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QUARTERLY REPORT 2017-Q3

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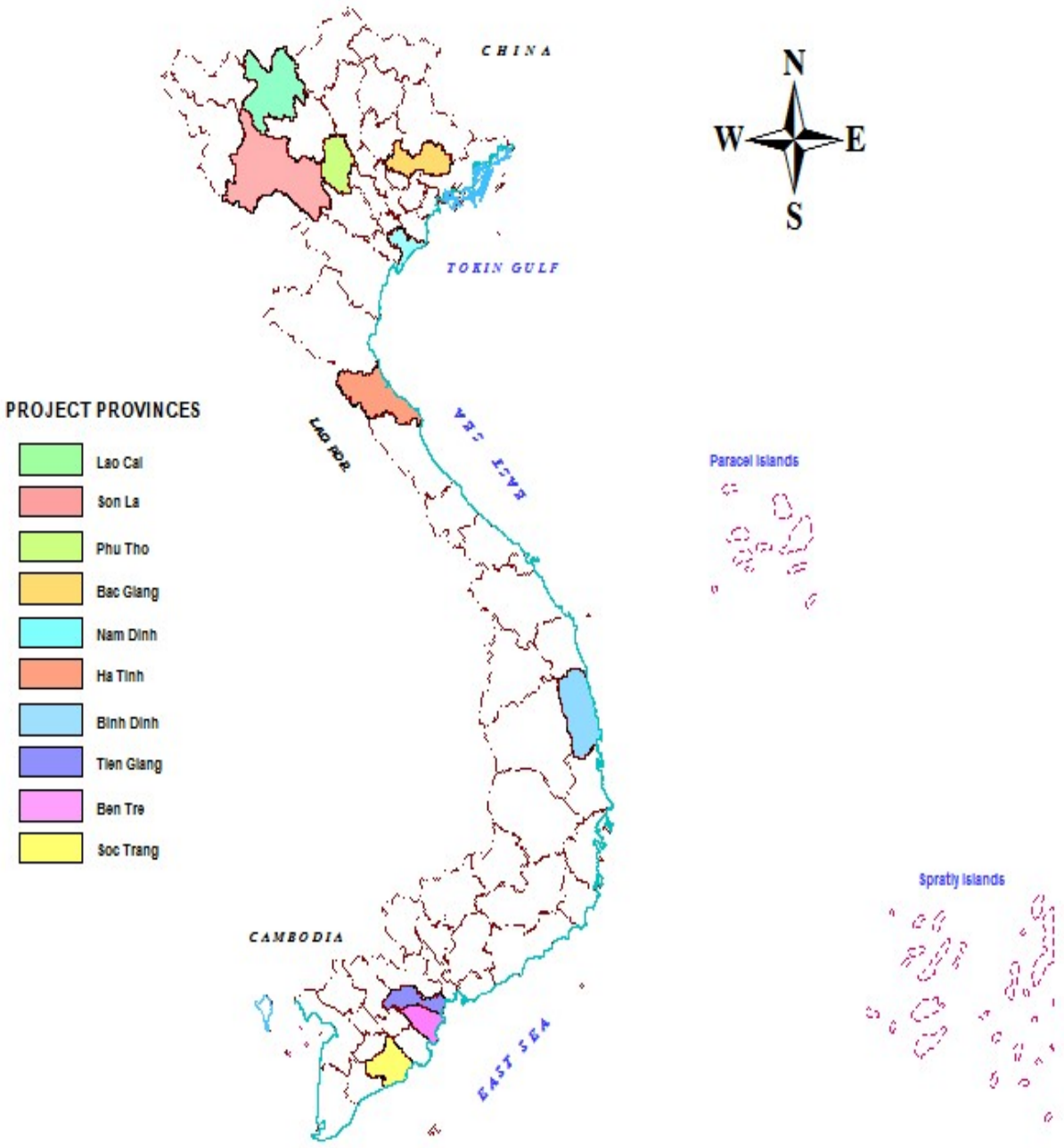
Central Project Management Unit
Ministry of Agriculture and Rural Development
by
Agrifood Consulting International

in association with

Asia Development Consultants Joint Stock Company (ADConsult)

