment 2. List of Experts from Institutions Visited

### International Livestock Research Institute (ILRI)
17A Nguyen Khang Street, Trung Hoa Ward
Cau Giay District, Hanoi, Vietnam

**Dr. Hung Nguyen Viet**  
Country Representative for Vietnam and Senior Scientist, Ecohealth and Food Safety  
Tel: +84 4 3783 4644 (ext 60)  
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