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**Low Carbon Agricultural Support Project  
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# **QUARTERLY REPORT 2017-Q2**

**Hanoi, 10 July 2017**

**Prepared for  
Central Project Management Unit  
Ministry of Agriculture and  
Rural Development  
by  
Agrifood Consulting International**



**in association with**

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*Smart Policies and Practices for Shared Prosperity*

## Agrifood Consulting International

August 10, 2017

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**Subject: Submission Quarterly Report Q2-2017**

Dear Dr. Hinh,

I would like to submit the Quarterly Report Q2 2017 for your review and feed back.

Please let us know if you need our assistance.

Your sincerely,

*Francesco Goletti*

Francesco Goletti  
President  
Agrifood Consulting International Inc.

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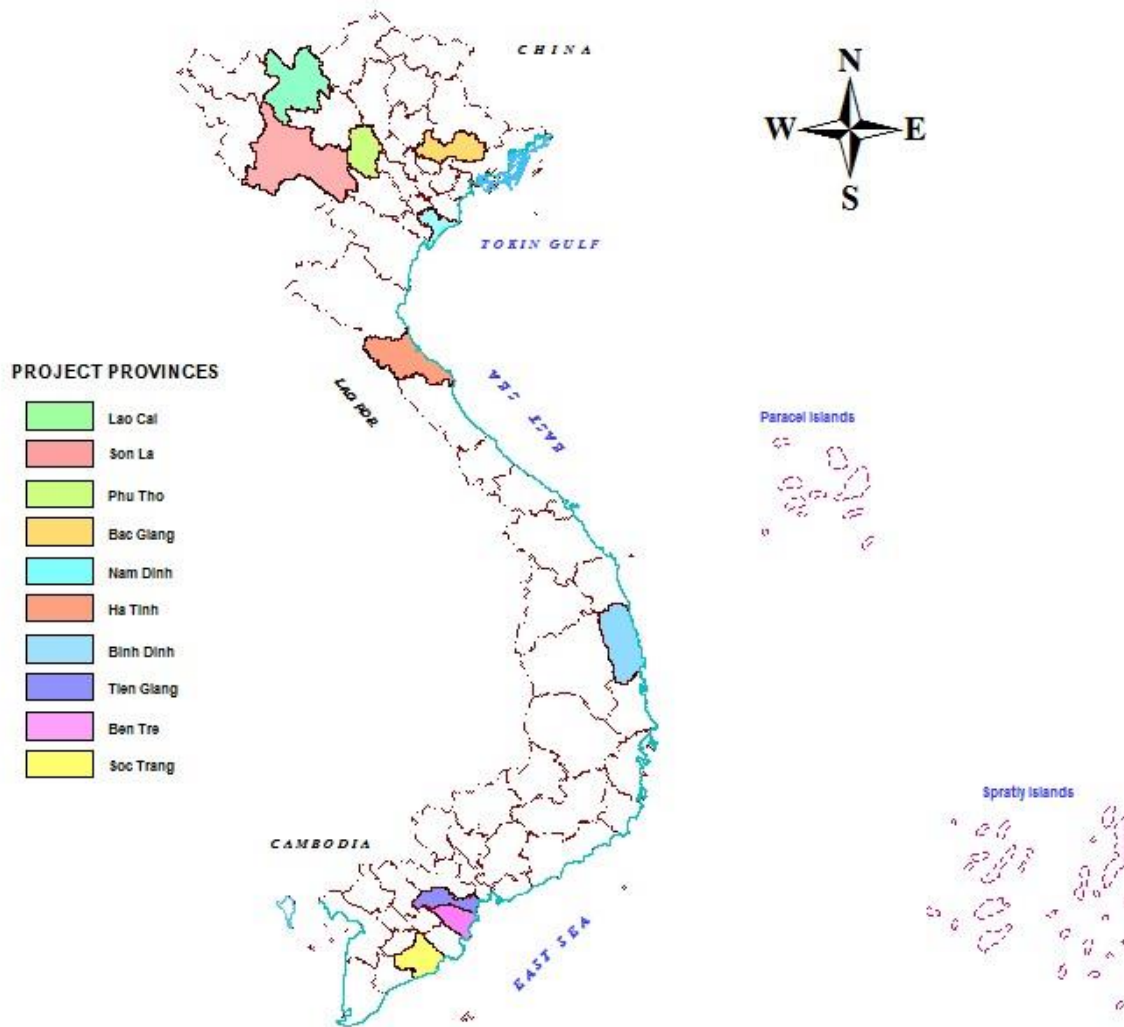
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### Map of Vietnam with Project Provinces



## ABBREVIATIONS

ACI	Agrifood Consulting International
ADB	Asian Development Bank
AD Consult	Asia Development Consultants
APMB	Agriculture Projects Management Board
BP	Biogas Plant
BVC	Biogas Value Chain
CRAM	Consultant Recruitment Activity Monitoring
CSAWMP	Climate Smart Agriculture Waste Management Practices
CDM	Clean Development Mechanism
CPMU	Central Project Management Unit
CRAM	Consultant recruitment Activity Monitoring
DTL	Deputy Team Leader
DMF	Design and Monitoring Framework
EARF	Environmental Assessment and Review Framework
EMP	Environmental Management Plan
EMDP	Ethnic Minorities Development Plan
GAP	Gender Action Plan
GHG	Green House Gas
GoV	Government of Viet Nam
IEE	Initial Environmental Examination
ICD	International Cooperation Division
IPCC	International Panel for Climate Change
LCASP	Low Carbon Agricultural Support Project
LIC	Loan Implementation Consultancy
m <sup>3</sup>	Cubic meter
MBP	Medium-sized Biogas Plant
MARD	Ministry of Agriculture and Rural Development
MONRE	Ministry of Natural Resources and Environment
M&E	Monitoring and Evaluation
MTP	Master Training Plan
MTR	Mid Term Review
MOU	Memorandum of Understanding
N/A	Not Applicable
NAMA	Nationally Appropriate Mitigation Actions

NEC	Narrative Evaluation Criteria
NGO	Non-governmental Organization
NOL	No Objection Letter
PAM	Project Administration Manual
PIM	Project Implementation Manual
PPMS	Project Performance Management System
PPMU	Provincial Project Management Unit
Q	Quarter
QBS	Quality Based Selection
QCBS	Quality and Cost Based Selection
RFP	Request for Proposal
REOI	Request for Expression of Interest
SBP	Small-sized Biogas Plant
SNV	SNV Netherland Nongovernmental Organization
SURE	Solution Using Renewable Energy
TL	Team Leader
TOR	Terms of Reference
\$	United States \$
VTV	Vietnam Television
VND	Viet Nam Dong

## 1. INTRODUCTION

In addition to the regular activities of the LIC Team, Quarter 2 of 2017 was particularly intense as the team provided support before, during, and after the implementation of the GoV/ADB Review Mission. Some of the Specialists also accompanied the mission in the field supervision visits to the provinces.

This report covers Quarter 2 of 2017 (April-June, 2017) of the project. The purpose of the report is to (i) provide details on the technical assistance provided by LIC to CPMU and PPMUs during the period and (ii) prepare the work plan for Quarter 3 of 2017. The report discusses the technical progress, assessment of the technical assistance performance, and makes some recommendations.

During Q2 of 2017, the technical assistance was involved in further refining technical designs, developing training materials and providing training support along including safeguards and procurement support. As the technical assistance is demand driven, supporting CPMU and PPMUs activities, DMF related activities in this report are not necessarily all covered during the reporting period. A number of coordination meetings were held between CPMU and LIC during the period identifying the technical issues to be addressed. The research package 29 had been approved; and safeguards related reports such as bi-annual Environmental Report, GAP and EMDP were completed during the period. Detail outputs are described in section 4.

## 2. PROJECT BACKGROUND

Although biogas plant technology is known to Viet Nam for quite some time, the current needs of environmental mitigation measures including the reduction of GHG emission require the adoption of improved technologies and measures to minimize livestock waste and effective CSAWMP. The new technologies and practices are important to all stakeholders in the project. Consequently, LCASP activities are supported with various capacity building and communication programs to be implemented at central, provincial, district and commune levels.

The Project is expected to increase the uptake of climate smart agriculture waste management practices (CSAWMP) as measured by the increased use of clean biogas energy and organic bio-organic fertilizers.

The specific purposes include:

- (i) Improve management of livestock waste and bio-slurry while reducing environmental pollution; creating clean energy; bio-organic fertilizer; generating incomes from Clean Development Mechanism (CDM).
- (ii) Increasing the application of CSAWMPs that are effectively certified; greater use of renewable energy and bio-fertilizer from agricultural waste; replicating models in order to reduce greenhouse gas emissions, and improving the livelihoods and quality of life of rural people.
- (iii) Capacity building of stakeholders and disseminating knowledge and skills of good CSAWMP to beneficiaries.

Expected Outcome

The Design and Monitoring Framework (DMF) of the Project indicated that by 2018 (from baselines in 2013) the envisaged outcomes in the project areas include:

- At least 70% bio-slurry is converted to organic fertilizers.
- At least 80% energy produced by Biogas Value Chains (BVCs) is utilized
- Daily workload of women and children is reduced by 1.8–2 hours, on average

The four components of the project are

- i) expanded use of livestock waste management infrastructure,
- ii) credit lines for biogas value chains,
- iii) enhanced CSAWMP technology transfer and
- iv) effective project management.



The project covers 10 provinces, Son La, Lao Cai, Phu Tho, Bac Giang, Nam Dinh, Ha Tinh, Binh Dinh, Tien Giang, Ben Tre and Soc Trang.

The project is implemented for a **period of six years** from 2013 to June 2019. Based on the Mid-term Review (MTR) in September 2016, the project **net loan** amount is \$67.920 million.