TABLES OF CONTENTS

Project Map with Provinces



ABBREVIATIONS

ACI	Agrifood Consulting International
ADB	Asian Development Bank
AD Consult	Asia Development Consultants
APMB	Agriculture Projects Management Board
BGT	Biogas Technology
BP	Biogas Plant
BVC	Biogas Value Chain
CDM	Clean Development Mechanism
CPMU	Central Project Management Unit
CSAWMP	Climate Smart Agriculture Waste Management Practices
CSRN	Consulting Services Recruitment Notice
CSC	Consultant Selection Committee
C/N	Carbon/Nitrogen
CQS	Consultants' Qualifications Selection
DTL	Deputy Team Leader
DTSE	Department of Technology, Science and Environment
DMF	Design and Monitoring Framework
EM	Ethnic Minority
EMDP	Ethnic Minority Development Plan
EMP	Environmental Management Plan
GAP	Gender Action Plan
GHG	Green House Gas
GOV	Government of Viet Nam
HDPE	High Density Polyethylene
ICD	International Cooperation Department
FI	Financial Intermediaries
IEE	Initial Environmental Examination
IPSARD	Institute for Policy and Strategy of Agriculture and Rural Development
LBP	Large Biogas Plant
LCASP	Low Carbon Agricultural Support Project
LIC	Loan Implementation Consultancy
MBP	Medium-sized Biogas Plant
MARD	Ministry of Agriculture and Rural Development
NCB	National Competitive Bidding
NOL	No Objection Letter

PIM	Project Implementation Manual
PPMU	Provincial Project Management Unit
REA	Rapid Environmental Assessment
REOI	Request for Expression of Interest
RFP	Request For Proposal
QBS	Quality Based Selection
QCBS	Quality and Cost Based Selection
SBP	Small-sized Biogas Plant
TL	Team Leader
TOR	Terms of Reference
TOT	Training of Trainers
US$	The United States $
VAAS	Vietnam Academy of Agriculture Science
VND	Vietnam Dong

1. INTRODUCTION

This report discusses the achievement and the performance of the ACI and ADConsult Technical Assistance (TA) to LCASP during the third quarter of 2017 (from July to September) and presents the planned activities for the fourth Quarter of 2017.

During the reporting period, the technical solution on the overloading issue of Small-size Biogas Plants (SBP) and Medium-size Biogas Plants (MBP) was addressed with a proposed pilot testing in Phu Tho province. This innovative technical solution consists of implementing sediment tanks that will ease the collection of solid wastes and bio-slurry. Optimization of excess biogas use is another technical intervention proposed to PPMUs and farmers. Research and demonstrations are now at implementation phase with high demand on technical supports. In addition, the study on organic fertilizer production for medium and large livestock farms in terms of livestock waste and bio-slurry was widely covered. Technical support on safeguards, both environment, and gender, was provided with the completion of various reports.

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 climate smart agriculture waste management practices (CSAWMP). The new technologies and practices are important for 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 CSAWMP as measured by the increased use of clean biogas energy and organic bio-organic fertilizers.

The specific purposes of the project 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 of Vietnam, which are 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 $67.92 million.

3. HIGHLIGHTS ON TECHNICAL SUPPORTS

Biogas Technology

- Technical solutions of overloading of SBPs and MBPs had been developed and approved by CPMU.
- Developed training documents on overloading of BP to implement in Phu Tho province.
- Developed technical guidance on MBP installation in Lao Cai, Bac Giang, Son La and Binh Dinh provinces.
- Developed formulas for the daily biogas production calculation of MBPs.
- Provided information to CPMU and PPMUs on the negative impact of bio-slurry and its utilization in Vietnam and the world.

Biogas Value Chain

- Developed Guidelines on the calculation of biogas production on comprehensive biogas utilization for SBP and MBP.
- Analyzed biogas utilization solutions supporting households installing MBPs.
- Developed technical support to nine LCASP provinces, except Phu Tho, developing household profiles to install MBP, based on the criteria.
- Supported to Ha Tinh, Phu Tho and Nam Dinh on the monitoring of MBP and LBP.
- Supported CPMU to develop technical feasibility assessment report for Package 34 and 37
- Developed standard forms with instruction to supplement detail design for Package 39.
- Developed GHG calculation methodology proposal, currently waiting for ADB comments.

Climate Smart Agriculture Waste Management Practices

- Submitted five research sub-projects proposals under Package 30 were prepared with TOR. Accordingly, ADB agreed for two sub-projects and received NOL for Package 42 and Package 43.
- Addressed discrepancies on manure separator design, structures, and sedimentation tanks for manure separators in Bac Giang, Phu Tho, Binh Dinh and Ben Tre.
- Conducted various studies providing the information to CPMU and PPMUs especially composting technologies for piggery waste treatment, bio-slurry sedimentation, composting of bio-slurry and others.

Training, Extension, and Communication

- Provided Technical assistance to CPMU through organizing three training on gender and ethnic minority, and organic fertilizer.
- Conducted training assessment as per the Training Master Plan for these all training and evaluated.
- Compilation of three vocational training materials is near finalization.
- Completed TOT training materials on the topic red worm raising from cattle and poultry manure; and industrial waste.

Environment Safeguards

- Completed a model IEE for PPMU, Binh Dinh. CPMU had submitted the IEE to ADB for NOL.

- Reviewed and corrected REAs and environmental category for proposed MBPs from eight PPMUs.
- Uploaded Semi-annual Environmental Monitoring Report (January – June 2017) to ADB website.
- Prepared and provided IEE flowchart to CPMU.

Gender and Ethnic Minorities Safeguards

- Uploaded Semi-annual Monitoring Report on EMDP (Jan – June 2017) to ADB website.

Procurement

- Completed Bid Evaluation Report of NCB goods package 14, 33 and 36; and Submission 1 of research Package 29.
- Prepared technical evaluation report by CSC for Submission 2 of research package 25, 26, 27 and 28.
- Drafted cost estimate for new research packages 42 and 43.

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

LIC technical team led by BGT Specialist identified the overloading issues of SBPs and provided solutions with detailed technical studies in Bac Giang, Phu Tho and Son La provinces. It appeared that the volumes of the biogas plants (8 to 12 m^3) are too small compared to the number of pigs ranging from 40 to 100. However, all animal waste is discharged to biogas plants resulting in overloading, making biogas owners to discharge effluents to public ponds and rivers.

The technical team conducted a feasibility study using data from the livestock farm of Mr. Tran Dang Dzung in Phuong Vien commune, Ha Hoa district, Phu Tho province, and developed a detailed proposal to cope with overloading of SBPs. The proposed design system consists of:

1. Separating waste water from two cages (raising 18 pigs) out of five cages into biogas plants so that the waste water is thoroughly treated.
2. Repairing two old existing tanks into sedimentary tanks for solid waste collection for organic fertilizer production. The waste water from the remaining three cages will be discharged directly to these tanks.
3. Building a new tank for bio-slurry to irrigate the crops.
4. Constructing a filter tank to collect solid waste for organic fertilizer production.

This technical design will adjust a suitable amount of waste water discharging into biogas plant applying technology to filter solid waste from bio-slurry. The technology is suitable for most farms and is cost-effective.

Project provinces are installing a number of MBPs. The BGT Specialist provided the technical support in:

1. Developing technical guidance on MBPs with necessary documents to Provincial Coordinators and provincial technicians of Lao Cai, Son La, Bac Giang and Binh Dinh provinces. Technical documents on MBP installation had been provided.
2. Preparing a template for calculation of daily biogas production and consumption by different utilization, specifically targeting Lao Cai, Son La, Ha Tinh and Binh Dinh provinces where households have committed to the full use of biogas.
3. Designing proposal with overloading solutions of MBP at the farm of Mr. Bui Duc Tuyen, Xuan Ang commune, Ha Hoa district, Phu Tho province.
4. Reviewing and commenting the MBP overloading solution proposal in Nam Dinh province.