### 3. HIGHLIGHTS ON TECHNICAL SUPPORT

#### Biogas Technology

- Technical support to PPMUs (Son La, Lao Cai, Binh Dinh, Phu Tho and Nam Dinh provinces) guiding construction of MBPs (50 – 499 m3)
- Supported “construction of MBPs” training for technicians and masons in Nam Dinh province (participants from Lao Cai, Son La, Phu Tho, Bac Giang, Nam Dinh and Ha Tinh provinces)
- Improved guidelines on construction of MBPs with additional technical details
- Supported PPMU Son La for data collection of 12 households on livestock waste production and feasibility for biogas production

#### Biogas Value Chain

- Updated the training document on technical issues on plug flow of MBPs
- Proposed practical solutions on optimum utilization of biogas from SBPs and MBPs
- Supported to develop report standard form of province/district technicians for the quality control of the biogas plants
- Monitoring by random check of biogas plants Form 4 completed
- Instruct Provincial Coordinators to supplement detailed design for power generators for packages 32 and 33 as requested by CPMU
- Developed technical feasibility assessment report for packages 33, 34, 35 and 36
- Revised technical parameters with detailed designs of package 34 (Binh Dinh, Nam Dinh, Ha Tinh and Soc Trang)
- Supported CPMU and PPMUs to finalise documents for the demonstration models including 25 preliminary designs and 86 detailed designs
- Supported CPMU and PPMUs to finalise evaluation procedures (site location with instruction) for demonstration packages and training
- Developed the design proposal on overloading solutions for SBPs. Design is especially focused to Phu Tho province, including use of biogas effluent for crops
- Developed formulae for estimating amount of daily biogas production from livestock farms of various sizes
- Draft report on GHG emission reduction methodology for LCASP

#### Climate Smart Agriculture Waste Management

- Supported procurement procedures on research packages 25 -29

- TOR development for research package 30 sub-projects (five packages are 42, 43, 44, 45 and 46) identifying the need area to address waste management
- Concept note development on research package 30 sub-projects (five packages are 42, 43, 44, 45 and 46) and CPMU submitted to ADB
- Responded the technical questions by international bidders on TOR of package 26
- TOR on the research packages were again revised/edited

#### Training

- Following training packages were approved by CPMU:
  - Production of organic fertilizer from the agricultural residues and biogas according to value chain training for research staff
  - Management of livestock waste and production of low carbon agriculture training for extension staff
  - Gender and ethnic minority groups training for trainers
- Training assessment forms developed
- Support to video preparation to telecast in VTV 1
- Review and comments provided on vocational training materials

#### Environment

- Survey on new MBPs construction in Son La on environmental protection
- Update internal monitoring report template on environmental safeguard
- Improved random checks table (Table 4: Environmental Assessment and Review Framework, EARF) of biogas plants

#### Gender and Ethnic Minorities

- GAP for Quarter 1, 2017
- Ethnic Minorities Development Plan
- Guidance forms on gender and ethnic minorities integrated planning for PPMUs, assessment for credit access by ethnic minorities and to change the communication methods for ethnic minorities
- Prepared gender awareness training materials and Power Points on GAP and EMDP

#### Policy and Institution

- Policy and institutional review completed with ongoing further progress, updating the changing scenario

## Procurement

- Bid evaluation report of goods package 32 (NOL)
- Submission 0 of research package 29 consisting of TOR, cost estimates Request of Expression of Interest (REOI) (NOL)
- Submission 1 of research package 26, 27 and 28 consisting of shortlist report prepared by CSC, RFP, NEC, TOR, cost estimates and CRAM
- Submission 2 of research package 25 received NOL from ADB

## 4. PROGRESS ON TECHNICAL ASSISTANCE BY COMPONENTS

### 4.1 Component 1: Expanded Use of Livestock Waste Management Infrastructure

#### *1.1 Standardizing and disseminating a design package for Biogas Value Chain Infrastructure by 2017*

Overloading of SBPs is a common issue in Vietnam given the SBPs volume of 9-12 m<sup>3</sup> keeping 20-40 fattening pigs. The livestock farming households increase the pigs to 40-80 when the pork meat market price rises resulting to over disposal of livestock waste to biogas digesters.

After feasibility studies in Phu Tho, Thai Nguyen, Bac Giang and Son La; detailed design proposal was prepared addressing overloading small biogas plants and effluent use for tea, cultivated grasses, pomelo fruit trees in Phu Tho Province. Biogas Technology Specialist, in collaboration with other LIC Specialists and Provincial Coordinator, Phu Tho, prepared a design by addressing two scenarios i) a system for livestock households with 20-70 pigs and ii) the system for livestock households with 71-150 pigs. In the case of 20 – 70 pigs, the design facilitates to collect a part of the livestock solid waste before biogas digester and collected in a sedimentary tank installed after the BP. Formulae were also proposed to calculate volume of sedimentary tanks that should be suitable for different farm sizes.

Though the overloading is one of the technical issues, nonetheless, there is no such issue encountered in Binh Dinh as reported by the Provincial Coordinator. On the other hand, the overloading problem in Bac Giang province exists, however, installation of an extra sediment tank for bio-slurry (about 20 m<sup>3</sup>) resolve the overloading to some extent. Due to the decreasing trend of number of pigs with low pork meat market response, there was no overloading of biogas plants in Ha Tinh province, however, excess gas and livestock waste were issues to resolve, as reported by the Provincial Coordinator.

Regarding the MBPs, the document on the introduction and guidelines for the construction of MBPs had been improved. The document includes i) KT1 type biogas plant (MBPs), ii) KT2 type biogas plant (MBPs), iii) type of plug flow bio-digester and iv) KT31 type of biogas plant with fixed dome made by composite material.

In addition to field support including support to Provincial Coordinators, the following articles were prepared in Vietnamese language and uploaded in the LCASP website.

- i. Introduction and guidelines for the construction of MBPs (LCASP Website <http://www.lcasp.org.vn/vi/kien-thuc/tai-lieu-ky-thuat.html>)
- ii. The management of livestock waste a medium livestock farms in Phu Tho province (LCASP Website <http://lcasp.org.vn/vi/operation-ppmu/ket-qua-thuc-dia-tai-tinh-phu-tho-cua-tu-van-lic-1-162.html>)
- iii. Technical characteristics of manure separator for livestock waste treatment (LCASP Website <http://www.lcasp.org.vn/vi/news/mot-so-dac-diem-cua-thiet-bi-tach-chat-thai-ran-tu-nuoc-thai-chan-nuoi-lam-nguyen-lieu-san-xuat-phan-huu-co-289.html>) and
- iv. Biogas formation mechanism in bio-digester (LCASP Website <http://lcasp.org.vn/vi/news/co-che-phan-giai-chat-huu-co-hinh-thanh-khi-sinh-hoc-trong-qua-trinh-xu-ly-chat-thai-chan-nuoi-285.html>)

In some instances, community effort in livestock waste management is a better option where the community members collect and storage livestock waste and prepare the organic fertilizer and/or compost. Organic fertilizers and compost can be marketed in a joint community effort.

While the documents revised and updated during the period are provided in Table 1, new documents produced are listed in Appendix 1.

**Table 1: Documents and Reports provided to CPMU, Quarter 2, 2017**

No	Documents Revised and Updated	Document Nature	Month
1	Utilization of manure separator for livestock waste treatment to collect solid waste for producing organic fertilizer in household group scale (according to request of CPMU)	Technical Document	April
2	Collections of options for overcome of overloading BPs	Technical Document	April
3	Utilization of biogas effluent as liquid manure for crops in individual household scale (according to request of CPMU)	Technical Document	April

MBPs installation was behind schedule due to insufficient design documents and guidance. Carbon emission monitoring is slow

BVC Specialist prepared two technical presentation documents, biogas formation mechanism to support project technicians to apply biogas technology and technical specifications of solid waste separators for livestock waste treatment for technicians, to support the demonstration implementation.

To strengthen biogas plant installation, the Specialists prepared a report on biogas power generator – calculation of capacity and cost-benefits that provide a basis for the selection of effective gas utilization from small and medium BPs including technical and economic analysis. In addition, the Specialists prepared a proposal for the provision of sedimentation tanks and organic composting tanks to address the overloading of SBPs. Overloading of SBPs is a major issue in the Project and the CPMU has given high priority in looking for a technical solution to resolve this issue.

A team of LIC Specialists field visits found that the direct use of bio-slurry for crops in Thai Nguyen (tea, pomelo, vegetables and others) and in Bac Giang (litchi and pomelo) is effective and can save 50% to 100% of chemical fertilizers, thus increasing the productivity. However, there should be a comprehensive study on chemical and physical contents of the waste, toxic elements and relationship with productivity and quality of agricultural products. There is a good opportunity to explore further: the project should carry out a survey to assess the effectiveness of using liquid waste in some existing models and then propose suitable solutions for LCASP to overcome the overloading of SBPs. In Bac Giang (Viet Yen district), many households are effectively using biogas for cooking, particularly cooking animal feed. However, the stoves are house made without pressure gauges and high fire risk. It is also impossible to control gas pressure as well as operation condition of the digester.

Biological products for treatment of sludge sediment in shrimp and fish ponds by Hoan Cau Company in Bac Ninh Province have been used and highly appreciated by farmers of some provinces. The LCASP Policy and Institutional Specialists team had conducted survey on the effectiveness of these products in Cam Duong Cooperative, Cam Xuyen, Ha Tinh Province. As this information is important for further use, it will be provided to winning contractor of research package 29, treatment of sludge sediment in shrimp farms for reference.

The survey on fertilizer enterprises shows that Vietnam lacks incentives and support policy for fertilizer enterprises and farmers to produce and use organic fertilizer from livestock and crop waste, most of the organic input materials are taken from peat which is of low quality and does not contribute to effective utilization of agricultural waste.

### *1.2 Strengthening the monitoring capacity of relevant agencies to handover and monitor the constructed biogas plants by June 2019*

As of Quarter 1, LIC supported the updating of PPMS especially GAP and EMDP. The monitoring data was up to date for the GoV/ADB Review Mission.

### *1.3 Monitoring the disbursement of funds paid to Eligible Beneficiaries as a financial incentive to carry out Eligible Subprojects by June 2019*

Though the criteria had been established for the selection of the ethnic minorities to participate in the SBP installation, PPMUs were in difficulties selecting the livestock farming households matching the required number of pigs for SBP in poor/pro-poor households.

### *1.4 Capacity building in designing, constructing, operating and monitoring biogas plants by June 2019*

The CPMU sample survey/assessment questionnaires on training needs to local beneficiaries to prevent the overloading of biogas digesters and evaluation of results and impacts of training and human resource development of the project were reviewed and refined; and approved by the Project Director. The assessment will contribute to update technical needs and contribute to replication.

Regarding the video preparation to telecast in the VTV 1 by CPMU, identification of the topics, materials preparation with project site identification and necessary support at the time of video preparation: the video had been telecasted nationwide on April 2017 after the approval from CPMU. CPMU uploaded this video (LCASP Website <http://lcasep.org.vn/vi/video/mo-hinh-u-phan-huu-co-trong-quan-ly-toan-chat-thai-chan-nuoi-toan-dien-du-an-lcasep-40.html>).

Working closely with the Provincial Coordinators, LIC Specialists supported the CPMU and PPMUs during the training delivery. The Specialists such as environment and gender, delivered the training courses on the subject matters during the period.

### *1.5 Strengthening the capacity and providing equipment for relevant agencies to manage national biogas database by 2017*

No environmental monitoring equipment was purchased during the reporting period.

## **4.2 Component 2: Credit Lines for Biogas Value Chains**

*2.1 FIs to provide credit lines to Eligible Beneficiaries to finance Biogas Value Chain Infrastructure and other climate smart agriculture waste management investments which satisfy the Subproject Eligibility Criteria by June 2019*



Provincial Coordinators were supporting the PPMUs, however, there was no significant progress on credit lines on biogas value chain.

### 4.3 Component 3: Enhanced CSAWMP technology transfer

*3.1 Utilizing farmer-based research including using biochar and other agricultural wastes as organic fertilizers; applying other efficient low greenhouse gas emission agricultural practices which generate bio-energy, managing waste treatments in aquaculture and other CSAWMP by June 2019*

With the involvement of the CSAWMP Specialist, procurement, procedures on research packages 25 - 29 were covered during the period especially technical proposal evaluation and RFP issue on other 25 packages. Milestone on research packages is provided in Table 2.

**Table 2: Milestone on Research Packages Received NOL**

Activities	Package					Milestone agreed
	25	26	27	28	29	
Submission_1						13.11.2016
Submission_2		X	X	X	X	21.2.2017
Submission_3	X	X	X	X	X	06.4.2017
Submission_4	X	X	X	X	X	13.6.2017
Signing Contract	X	X	X	X	X	23.6.2017

Regarding the package 30, research on the cultivation techniques for GHG emission reduction, all concerned agencies including ICD (MARD), CPMU, ADB and LIC agreed to cancel the package replacing alternative research on technology improvement that is pertinent to address the livestock waste management. After careful study in the area, upon request from the Project Director, the CSAWMP Specialist identified and developed the following research sub-projects that had been agreed by CPMU:

- (i) Piloting technology for specially designed organo-mineral fertilizers production from livestock waste and bio-slurry for fruit trees (mango, pomelo and dragon fruits) in Mekong River Delta;
- (ii) Piloting technology for specially designed organo-mineral fertilizers production from livestock waste and bio-slurry for key crops on sandy soils in Southern Central Coastal Region;

- (iii) Piloting technology for specially designed organo-mineral fertilizers production from livestock waste and bio-slurry for key crops on sandy soil in Northern Central Coastal Region;
- (iv) Piloting technology for specially designed organo-mineral fertilizers production from livestock waste and bio-slurry for key crops in Red River Delta and Northern Midland and
- (v) Piloting technology for specially designed organo-mineral fertilizers production from livestock waste and bio-slurry for key crops in Northern Mountainous Region.

However, CPMU asked to combine the packages into three packages as follows.

- (i) Piloting technology for specially designed organo-mineral fertilizers production from livestock waste and bio-slurry for fruit trees (mango, pomelo and dragon fruits) in Mekong River Delta;
- (ii) Piloting the technology for production of specially designed organic-mineral fertilizers for crops on sandy soil in Central Coastal Area (combining the original two packages) and
- (iii) Piloting the technology for production of specially designed organo-mineral fertilizers for crops in Red River Delta and Northern Mountain Area (combining original two packages).

Additionally, two new packages were also included.

- (i) Establishing comprehensive system of production and supply of microbial product for organic fertilizer production from agricultural waste and bio-slurry (developed TOR in Vietnamese)
- (ii) Using liquid waste of biogas plants for fertigating crops (TOR under progress)

To agree on the above research sub-project, replacing package 30, the Specialist prepared a concept note and forwarded to CPMU. This document had been submitted to ADB by CPMU in late June 2017.

CSAWMP Specialist responded on the technical questions of international bidders on TOR of package 26 and the Project Director, CPMU responded to them satisfactorily in late June 2017. In addition, TOR on the research packages were again revised/edited receiving NOL from ADB.

Long pending research package 29 (research on the treatment of sludge sediments in shrimp farming) had been approved with NOL from ADB. Ultimately research package 30 had been cancelled given the reason of not meeting the DMF requirement; however, extensive time had

been spent by the Specialist on TOR development, revision and responses from various stakeholders including Consulting Committee of MARD. The LIC will follow up to approve the concept note on new proposal of package 30 so that unnecessary time will not be wasted.

LIC Specialists team closely worked to survey and design solutions on overloading of SBPs and use of bio-slurry for crops. Draft design prepared by Biogas Technology Specialist had been submitted to CPMU and PPMUs (Phu Tho and Bac Giang).

There had been a number of field visits by LIC Specialist team during the reporting period. The Truong Thanh Cooperative, Hiep Hoa district, Bac Ginag provided a good model.

### ***Truong Thanh Cooperative, Bac Giang as a Model***

The Truong Thanh Cooperative, Hiep Hoa district, Bac Giang is a model that follows organic agriculture production standard TCVN 11041: 2015 with a certificate from NHO issued in January 2017. The farm can produce 300 tons of pork annually (over 3000 fat pigs). Livestock feeds are produced locally without using vitamins, antibiotics and growth stimulants. The slaughtering, processing and freezing are carried out by the cooperative and all supplied to supermarkets in Hanoi at the cost of VND200,000/kg of pork meat that is 5-6 times higher than the market price. Whereas the pork meat price is sharply decreasing in Vietnam (VND 20-21,000/kg of live weight), this cooperative consistently maintained the Hanoi market. All eight households of the cooperative have digesters of 50-60 m<sup>3</sup>, KT 1 type. The biogas is not sufficient for cooking and slaughtering use, and it needs to expand meeting demand of the cooperative. Waste from livestock and slaughtering is collected for organic fertilizer production. The farm is well managed addressing sanitation and hygiene.

### ***3.2 Developing livestock waste management models for agricultural production and greenhouse gas emission reduction by 2018***

Although the demonstration package related design documents were produced the last year, technical assistance on these documents still continued during the period. Feasibility assessment was again conducted for packages 33, 34, 35 and 36. Soc Trang province was added making the package with two provinces to package 37 after GoV/ADB Review Mission of April 2017. Accordingly, BVC Specialist recalculated the specifications and basic parameters. In addition, technical parameters with detailed designs for package 34 (Binh Dinh, Nam Dinh, Ha Tinh and Soc Trang Provinces) had been revised and submitted to CPMU to finalise documents for the demonstration models including 25 preliminary designs and 86 detailed designs.

The document on technical issues on plug flow of MBPs was updated addressing the practical issues. This document was used for both training and guidance to technicians for their supervision purpose. Another document on “Solution for Effective Utilization of Biogas” was prepared summarizing all effective solutions of biogas technology. The BVC Specialist recalculated and adjusted some technical parameters suitable to households. Along with the practical solutions on optimum utilization of biogas from SBPs and MBPs, BVC Specialist supported to develop reports outlining to province/district technicians for the quality control of the biogas plants and technical consideration while implementing the models to guide Provincial Coordinators and PPMUs. Progress on the construction of SBPs and MBPs during the period was satisfactory maintaining quality and following environmental mitigation measures. Team efforts among the LIC Specialists provided timely inputs.

GHG emission reduction calculation methodology review was another input provided. LCASP has to access the GHG emissions reduction from BPs to meet the DMF indicator (reduced by about 0.2 tons of CO<sub>2</sub> equivalent annually per cubic meter capacity of biogas plants). Being not CDM/Vietnam registered project, LCASP can adapt nationally acceptable methodology to calculate the GHG emission. During the period, various methodologies and applications were reviewed and discussed. Some of the documents reviewed were published from biogas project for animal husbandry sector (Department of Animal Production and SNV), documents from the project for converting waste into energy (document from SURE, Philippines), documents from IPCC, NAMA calculation methodology documents (MONRE), documents from NEXUS and others.

The National Policy and Institutional Specialist was assigned additional tasks to study GHG emission reduction methodology for LCASP and collected information on CDM/VGS project for livestock waste by using digestion and two NAMA related researches on biogas for power generation for medium and large pig farms. A detailed study report had been provided to CPMU.

BVC Specialist also closely worked with Business and Planning Specialist on the reports “Analysis of cost-benefits for small, medium and large biogas plants (29 case studies)”, “Study the cost-benefits of SBPs” and assisted on technical data.

Noting the innovative technical application, masonry type MBP has been constructed in Moc Chau district, Son La province that was first of its kind. This type of biogas plant is still in preliminary stage in Vietnam. BVC Specialist drafted a document recording to site condition,

technical information and practical experience. The materials had been used in training in Nam Dinh province in May 2017.