For MBPs, solutions for overloading is developed using Mr. Tuyen's farm and covered the following technical provisions:

1. Construction of four filter tanks in front of biogas plants to collect solid waste for organic fertilizer production.

2. Construction of settling pond and effluent pond (base with HDPE sheet to avoid groundwater contamination).
3. Construction of a filter tank for collecting solid waste from sedimentary materials for organic fertilizer.
4. Construction of small shade house for organic fertilizer processing.

The design proposal for MBP is technically feasible with the provision to collect solid waste in filter tanks that will remarkably reduce livestock waste from biogas plants. This overloading technical solution can apply to livestock farms of 100 - 1000 pigs treating solid waste and bio-slurry livestock waste, which in turn will be used as fertilizer for crops.

LIC technical team provided technical assistance to Nam Dinh province by reviewing the proposal on overloading solutions of MBPs. The recommendations are suitable for MBPs with 4-6 sedimentary tanks of total volume of 24 m^3 for livestock farms of 1,000 pigs. In addition, two storage tanks of 10 - 15 m^3 will be built behind the biogas plant for effluent treatment. The adoption of bio-slurry treatment facility is low as the province is located in the Red River Delta with a land shortage.

The following main technical improvements had been approved by PPMU, Nam Dinh as advised by BGT Specialist.

1. Four sedimentary tanks must be installed for solid waste removal and;
2. There should be two storage tanks (ponds) with HDPE base because the waste water treatment tank is too small.

Documents prepared by BGT Specialist during the period are provided in Appendix 1 (Serial 1 to 13). Appendix 2 provided the list of reviewed documents (Serial 1 to 9).

Efforts had been made to identify various technical options during the reporting period to optimize the biogas utilization by the households. On-site studies and discussions including economic viability were conducted with the households by

the LIC technical team led by BVC Specialist. Comprehensive solutions for biogas utilization and livestock waste management were investigated with technical feasibility.

Various studies and reports were conducted and prepared especially:

- Monitoring report on MBP and LBP of Ha Tinh, Phu Tho and Nam Dinh provinces.
- Report on use of biogas generator under LCASP summarises the status of bio-power utilization in the project provinces. This document is a reference material for the bio-power generator from biogas.
- The solution for using biogas production of MBP related form, which was included in the MBP construction registration dossier.
- Review of the use of biogas for power generator in the world – problem and solutions covering the status of the biogas power development in the world and lessons learned.
- Reports on technical feasibility assessment for Package 34 and Package 37.
- Development of standard forms with instruction to supplement detail design for Package 39.

Power generation from biogas is still not popular in Vietnam. The report prepared by BVC Specialist covered the issues and problems, the types of generators, suppliers, pricing and others. However, the use of power generator should be encouraged in the project.

Given the complicated methodology for the biogas production calculation and alternative fuel solution, the BVC Specialist simplified the processes and provided a set of indicators to guide PPMU technical staff and Provincial Coordinators. Biogas utilization is based on the household needs, interest and investment options. However, at this stage LCASP can provide only technically feasible options to the households so that users can optimize biogas utilization.

Documents prepared by BVC Specialist during the period are provided in Appendix 1 (Serial 14 to 22). Appendix 2 provides the list of reviewed documents (Serial 10 to 12). Reports during the period were also provided by TL,

DTL/CSAWMP Specialist, International Policy and Institutional Specialist, International CSAWMP Specialist and Policy and Institutional Specialist.

LIC team completed GHG emission calculation related study. CPMU is now waiting for the comments from ADB. The report discussed the GHG emission status in the country with the analysis of various GHG emission calculation methodology adopted under various biogas programs.

Provincial Coordinators provided an indispensable support to both PPMUs and Specialists in a timely manner. For PPMUs, a number of feasibility assessments were conducted, identifying sites and constraints that may be encountered during various technical interventions. Provincial Coordinator, Bac Giang also prepared a case study and uploaded the findings to the project website (http://lcasp.org.vn/vi/operation-ppmu/nhan-rong-xay-dung-cong-trinh-khi-sinh-hoc-nho-sbp-mot-bai-hoc-tu-du-an-lcasp-bac-giang-195.html).

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

EMDP and GAP were updated with the technical assistance. The report has been provided to ADB from CPMU and uploaded on the ADB website (https://www.adb.org/projects/documents/vie-45406-001-smr).

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

No reported progress during the period for technical assistance.

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

LIC provided technical assistance on a number training during the reporting period. CPMU organized training on gender and ethnic minority with support from the Training Specialist as a resource person. In total, two training was conducted each in the south and central Vietnam, with participants from six provinces. The trainees were coordinators, technicians, focal person of gender and ethnic minority. Details are provided on LCASP website, http://lcasp.org.vn/vi/news/tap-huan-nang-cao-nhan-thuc-ve-gioi-va-dan-toc-thieu-so-cho-can-bo-va-ky-thuat-vien-cua-3-tinh-mien-nam-323.html and http://www.lcasp.org.vn/vi/news/tap-huan-nang-cao-nhan-thuc-ve-gioi-va-dan-

toc-thieu-so-cho-dieu-phoi-vien-ky-thuat-vien-va-phu-trach-ve-gioi-va-dtts-cho-3-tinh-nam-dinh-ha-tinh-va-binh-dinh-327.html.

A series of evaluations were conducted for each training especially the training conducted by CPMU (Appendix 3). The assessment consists of the quality of the overall course, and the self-assessment done by the trainers and trainees. Assessments under the overall training course include the understanding of the training objectives, the gain in skills and knowledge, applicability, support to trainees, the condition of the equipment and classroom; and the training duration. The trainers were evaluated for their professional knowledge, teaching methodology, quality of training materials, curriculum development with training contents, responses to trainers and active participation of trainees. For trainees, the self-assessments covered the learning attitude and concentration level, knowledge gain on the training contents, participation, and attendance.

Results from the evaluations of the Gender and Environmental Monitoring (EM) training are presented in Figure 1 and Figure 2. About 54% of the trainees scored the training as very good followed by good in Can Tho (Figure 1), and 66% of the trainees evaluated the training as very good followed by excellent in Binh Dinh (Figure 2).