### *3.3 Capacity building of researchers, extension staff and farmers including vocational training program, training packages and study tours on CSAWMPs by June 2019*

LIC Specialists reviewed and provided comments for each topic of the vocational training material that the CPMU assigned to various government agencies.

#### 1. Producing biological organic fertilizer from animal manure and sugarcane bagasse (4 modules)

The document was prepared by Food College, Danang City; and comments were provided and revised by BGT Specialist, LIC. The Acceptance Committee is chaired by the Rector, Southern Mechanical, Electricity and Agriculture College, Can Tho.

#### 2. Raising red worms by manure of cattle and poultry and agricultural waste (6 modules)

The document was prepared by Southern Mechanical, Electricity and Agriculture College, Can Tho; and comments were provided and revised by Training Specialist, LIC. The Acceptance Committee is chaired by the Deputy Rector Food College, Danang City.

#### 3. Producing biological organic fertilizer from crop residues and bioslurry (4 modules)

The document was prepared by Vietnam Horticulture Association, Hanoi; and comments were provided and revised by CSAWMP Specialist, LIC. The Acceptance Committee is chaired by the Deputy Rector of Southern Agriculture College.

#### 4. Producing biological organic fertilizer from livestock solid waste for growing vegetables, flower and bonsai (5 modules)

The document was prepared by Vocational Training and Consultancy Centre under Northern Agriculture and Rural Development College, Xuan Mai, Hanoi for Agriculture and Rural Development; and comments were provided and revised by Training Specialist and Policy/Institutional Specialist, LIC. The Acceptance Committee is chaired by the Rector of North-East Technology and Agro-forestry Vocational College, Lang Son.

#### 5. Techniques of installation and operation of biogas equipment (4 modules)

The document was prepared by Southern Mechanical, Electricity and Agriculture College, Can Tho; and comments were provided and revised by Training Specialist, LIC and CPMU. The Acceptance Committee is chaired by the Deputy Rector of Southern Agriculture College.

The Team Leader, LIC provided the comments on the materials on training delivery approach and methodology following the vocational nature of the training topics. Some of the content is limited to technology related information, however, it also need to provide practical suggestions in order to gain knowledge and skills

Acceptance Committee should incorporate the comments and revisions provided by LIC; and CPMU should pursue the same, before submitting to MARD.

LIC Specialist closely worked with the CPMU on Memorandum of Understanding signing with the partner organization, Que Lam Phuong Bac Company on the topic – organic fertilizer production and consumption chain from livestock waste (LCASP Website <http://www.lcasp.org.vn/vi/news/ban-qlda-trung-uong-tham-va-lam-viec-voi-cong-ty-phan-bon-que-lam-297.html>). Similarly, Memorandum of Understanding was signed between CPMU and Soil and Fertilizer Institute, Hanoi to organize two workshops (to be conducted tentatively in July and October 2017).

For the effective training delivery, the Training and Communication Specialist attended a number of trainings such as gender, organic fertilizer from bio-slurry and livestock waste management. In addition, she also attended the CPMU organized meeting on first half year review of 2017, presenting a paper on assessment and requirements for improving the training quality.

LIC Specialists supported the preparation of the training materials based on training requirements of CPMU and PPMU; the following topics were covered:

1. Production of organic fertilizer from the agricultural residues and biogas integrated with value chain
2. Management of livestock waste and production of low carbon agriculture
3. Gender and ethnic minority groups

After preparing the training materials on production of pigs and chickens in the breeding facilities using the biological bedding, the Training and Communication Specialist used for TOT in Nghe An and supported Bac Giang Province (LCASP Website [http://lcasp.org.vn/uploads/kien-thuc/2017\\_06/lam-dem-lot-sinh-hoc.pdf](http://lcasp.org.vn/uploads/kien-thuc/2017_06/lam-dem-lot-sinh-hoc.pdf)). The Specialist also prepared methods on model preparation for training purpose.

BG Technology Specialist supported as resource person for the training on the construction of MBPs for technicians and masons in Nam Dinh province (participants from Lao Cai, Son La, Phu Tho, Bac Giang, Nam Dinh and Ha Tinh provinces).

A long awaiting training assessment was in the process with the approval of the Training Master Plan. The Specialists supported the CPMU on the assessment forms. Table 3 shows the reports provided to CPMU.

Table 3: Reports provided to CPMU, Quarter 2, 2017

No	Document Name	Document Nature	Month	Remarks
1	Forms for training evaluation	Technical Document	April	
2	Materials on production of chickens and pigs in the breeding facilities with bio-bedding	Technical Document	June	Presented in the training on management of livestock waste and low carbon agriculture
3	Translating knowledge into practice	Technical Document	June	Presented in the training on production of organic fertilizer from agricultural by-products and biogas according to value chain
4	Article on training progress	Article	June	

3. 4 *Establishing an information system (e-library, map sets on agro-ecological zones and distance learning system) to disseminate awareness and knowledge CSAWMP by June 2019.*  
No progress during the period.

#### 4.4 Component 4: Effective Project Management

4.1 *Establish CPMU and PPMUs to be operational by 2013*

4.2 *Conduct a gender awareness raising workshop for PMUs by 2016.*

4.3 *Engage consultants for start-up and auditing, and to develop the PPMS, with sex- and ethnicity- disaggregated data and including gender action plan monitoring by 2015.*

Environment, and gender and ethnic minorities Specialists were supporting CPMU and PPMUs on field follow up, training and others. Output details of other Specialists are provided in this section.

### *Environment*

Some of the environment related documents such as finalization of the IEE document, biogas plant random checking form, update internal environmental monitoring report and appraisal of new MBPs construction with environmental safeguard and ADB safeguard policy were prepared and updated. REA on MBP/LBP was also updated. PPMU environmental focal points were supported to complete IEE for B category MBP/LBP with specific EMP to mitigate the adverse impact.

Field study on environmental protection and its requirements on MBPs in Son La had been completed. However, due to lack of Provincial Coordinator in Son La, progress is negligible. PPMU also do not have sufficient confidence to complete REA form.

A close consultation had also been made by the Environmental Safeguard Specialist with ADB Environmental Specialist meeting the ADB compliances.

Due to lack of environmental monitoring equipment, most of the environmental parameters in the project provinces are not yet completed. Hence the assessment of the environmental conditions is not accurately monitored impacting to proper mitigation measures.

### *Gender and Ethnic Minorities*

GAP and EMDP were prepared and supported to CPMU and PPMU meeting the requirements of GoV/ADB Review Mission. Updated EMDP had been published in ADB website (<https://www.adb.org/projects/documents/low-carbon-agricultural-support-project-ethnic-minority-development-plan>) in June 2017. Seeking the requirements of PPMUs, guidance forms were prepared on gender and ethnic minorities integrated planning for PPMUs, assessment for credit access by ethnic minorities and change the communication methods for ethnic minorities.

Training materials were prepared on awareness generation on gender and ethnic minorities and delivered the training in Thai Nguyen Province to project provinces from Lao Cai, Son La, Phu Tho and Bac Giang (40 participants). Main topics of the training were awareness raising, introduction to GAP and EMDP and its implementation and various exercises dealing the difficulties and issues.



The Specialist faced difficulty having to prepare both GAP and EMDP at the same time. Meanwhile, more attentions from PPMUs were necessary to mobilize women and ethnic minorities to involve in biogas plants.

*Procurement*

Though the NOL was received for Submission 1 in Quarter 1, regarding the research package 25, procurement method was changed from QCBS to QBS as the shortlisted consultants also include a NGO. Consequently, the CPMU updated this change to the procurement plan and approved by MARD and APMB. With the RFP issued in March 2017, the consultant’s technical proposals were publicly opened in April 2017 and being evaluating. It is taking time due to in-depth study by the selection committee.

Submission 2 planned to be completed by CPMU and will submit to ADB in Quarter 3, 2017. The Procurement Specialist provided necessary guidance and standard evaluation templates to be used by the Selection Committee during the evaluation of the proposals. Similarly, regarding the package 26, 27 and 28, submission of the consultant’s proposal would be in Quarter 3, 2017. Consequently, Submission 2 planned to submit to ADB in Quarter 3, 2017.

There was a gap due to approval procedures between the date of NOL to Submission 1 and issuance date of RFP for all packages 25 to 28 causing a delay in issuing RFP to the shortlisted consultants.

The Procurement Specialist closely supported CPMU in communication and clarifications with ADB for approval of both Submissions of research packages and bidding documents of goods packages. The Specialist supported to revise the Bid Evaluation Report of goods package 32 and received NOL.

After the cancellation of research package 30, CPMU is developing new proposals with additional research packages 42-46 where the Procurement Specialist also provided inputs on the TOR.

**Table 4: No Objection Letter Received**

No.	Description	No. of NOL	Date

1	ADB's NOL to Submission 0 of research package 29 which consists: TOR, Cost Estimation and Request or Expression of Interest (REOI)	N/A	23 May 2017
2	ADB's NOL to Submission 1 of research package 26, 27 and 28 which consists: shortlist report prepared by CSC, RFP, NEC, TOR, Cost Estimate and CRAM	N/A	Sub 1 of package 26: 4 April 2017; Sub 1 of package 27 and 28: 20 April 2017
3	ADB' NOL to Bid Evaluation Report of goods package 32	N/A	16 June 2017

### *Policy and Institutional Support*

Along with the documents reviewed, the Specialists collected information from various government agencies and enterprises, contributing to further review of the policy and institutional framework on low carbon agriculture waste management particularly livestock waste management. Some gaps are highlighted as follows:

- Regarding the sustainable growth, green growth and climate change; attention of private sector involvement on the Action Plan on Climate Change Response of Agriculture, 2011 is low; resulting in a weak connection between agriculture producers, mostly small holders, with the enterprises and market.
- Importance is not given equally to the investment for treatments of urban solid waste and rural solid waste, a high percentage in volume of waste is untreated, recycled or reused.
- Timely issuance of relevant documents by MARD such as Environmental Protection Law 2014 is needed to avoid the gaps on regulatory issues on practical management of agricultural waste.
- Lack of policy support to households to utilize total livestock waste treatment, as it supports only household biogas plants construction and biological bedding.
- Land fragmentation is one of the factors hindering long term investment in agriculture. Progress on land accumulation and information is slow. Due to low attention by local authorities on disclosure of land asset for agriculture, enterprises are not able to access agricultural land as expected. Law on Corporate Income Tax does not encourage enterprises to invest in agriculture sector as it does not provide tax incentives.
- It is impossible to control the quality of organic fertilizers due to lack of standards, regulations and management mechanisms. Fertilizer business does not need license to

market; causing fertilizer market with mainly small retail traders and no quality control mechanism.