Figure 1: Gender and EM Training, Can Tho

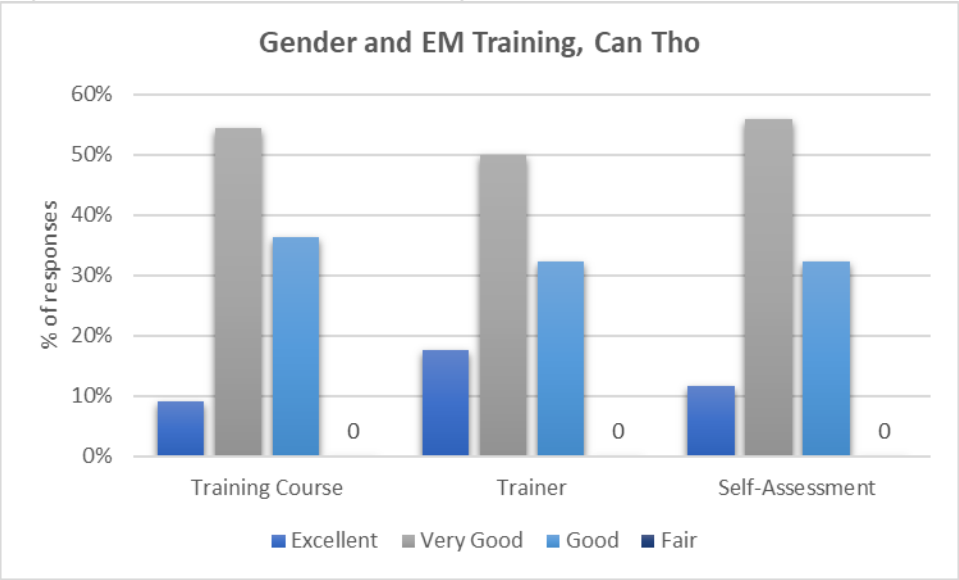
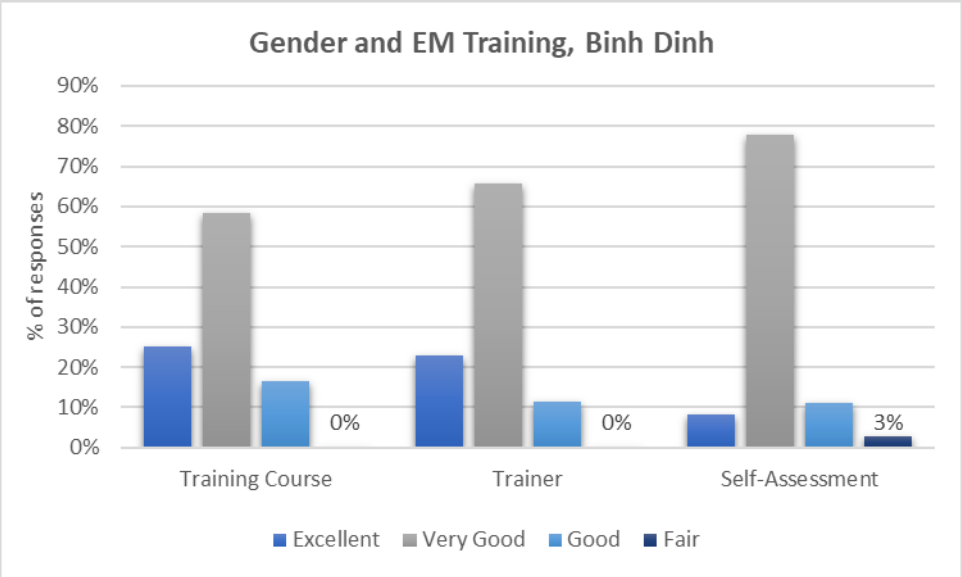


Figure 2: Gender and EM Training, Binh Dinh



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

No reported progress during the period for technical assistance.

4.2 Component 2: Credit Lines for Biogas Value Chains

2.1 Financial Institutions (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

No reported progress during the period for technical assistance.

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

Progress on the research packages is in various stages (Table 1).

Table 1: Status of Research Packages

Package	Research	Status
25	Research on organic fertilizer production from livestock waste and bio -slurry by value chain	Approval by APMB is in the process of the evaluation results of technical proposal
26	Research on improved technology and effective biogas utilization within the biogas value chain	APMB basically completed the evaluation procedures. However, approval process under progress.
27	Research on the water saving pig farming technology	APMB basically completed the evaluation procedures. However, approval process under progress.
28	Research on effective utilization of crop waste by value chain	CPMU is evaluating the technical proposals.
29	Research on the treatment of sludge sediment in shrimp farming	CPMU has issued REOI.

After the cancellation of Package 30, research on cultivation techniques for GHG emission reduction, DTL/CSAWMP Specialist prepared TOR for five additional

packages as follows.

- Establishing comprehensive system of production and supply of microbial product for organic fertilizer production from agricultural waste and bio-slurry
- Using bio-slurry for irrigating crops
- Piloting technology for special designed organo-mineral fertilizers production from livestock waste and bio-slurry for fruit trees (mango, pomelo and dragon fruits) in Mekong River Delta
- Piloting technology for special designed organo-mineral fertilizers production for key crops on sandy soil of central coastal area and
- Piloting technology for special designed organo-mineral fertilizers production for key crops in Red River Delta and northern mountain areas.

However, only the following two research packages will be implemented with the NOL received from ADB.

- Package 42: Piloting technology for special designed organo-mineral fertilizers production from livestock waste and bio-slurry for key crops in Vietnam and

- Package 43: Establishing a comprehensive system of production and supply of microbial activators for organic fertilizer production from agricultural waste and bio-slurry.