- Biogas use is only for cooking and there is no attraction to use biogas generators due to high investment cost and low life expectancy. This has resulted to minimum completion of biogas generators with grid electricity.
- The state organizational structure on environmental management in agriculture sector is characterized by lack of capacity, organizational unit and specific responsibilities. Most of the DARD does not have full time staff in charge of agricultural sector environmental protection.

*4.5 Undertake baseline surveys in all project provinces with collection and analysis of sex- and ethnicity-disaggregated data by 2016.*

Completed in early 2016

*4.5 Prepare progress reports and submit to ADB on a regular basis by 2018.*

Following the Report Preparation Guidelines (ACI/AD Consult), LIC provided the quarterly reports to CPMU. CPMU also forwarded the reports of Quarter 4, 2016, Annual Report 2017 and Quarter 1, 2017 to GoV/ADB Review Mission in April 2017.

## 5 SPECIALISTS MOBILIZATION

Due to the high demands on safeguards, it is proposed to increase the input periods of both Environmental Specialist; and Gender and Ethnic Minority Specialist. While Environmental Specialist is not available for extended period, 75 person-days of additional period are proposed for Gender and Ethnic Minority Specialist. In addition, 40 person-days were added to National Policy and Institutional Specialist with the revision of TOR to work on GHG emission calculation. Both additional person-days were transferred from ICT Specialist as there were excess person-days in balance.

Revised six Specialists TOR are included in the revised PAM. Revised TOR are provided to AD Consult for necessary actions.

Meanwhile LIC Administrator tendered resignation, due to personal reasons, effective from 1 July 2017. A replacement is under process.

## 6 LIC MANAGEMENT

### *Project Management*

#### *Report Preparation and Submission*

Other than the technical documents/reports, Quarterly 1 Report, 2017 was submitted to CPMU during the period. CSAWMP Specialist contributed editing Quarter 1 Report in Vietnamese language. A report acceptance meeting was held with APMB and CPMU on 8 June 2017 and the report was accepted with the following comments from APMB.

1. The report is good with detail information on technical assistance.
2. Proposed work plan should be provided in a matrix.
3. Need to mobilize the Provincial Coordinator of Son La.

Comments are incorporated and responded in this Quarterly 2 Report, 2017.

### *Monthly Plan and Time Sheets*

Individual Specialists and Provincial Coordinators monthly plans of the following month were provided in advance. CPMU was satisfied with this provision having early work plan proposal to understand the anticipated tasks.

### *Co-ordination*

Effective co-ordinations had resulted to a number of outputs with timely delivery. Along with CPMU and PPMUs, various agencies related to biogas value chain, vocational training, research and demonstrations and training were closely involved to complete the tasks. At provincial level, Provincial Coordinators supported PPMUs coordinating with relevant agencies for the timely completion of the activities.

### *Project Administration Manual and Project Implementation Manual (PAM/PIM)*

LIC Specialists supported to revise the documents. Main headings of the revisions were as follows.

1. Revised targets as per DMF (after ADB Mid-term Review)
2. Procurement of goods, works and services
3. Project procurement plan
4. Research and demonstration packages
5. Consultant's TOR revisions
6. Project implementation plan based on revised activities (after ADB Mid-term Review)
7. LCASP Facilitators (Chart 1)

8. Safeguards, both environment and gender/ethnic minorities
9. Other items

*Specialists and Provincial Coordinators Input Period*

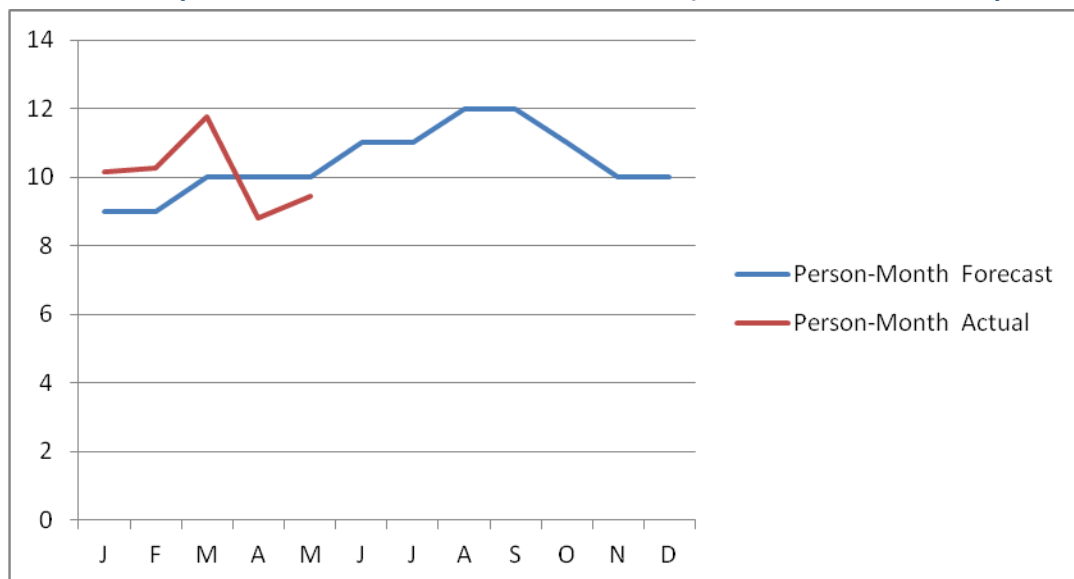
Specialists and Provincial Coordinators inputs in April and May, by desk office and field, are tabulated in Table 4.

**Table 5: Specialists Inputs by Desk Office and Field, April - May, 2017**

Serial No	Names	Desk Office (Days)	Field (Days)
1	Manohar Shrestha	33	6
2	Bui Ba Bong	0	8
3	Henrik Moller	0	0
4	Nguyen Thi Van Huong	0	0
5	Nguyen Van Bo	36	12
6	Ho Thi Lan Huong	32	0
7	Bui Van Chinh	33	5
8	Pham Thi Vuong	37	1
9	Pham Van Binh	0	0
10	Ta Hoa Binh	8	0
11	Dao Viet Cuong	0	0
12	Nguyen Ngoc Long	25	0
13	Le Thi Mong Phuong	0	7
14	Le Thi Thoa	22	7
15	Bui The Hung	18	2
16	Bui Thi Phuong Loan	24	2
17	Le Ngoc Hung	17	4
18	Dang Thi Phuong Lan	0	0
19	Tong Khiem	22	2
20	Nguyen Dinh Vinh	20	2
21	Dao Van Thong	0	0
22	Bui Thi Lan Huong	0	0
23	Tran Viet Cuong	14	3
	<b>Total</b>	<b>341</b>	<b>61</b>

Comparing to the forecasted inputs of the Specialists for 2017 (as presented at CPMU LIC meeting in Sa Pa on 16 January 2017), the actual first five-monthly inputs of the Specialists (January – May, 2017), person-months on Quarter 2 is lower as compared to Quarter 1, however, it is in increasing trend (Chart 1). Overall Specialist inputs are robust and consistent with the planned forecast.

**Chart 1: Comparative Chart on Forecast and Actual (First Five-month LIC Inputs, 2017)**



LIC is performing the tasks in full cooperation with the stakeholders as necessary; however, there are still gaps at some instances. Responsible Specialists should pre-plan in advance supporting the CPMU and PPMUs so that the tasks can be performed effectively.

Provincial Coordinators progress reports were closely followed with comments provided to finalize, however, some of the reports of Quarter 1 were still under progress. CSAWMP Specialist also provided comments on monthly work plans and reports of Provincial Coordinators.

However, output based reporting of the Provincial Coordinators is still a problem and reports need to include more information regarding the achievements made. Only few Provincial Coordinators submit their technical findings and recommendations to LIC. They have to pay more attention and report on overloading issues of SBPs, full utilization of excessive gas and solutions on waste treatment.

## 7 TA PERFORMANCE ASSESSMENT

LIC team supported CPMU while the GoV/ADB Review Mission was conducted, providing both technical information and support in the field. The team provided the comments on the MOU and also participated in the wrap up meeting. Review Mission MOU noted that the LIC performance is good.

Main technical issues of LCASP are overloading of SBPs, optimum use of excess biogas and livestock waste management with organic fertilizer for which the LIC Specialists are exploring various technical options to resolve these issues. To overcome overloading issue, two technical options, depending upon the livestock farm size, have been proposed and under review. Whereas the use of excess biogas related technical solution is in progress with the pilot testing in Ha Tinh (later in Bac Giang), livestock waste management with organic fertilizer issue will be studied further.

Most of the PPMUs installed the SBPs and MBPs with quality assurance enhancing the capacities of both masons/technicians and livestock farm owners. Long pending research package 29 had been approved and CSAWMP Specialist is further working on research package 30. Regarding the pilot demonstrations, BVC Specialist further supported on some design revisions and demonstration additions in some PPMUs. However, although technically both research and pilot demonstrations are completed, scheduled implementation has been delayed. International CSAWMP Specialist first input in 2017 was scheduled in Quarter 3 but has to shift to Quarter 4, 2017. Regarding international specialists, M&E report of the Specialist had been finalized and Policy/Institutional Specialist provided the report (related TOR i and ii) during the period. GoV/ADB MOU acknowledged report format recommendation of international M&E report for CPMU and PPMUs. Comments are provided by CPMU and LIC team on policy/institutional reports and the reports are under further revision to present in a national workshop.

After the implementation of Training Master Plan, CPMU conducted various training where Training/Communication Specialist, Gender Specialist and Environmental Specialist supported closely as resource persons. LIC supported to prepare training assessment but still need to finalize with indicators.



Regarding the safeguards, gender/ethnic minorities and environment, the Specialists supported the CPMU on GAP, EMDP and six-monthly Environmental Monitoring Report, meeting the requirements of GoV/ADB Review Mission.

The Provincial Coordinators are supporting PPMUs on technical matters required by PPMUs including training materials preparation and support during the training delivery. Regular feedback on technical issues in the field with two-way communications with Specialists will further strengthen the technical assistance.

During the reporting period, CPMU received three NOL from ADB. To date, no LIC progress reports are pending for the approval from CPMU and APMB. Progress on the meeting minutes of CPMU and LIC meetings is provided in Appendix 3.

Overall, the technical assistance during the reporting period is effective and timely; this has been acknowledged also in the GoV/ADB Review Mission.

## 8 WORK PLAN FOR QUARTER 3

Overall progress on the proposed plan for Quarter 2, 2017 is provided in Appendix 4.

Main activities during the Quarter 3 cover to support technical assistance on various activities including GoV/ADB MOU agreed actions (Table 6).

**Table 6: Work Plan, Quarter 3, 2017**

No.	Activities	July	Aug	Sep
<b>1</b>	<b>Component 1: Expanded use of livestock waste management infrastructure</b>			
1.1	<i>Biogas Technology</i>			
1.1.1	Support to install MBPs			
1.1.2	Design a system to treated effluent from manure separator of project demonstration			
1.1.3	Improve solutions for overloading SBPs			
1.1.4	Coordinate with Provincial Coordinators and technicians to collect data			
1.1.5	Prepare articles on biogas technology and publish in website			
<b>2</b>	<b>Component 2: Credit lines for biogas value chains</b>			
<b>3</b>	<b>Component 3: Enhanced CSAWMP technology transfer</b>			
3.1	<i>Climate Smart Agriculture Waste Management Practices</i>			
3.1.1	Support CPMU to discuss on Concept Note with ADB on new five research packages (replacing package 30)			
3.1.2	Prepare TOR of five new additional packages (subject to ADB NOL)			
3.1.3	Assist CPMU in preparation of Submission 1 for Package 29			
3.1.4	Assist CPMU in preparation of Submission 1 for Packages 26, 27 and 28; and submit for ADB approval			
3.1.5	Assist CPMU in preparation of RFP for Packages 26, 27 and 28; and submit for MARD approval			
3.1.6	Assist CPMU in preparation of Submission 3 for Packages 25, 26, 27 and 28			
3.1.7	Assist CPMU in preparation of Submission of Package 29			
3.1.8	Contract award for all packages (as agreed, to be completed by July 2017, may delay to Q 4, 2017)			
3.1.9	Assist CPMU to organize a workshop on livestock			

	environmental management policy			
3.1.10	Draft article to publish in LCASP website			
3.2	<i>Biogas Value Chain</i>			
3.2.1	Technological solutions for BVC, follow up and coordinate for demo-packages (closely work with Policy and Institutional Specialist)			
3.2.2	Review and develop standards and codes to conduct BVC management and CSAWMP (closely work with environment and gender/EM Specialist)			
3.2.3	Support Training Specialist and PCs for developing training materials and training program			
3.2.4	Update and technical design for medium biogas digesters; propose O&M of biogas digesters			
3.2.5	Support to appraise the demo packages			
3.2.6	Complete solutions for using bio-slurry and animal waste as organic fertilizer			
3.3	<i>Training and Communication</i>			
3.3.1	Workshop on production and utilization of organic fertilizer (Training)			
3.3.2	Communications related activities			
3.3.3	Monitor the progress survey/evaluation on training needs and impacts of training activities			
3.3.4	Monitor and support the application of evaluation forms applicable to participants of the training			
3.3.5	Support to develop models for training activities to be contracted with (Que Lam involvement)			
3.3.6	Review and revision of training materials on red worm raising using agricultural by-products			
3.3.7	Support CPMU on vocational training curricula			
<b>4</b>	<b>Component 4: Effective project management</b>			
4.1	<i>Policy and Institution</i>			
4.1.1	Prepare draft report for task TOR (iii) (Policy/Institution)			
4.1.2	Proposal on GHG emission factor for LCASP factor			
4.2	<i>Procurement</i>			
4.2.1	Support to develop and finalize Submission 2 – 3 - 4 of			

	research package 25 - 28			
4.2.2	Support develop and finalize documents for Submission 1, 2, 3 of research package 29			
4.2.3	Support CPMU in communication and clarifications with ADB and other tasks on procurements			
4.3	<i>Environment</i>			
4.3.1	Assist to prepare six-monthly internal environmental monitoring report			
4.3.2	Revision of six-monthly internal environmental monitoring report of PPMU			
4.3.4	Revise IEE, REA for B category MBP			
4.4	<i>Gender and Ethnic Minorities</i>			
4.4.1	EMDP preparation			
4.4.2	Gender awareness training (Can Tho and Quy Nhon)			
4.4.3	Assessment of credit related issues working with CPMU and PPMU			

## 9 RECOMMENDATIONS AND CONCLUSIONS

LIC makes the following recommendations to be acted upon during Quarter 3 of 2017 by project stakeholders including CPMU and PPMUs.

### Biogas plant technology

- LIC had completed the design model dealing with the overloading of BPs and it should be approved by CPMU at the earliest, to pilot demonstration in Phu Tho and Bac Giang Provinces. With the success of the model, it will be further assessed and replicated and also developed a training package on the overloading solution of BPs.
- Technical support to PPMUs needs to be enhanced especially on treatment of effluent and solid waste from manure separator.

It is expected that after the specialists prepare the technical design proposal, they received comments promptly from the CPMU and PPMUs before the finalization of the proposal. However, due to long time in receiving comments, the Specialists have to work on the same subject matter for a longer period.

### Climate Smart Agriculture Waste Management

- The research package progress is very slow, at least six to nine months behind the schedule. The remaining time for the implementation is also extremely short, hence the CPMU should expedite the progress closely following MARD and ADB.
- CPMU should receive ADB consent as early as possible on Concept Note for five new additional package sub-projects (to replace package 30) following CQS procedure. Then the Specialist will start the preparation of TOR.
- Regarding the use of effluents, there are many effective models from biogas plants for fertigation of crops in Thai Nguyen, Phu Tho and Bac Giang. These models should be closely assessed to recommend scaling up.
- Organic and organic-oriented productions are a major policy of MARD and thus the project should pay more attention on communication activities relating to this policy.

### Training

- Identifying the models on livestock waste management and biogas digesters for training purposes, necessary actions with criteria to be taken for training sites in the provinces.

- Training should be diversified with priority for on the job training for farmers, extension staff and trainers. The training materials should be simple and easy to understand including a lot of graphics.

#### Environment

- Environmental monitoring equipment should be made available for the second environmental monitoring to monitor effectively.

#### Gender and Ethnic Minorities

- More coordination between LIC Specialists, CPMU/PPMU staff and others is necessary to integrate gender and ethnic minorities issues in the project activities.
- Need to include a separate section on gender and ethnic minorities in CPMU and PPMU reports.

#### Procurement

- It should avoid the overlapping of work, overburdening the project staff, by appropriately allocating CPMU human resources and timing for implementing procurement activities.
- It is necessary to maintain the coordination between CPMU and LIC in the process of the procurement documents of research packages ensuring the monitoring of all project milestones.

#### Management

- Revised TOR of six LIC Specialists had been forwarded for the approval but it is still in waiting. However, the concerned Specialists are now performing their task according to the revised TOR.
- To improve the coordination between CPMU and Specialists, CPMU staff should inform the Project Director and Team Leader on the work assignments.
- A good relation between PPMU and Provincial Coordinators is always expected for result oriented outputs. The Provincial Coordinator of Ha Tinh had some difficulties to approve some documents such as Time Sheets, reports and work plans, however, these are later approved by PPMU.

LIC technical assistance during the reporting period focused on the long standing technical issues of overloading of SBPs and optimum use of excess biogas. Design proposals were made to overcome the overloading of SBPs and proposed to CPMU to pilot test in Phu Tho and Bac Giang.

Most of the PPMUs installed the SBPs and MBPs with quality assurance enhancing the capacities of both masons/technicians and livestock farm owners. Research package 29 had been approved and LIC is further working on research package 30 with additional five research topics. MBPs installation is behind schedule due to insufficient design documents and guidance. Progress on the construction of SBPs and MBPs during the period is satisfactory maintaining quality and following environmental mitigation measures. GHG emission reduction calculation methodology review has been completed. Though the demonstration package related design documents were ongoing from the last year, however, technical assistance on these documents continued during the period. Feasibility assessment was again conducted for some packages.

M&E report of the international M&E Specialist had been finalized and international Policy/Institutional Specialist provided the report with further review to present in a national workshop.

A number of training courses was conducted by CPMU and PPMUs during the period and supported by LIC. CPMU supported to telecast LCASP related video in the VTV 1 for which LIC contributed by identifying the topics and necessary support at the time of video preparation. LIC Specialists also contributed providing technical articles and uploaded in the LCASP website. On safeguards, GAP, EMDP and environmental monitoring reports LIC provided support to GoV/ADB Review Mission. Delay in research and demonstration implementation also affected the work plan for the technical assistance. Output based reporting of the Provincial Coordinators still have to improve.