Table 2: Received NOL

No	Document	NOL Reference	Remarks
1	Research TOR of package 42	170907 L2968 NOL to PP version 9	Date received: 7 Sep 2017
2	Research TOR of package 43	170907 L2968 NOL to PP version 9	Date received: 7 Sep 2017

Accordingly, the procurement methodology was changed from QCBS to CQS. Detailed milestones with the timeline are provided in Appendix 4.

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

Livestock waste treatment still needs to be diversified with the objective to collect manure for the production of organic fertilizers. The technology should be applied addressing various technologies on water saving, livestock,

sedimentation, manure separation as well as microorganism treatment that can digest organic matters with a high content of C/N (in case the agricultural by-products are not available to reduce the content of C/N for composting).

On 20 September 2017, the Government of Vietnam had issued Decree No. 108/2017ND-CP regarding the management of fertilizers. In addition, MARD is drafting a Decree on the management of organic agriculture products. LCASP has the opportunities to be involved and support the implementation of these policies. LCASP initiated advanced technology for the production of organic fertilizers, low carbon agriculture production and GHG emission reduction, would highly contribute to policy implementation. The anticipated policies should also provide incentives for manure collection and organic fertilizer productions from livestock waste in terms of funding, capacity building, and geographical priorities.

LIC technical team made several feasibility study field visits especially in Phu Tho and Bac Giang provinces discussing with the technicians and farmers. Some of the issues identified are as follows.

- The design of sedimentary tanks should facilitate manure separator operation, and should have options for various farm size.
- A small tank should be installed in front of sedimentary tank to filter external materials such as glass, PE, stone and others for the safety of manure separators.
- The house hosting the manure separator should be convenient for the use of a crane.

Manure Separator (Package 32): Four contractors were awarded to build manure separators in Bac Giang, Phu Tho, Binh Dinh and Ben Tre. However, several issues arise from the implementation.

- Contractors did not put attention to the quality of the supporting structures and sedimentation tanks which ensure the efficiency of the system.
- In addition, additional sedimentation tanks were used to assure minimum 50% separation of solid waste.
- One contractor used inappropriate design to build manure separators.

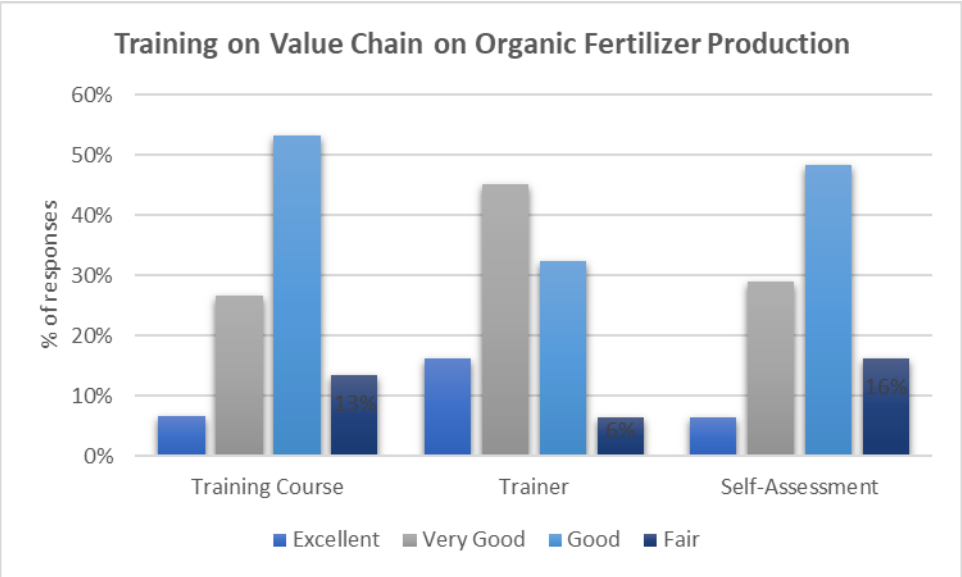
CPMU and LIC Specialists team have worked with the contractors to solve these issues on design, supplementary sedimentation tanks, and waste collections.