## APPENDICES

### APPENDIX 1: DOCUMENTS PRODUCED

Serial No.	Document Names	Document Nature	Month
1	Developed formulae for calculating technical data to add into the detailed redesign of demonstration on "Utilization manure separator for livestock waste treatment to collect solid waste for producing organic fertilizer in group household scale"	Technical Document	June
2	Draft proposal of training demonstrations for six households and farms in Phu Tho Province (version 1)	Technical Document	June
3	Template on using complete biogas of households which have registered to install MBPs.	Template	June
4	Report on assessment of potential of using complete biogas of 12 households which have registered to install MBPs in Son La Province	Report	June
5	Adjustment of specifications and updated information for six detail designs for P25	Technical Document	June
6	Added the draft proposal of training demonstrations at 6 households and farms in Phu Tho Province (version 2, according to CPMU comments) and sent it to CPMU	Technical Document	June
7	Field report Thai Nguyen-VN (Policy and Institutional-National Specialist))	Report	June
8	Guidance forms for PPMU staff and technicians on planning issue	Templates	June
9	Guidance forms for assessment to access credits and BPs by EM	Templates	June
10	Guidance forms for changing communication methodology for EM to encourage their participation in the construction of BPs	Templates	June



Serial No.	Document Names	Document Nature	Month
11	Assessment of quality control of household biogas plants	Technical Document	May
12	Formulas to estimate expected economic and technical results of bidding package 32 (utilization of manure separator for livestock treatment)	Technical Document	May
13	Assessment of quality control of household biogas plants (for CPMU and PPMUs meeting in 23rd May, 2017)	Technical Document	May
14	Presentation document on CPMU ideas of overcoming overload of biogas plants in the project provinces.	Technical Document	May
15	Proposal on overcoming overload of BP in some households to establish training demonstrations in Phu Tho Province	Technical Document	May
16	Field report Central Region-VN (Policy and Institutional-National Specialist))	Report	May
17	Technical considerations for models	Power Point	May
18	Effective utilization of bio-slurry for plantation	Power Point and document	May
19	Overview of methodologies for calculation of emission reduction from BPs	Power Point	May
20	Overview of effective biogas utilization in Vietnam	Power Point	May
21	Annex of technical feasibility assessment for P33, P34, P35 and P36	Technical Document	April-May
22	Report on technical feasibility assessment for P35, P36 and P37	Report	April-June
23	Outline for the quality control report of technicians	Report Format	April
24	Policy and Institutional Report (National Specialist)	Report	April
25	Training materials on gender awareness raising and integration of gender and EM	Training Materials	April

Serial No.	Document Names	Document Nature	Month
	issues		
26	Outline to guide provincial technicians for preparing their reports	Technical Document	April
27	Outline to guide provincial mason teams for preparing their reports	Technical Document	April
28	outline to guide companies producing composite bio-digesters for preparing their reports	Technical Document	April
29	Mechanism of creating biogas	Technical Document	April
30	Introduction of manure separator for livestock waste management	Technical Document	April

Note: Field reports provided by the Specialists are not listed here.

## APPENDIX 2: DOCUMENTS REVIEWED

No.	Document Names	Document Nature	Month
1	Analysis of economic effect of small biogas plants (SBPs), MBPs, LBPs (case study in project provinces)	Technical document	April
2	The draft workshop program on evaluation of BPs in project Provinces	Technical document	April
3	Collection of dung, sugarcane bagasse mud and by-products for producing organic fertilizer	Technical document	April
4	Technology of producing organic fertilizer from dung and bagasse mud	Technical document	April
5	Document on beneficiaries link- output 1 and output 3 on Vietnamese version (for post into LCASP website)	Technical document	April
6	Current policy issues and gaps in agricultural waste management and low carbon development" (version 1, EN, 42 pages)	Technical document	May
7	Assessment of small biogas plants in 40 households of three districts in Bac Giang Province	Technical document	May
8	The Final Mission Report of M&E Inter. Expert (version 2, EN, 24 pages)	Technical Document	May
9	The guideline for preparing working plan for June of provincial consultants (EN version)	Management Report	May
10	procedures and template form for random check of household biogas plants (version 2)	Technical document	May
11	Distribution of biological organic fertilizer (97 pages).	Technical document	May
12	Utilization manure separator for livestock waste treatment to collect solid waste for producing organic fertilizer in group household scale of Binh Dinh province	Technical Document	June
13	Document of environmental category in Xuan Ang Commune, Ha Hoa District, Phu Tho	Technical Document	June

No.	Document Names	Document Nature	Month
	Province		
14	Technical methods of using completely biogas at Mr. Bui Huu Thi farm in Xuan Ang Commune, Ha Hoa District, Phu Tho Province	Technical Document	June
15	Rapid Environment Assessment (REA) Checklist (EN and VN version)	Technical Document	June
16	Utilization of mobile manure separator for livestock waste treatment to collect solid waste for producing organic fertilizer in household group scale in Luong Phong Commune, Hiep Hoa District, Bac Giang Province	Technical Document	June
17	Utilization of mobile manure separator for livestock waste treatment to collect solid waste for producing organic fertilizer in group household scale in Nenh town, Viet Yen District, Bac Giang Province	Technical Document	June
18	Solutions dealing with BP overloading problem in Phu Tho	Technical Document	May – June
19	Linkage between Output 1 and comp 3 (Vietnamese version)	Technical Document	May

### APPENDIX 3: CPMU LIC MEETING MINUTES PROGRESS (APRIL-JUNE 2017)

#### CPMU PPMU Workshop dated 23 June 2017

No	Decisions	Progress
1	Coordinating with CPMU and PPMUs to implement MOU of ADB Review Mission – April 2017	LIC team members are briefed with the responsibilities of the concerned Specialists. Progress will be provided meeting the deadlines of the MOU.
2	To focus on finding effective technical solutions for small-scale biogas plants in order to handle the problem of overloading BP and to make use of excess flare. For medium and large scale farms, it is necessary to conduct a pilot study on a solution to convert animal waste into organic fertilizer for more efficient treatment of the farm scale environment.	<p>LIC Specialists proposed to collect the livestock solid waste before the biogas plants to reduce the overloading of BPs. IN addition, it is also advised to install a small sedimentary tank after BP digester to collect the waste. Both kinds of waste can use for producing organic fertilizer.</p> <p>In case of MBP and LBP, two sedimentary tanks are proposed to install before BP, collecting waste to make compost.</p> <p>Effluents from biogas plants can use to fertilize tea, fruit trees and livestock feed grass.</p>

#### CPMU LIC meeting dated 17 May 2017

No	Decisions	Progress
1	<p><b>Research Packages</b></p> <p>It is expected to finalize all five packages in one month (deadline: 17/06/2017)</p>	LIC Specialist provided all packages to CPMU on 12 June 2017.
2	<p><b>CO<sub>2</sub> Emission Reduction</b></p> <p>Regarding the workshop with stakeholders, especially the Department of Climate Change, Ministry of Natural Resources and Environment, on the amount of CO<sub>2</sub>e emission reduction per cubic meter of biogas plants under LCASP,</p>	After discussion with the Specialist, the TOR revision and additional 1.35 person-months extended (transfer from ICT Specialist) has been completed and provided to AD Consulting for further process to approval.

No	Decisions	Progress
	<p>it is agreed that Ms. Le Thi Thoa is qualified for this activity and LIC should make any necessary arrangements to facilitate her new assignment even though this needs to supplement person-days to the Consultant.</p>	
3	<p><b>Training Activities</b></p> <p>Training Specialist is in charge of evaluating the quality of training courses conducted by CPMU, support the Provincial Coordinators with the training assessment following the forms under Master Training Plan. It is the responsibility of PCs to support PPMUs to assess the training courses. In terms of training materials, the Training Specialist should coordinate all activities between CPMU and the Review Committee, propose to the Team Leader and relevant specialists for reviewing, circulate to collect the feedbacks of stakeholders on the training material content, and circulate the plan on training courses so that relevant specialists can attend.</p>	<p>Comments are provided on the following training materials.</p> <ol style="list-style-type: none"> <li>1. Producing biological organic fertilizer from animal manure and sugarcane bagasse (4 modules): Commented by BGT Specialist</li> <li>2. Raising red worms by manure of cattle and poultry and agricultural waste (6 modules): comments provided by Training Specialist</li> <li>3. Producing biological organic fertilizer from crop residues and bio-slurry (4 modules): comments provided by CSAWMP Specialist</li> <li>4. Producing biological organic fertilizer from livestock solid waste for growing vegetables, flower and bonsai (5 modules): comments provided by Training Specialist and Policy/Institutional Specialist</li> <li>5. Techniques of repair and maintenance of biogas equipment (4 modules): some comments provided by Training Specialist and others from CPMU</li> </ol> <p>Addressing the vocational training targets, Team Leader commented on the training</p>

No	Decisions	Progress
		approach as vocational training delivery.
4	<p><b>Training Activities</b></p> <p>It is suggested that the Training Specialist work with Mr. Ninh to send the training needs assessment form on livestock waste management and training assessment form as reference for Physical Audit Consultants. This task is suggested to be integrated into Physical Audit Consultants missions.</p>	<p>The Training Specialist prepared the form and provided to CPMU. It will be further discuss with CPMU by the Specialist.</p>
5	<p><b>Revision of PIM and PAM</b></p> <p>PAM revision should be completed by LIC in one week (deadline: 24/05/2017)</p> <p>PIM is under revision of CPMU and will be adjusted (if any) to be in line with the revised version of PAM.</p>	<p>Revised PAM was provided to CPMU.</p> <p>PIM in Vietnamese version was provided to CPMU.</p>
6	<p><b>Solutions for Overloading of Biogas Plant</b></p> <p>Further discussions will be carried out after the field mission of Mr. Chinh.</p> <p>It is expected that the technical support to Phu Tho province should be provided this month (May 2017).</p>	<p>A draft report on proposal of overcoming overload of BP in some households to establish training demonstration in Phu Tho province (version 1) had been prepared and provided to CPMU.</p>
7	<p><b>Provincial Coordinators</b></p> <ul style="list-style-type: none"> <li>• Urgent need of recruiting Provincial Coordinator for Son La.</li> <li>• Provincial Coordinators are proposed to further participate in the project activities in a more efficient ways, including conducting biannual environmental report, assessing the training courses and providing consultation on this area to PPMUs.</li> <li>• It is expected to carry out monthly</li> </ul>	<p>Under process</p> <p>LIC Specialists also provided the list of work to be covered. Work plan preparation for the following month will commence from the middle of the month and submit by 23<sup>rd</sup> of the month so that LIC can review before submitting to CPMU on 25<sup>th</sup> of the month.</p> <p>The Provincial Coordinators monthly</p>

No	Decisions	Progress
	meeting with provincial coordinators at the end of June 2017. The topic of this meeting is training. Provincial coordinators are requested to evaluate the training quality at provincial level and report in the meeting.	meeting is delayed.
8	<p><b>Consultants Administration</b></p> <ul style="list-style-type: none"> <li>The inputs of the 3 specialists (National Specialist on Policy, Ms. Le Thi Thoa; Gender and Ethnic Minority Specialist, Ms. Le Thi Mong Phuong, Environment Consultant, and Environment Safeguard Specialist, Mr. Ta Hoa Binh) should be increased to meet their required tasks</li> <li>A brief report on the progress of consultant's assigned task to the Team Leader should be enhanced.</li> </ul>	<p>It has been proposed to extend the person-months as follows.</p> <p>Ms. Le Thi Thoa- 1.82 person-months</p> <p>Ms. Le Thi Mong Phuong- 4.14 person-months</p> <p>Due to other commitments, Mr. Ta Hoa Binh will not be able to work with additional extension.</p> <p>The Specialists and Provincial Coordinators provide the quarterly reports addressing these decisions.</p>
9	<p><b>Meeting with PPMUs on 23/05/2017</b></p> <p>LIC is expected to attend, particularly the Gender Specialist and the Environment Specialist, who need to prepare the discussion contents with PPMUs for the completion of the tasks required by ADB in the MoU.</p>	<p>PowerPoint presentation documents were provided by BG Technology Specialist, BVC Specialist and Gender/EM Specialist. However, due to the time shortage in the workshop, only BG Technology Specialist made a presentation.</p>
10	Review of some follows-up activities listed in ADB mission MoU to be prioritized	LIC team members are briefed with the responsibilities of the concerned Specialists. Progress will be provided meeting the deadlines of the MOU.

**CPMU LIC meeting dated 5 April 2017**

No	Decisions	Progress
1	For the meeting with ADB on 10/4/2017 at MARD's office, LIC will prepare the	A meeting was held in MARD with ADB on Package 29 revision and research



No	Decisions	Progress
	<p>technical justification the package 29-30 to discuss and to be finalized by both MARD and ADB.</p>	<p>contents were agreed in a modified version. Though the Package 30 had been cancelled, a meeting was held with CPMU on 16 May 2017 for potential options using the fund available under Package 30.</p>
2	<p>The joint Workshop (LCASP and new countryside building Program - <i>the National Target Program on the New Rural Development</i>) is expected on May 2017 – chaired by Vice Minister Nguyen Thanh Nam with the participants of various stakeholders. Contents focus on (i) management issues on Regulation No 62; (ii) efficiency of biogas plants (which scale of biogas plant is most efficient; others will be handled with other technologies); (iii) organic fertilizer production and marketing. LIC will support to prepare the technical documents for the mentioned workshops</p>	<p>Received a list of workshops (5 workshops) suggested by the Project Director. Comments had been provided by Training Specialist.</p> <p>Two workshops have to finalize with Soil Fertilizer Institute. Training Specialist participated the meeting with CPMU on 16 May. It was suggested to organize two workshops in 2017 on value chain organic fertilizer production.</p> <p>Program should name “The National Target Program on New Rural Development”.</p> <p>An “Ad-hoc Committee” for the workshop should be formed to address the agenda, technical papers, duration and others.</p>
3	<p>The demonstration package of 35: “Supply of mobile manure separating system to treat livestock waste to produce material for organic fertilizer demonstration at household scale for Bac Giang, Ben Tre, Binh Dinh and Lao Cai province” should be redesigned by LIC to make it suitable to current practical situation. Others should be also revised to make changes, if any, in the next</p>	<p>Redesigned the demonstration and prepared formulae for calculating technical data of the demonstration package of 35.</p> <p>The detailed technical designs for Binh Dinh and Bac Giang provinces had been resigned (also reviewed and comments by LIC team). Formulae for technical data calculation for demo package 35 had been</p>

No	Decisions	Progress
	procurement plan update.	added in the document.
4	LIC is requested to contribute comments on the training syllabus, then consolidate and publish on LCASP website for further clearance.	<p>“Vocational training for farmers on raising red worm” has been edited with six modules and provided to CPMU and Chairman of the Committee.</p> <p>Reviewed and commented on two training documents, collection of dung, sugarcane, bagasse mud and by-products for producing organic fertilizer and technology of producing organic fertilizer from dung and bagasse mud.</p>
5	PAM and PIM should be revised quickly (as agreed in the previous meeting). The first draft of PAM and PIM are expected to be circulated in the first week of May 2017.	PAM and PIM have been revised. Whereas PIM is revised in Vietnamese language, PAM is in English language.
6	LIC is requested to prepare basic design for the Model of dealing with overload of small and medium biogas plants with the method of building a biogas tank (capacity large enough to store wastewater after biogas and liquid fertilizer/slurry for tentative 3 month duration).	<p>Collected and prepared basic design for the Model dealing with overload of small and medium biogas plants.</p> <p>Biogas Technology Specialist was in the field, Phu Tho Province. A draft proposal (version) on solutions of overloading SBPs for six households and farms in Phu Tho had been prepared and provided to CPMU.</p>

**APPENDIX 4: PROGRESS ON WORK PLAN FOR QUARTER 2, 2017**

No.	Proposal Work Plan Quarter 2, 2017	Progress of Quarter 2, 2017
1	<b>Component 1</b>	
1.1	Study more options to address overloading of SBPs. The survey, evaluate and propose solutions to deal with overloading problem of biogas plants at household scale.	Three options proposed to overcome the overloading of SBPs: i) collecting solid waste from BPs, ii) install sedimentary tank after SBP and iii) discharging only appropriate amount of waste to SBP and rest will be discharged to extra sedimentary tank.
1.2	Coordinate with Provincial Coordinators to collect data on the cost of small and medium biogas plants (develop questionnaires, data collection, evaluation of data and report...)	Questionnaires had been developed and data collected from Bac Giang and Son La provinces.
1.3	Prepare a document on biogas technology for the project website.	Provided four documents
1.4	Evaluate and propose solutions for effective utilization of biogas for small, medium and large scale BPs.	Proposed to use biogas for warming young animals, cooking animal feed and biogas generator
1.5	CO2 calculation methodology development	Document review had been completed with the report provided to CPMU.
2	<b>Component 3</b>	
2.1	TOR of revised research packages 29, and new packages to replace package 30 package will be developed for ADB approval	TOR for research package 29 had been finalized and received NOL from ADB. Proposed five additional new packages to be implemented. Concept note already provided to ADB.
2.2	Support CPMU to prepare Submission_1 for research packages 25, 26, 27 and 28 for MARD approval	Submission 1 for research packages 25, 26, 27 and 28 received NOL from ADB.
2.3	Prepare Submission 2 and Submission 3 for research package 25, 26, 27 and 28 for CPMU to send to ADB for no-objection	Up to date only Submission 2 of package 25 received NOL from ADB and technical proposal evaluation results for package 25 submitted to MARD on 16 June 2017.

2.4	Develop and finalize Submission 2-5 of research packages 25-28 and Submission 1-5 of research packages 29-30	As indicated in 2.3 above, only Submission 2 of package 25 received NOL from ADB. Still waiting for NOL from ADB for the packages 25, 26 and 28.
2.5	Support CPMU to prepare the Consultation workshop on beneficiaries of biogas	Workshop removed
2.6	Support Project coordinators in commenting training curriculum	Working with CPMU, selected and following up to develop three training curriculum
2.7	Field support on biogas technology which will be applied in project demonstrations.	Advised Provincial Coordinator, Bac Giang on solutions for using bio-slurry and biogas production. Meeting with the participants of the demonstration package P 35 and P32 in Bac Giang.
2.8	Support CPMU to finalize documents for the remaining demonstration packages (P36, P37, P38) and prepare for implementation of Package 32.	Developed appraisal reports and Appendixes for packages P36, P37 and P38.
2.9	Coordinate with Financial and Business Development Specialist to analyze cost-benefits of BPs by size and technology.	Provided technical support on two reports
2.10	Assist PCs with the preparation work for implementation of manure separator model	Supported Provincial Coordinators of Bac Giang, Tien Giang, Phu Tho and Binh Dinh to recheck the commitment of the participants and check additional demand, if any.
2.11	Assess training needs on livestock waste management technologies	Will follow up with the Deputy Project Director to implement
2.12	Develop training/communications topics/contents about the livestock waste management, prevention of biogas digester overloading	Following to develop when the demonstration on the livestock waste management and prevention of biogas digester overloading have been carried out.
2.13	Work with the television channels to carry out the filming projects about livestock waste management technologies	CPMU plan to filming the workshop on livestock waste management technologies.

2.14	Participate in the training courses organized by CPMU	Participated in the courses organized by CPMU
2.15	Support CPMU to develop and finalize Submission 2-5 of research package 25-28	Regarding Submission 1, the consultant's technical proposals were publicly opened in April 2017 and being evaluating. It is taking time due to in-depth study by the selection committee.
2.16	Support CPMU to develop and finalize Submission 1-5 of research package 29-30	Regarding the Submission 2, provided necessary guidance and standard evaluation templates to be used by the Selection Committee during the evaluation of the proposals.
2.17	Support CPMU in communication and clarification with ADB and other tasks	Clarified number of issues communicating with ADB for approval of both packages and bidding documents of goods packages, supporting CPMU