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

The Training Specialist, as a resource person, supported the training courses on the production of organic fertilizers according to the value chain for research staff (http://lcasp.org.vn/vi/news/tap-huan-nang-cao-nhan-thuc-ve-gioi-va-dan-toc-thieu-so-cho-can-bo-va-ky-thuat-vien-cua-3-tinh-mien-nam-323.html) in July 2017.

The results of the post-training evaluation for the production of organic fertilizers shows that 45% of the trainees evaluated the training as good followed by very good (Figure 3).

Figure 3: Training on Value Chain on Organic Fertilizer Production from Agricultural Waste, Hanoi



LIC team continues to compile materials for three vocational training during the reporting period. Technical support was provided to the evaluation committee as required, and it will continue in Quarter 4. Technical assistance was provided to the committee for scientific assistance to finalize the vocational training materials, and to organize a workshop on production and utilization of organic fertilizers from livestock waste. LIC coordinated with the Soil and Fertilizer Research Institute, Hanoi and supporting to receive approval from MARD.

TOT training materials on red worm raising from cattle and poultry manure; and industrial waste had been completed (http://lcasp.org.vn/vi/kien-thuc/tai-lieu-ky-thuat.html). Other training documents were uploaded to the LCASP website (http://lcasp.org.vn/uploads/kien-thuc/2017_08/nuoi-trun-queco-vuong.pdf).

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 e-library.

No reported progress during the period for technical assistance.

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.

The section includes the LIC technical assistance management and other subject matters covered under safeguards, policy and procurement.

Environment

IEE must be conducted for all Project MBPs since they are categorized under Category B. ADB authorized the CPMU to approve these IEEs, which must follow the model cleared by ADB as sample IEE. The Project has installed eight MBPs, and plans to install additional 32 MBPs by the end of 2018. The total amount of subsidies for these activities are VND 50 million.

PPMU Binh Dinh prepared a draft IEE on a proposed MBP following the IEE format from the Environment Specialist. The MBP belongs to Mr. Nguyen Long Vu Bao, Dai Hoa village, Nhon Hau commune, An Nhon town, Binh Dinh. PPMU conducted the site study and assessed environmental parameters. IEE includes environmental impacts during the preparation, construction, and operation of MBP, EMP and environmental mitigation measures along with the site-specific physical background. CPMU submitted the IEE to ADB in September 2017 for NOL.

Technical support had been provided to PPMUs on-site identification with a detailed feasibility study. Accordingly, REAs and environmental categories for proposed MBPs of Son La, Ben Tre, Binh Dinh, Ha Tinh, Nam Dinh, Bac Giang, Lao Cai and Soc Trang were reviewed, revised and corrected as necessary.

In addition, LIC team reviewed and corrected the Semi-annual Environmental Monitoring Report (January – June 2017) as necessary. CPMU already send the

document to ADB for approval (https://www.adb.org/sites/default/files/project-documents/45406/45406-001-smr-en.pdf).

Meanwhile, Son La, Ben Tre, Binh Dinh, Ha Tinh, Nam Dinh, Bac Giang, Lao Cai and Soc Trang PPMUs submitted the safeguard documents on subsidy support for proposed MBPs to CPMU. Timely technical assistance had been provided to finalize, reviewing these documents.

An IEE preparation flow chart was also provided to CPMU for steps to follow.

Gender and Ethnic Minorities

The Semi-annual Monitoring Report on EMDP (Jan – June 2017) was prepared during the reporting period (https://www.adb.org/projects/documents/vie-45406-001-smr).

Policy and Institutional

The draft policy and institutional report had been updated with the latest government decisions and decrees. The International Policy and Institutional Specialist presented the findings in the CPMU / LIC meeting in Ha Tinh. Following the meeting's recommendation, a paper on policy constraint on livestock waste and bio-slurry management for organic fertilizer production was prepared and accepted by CPMU.

The paper reviewed the strategy for protecting the national environment by 2020 and orientation towards 2030, various laws, decrees and circulars. The strategy for protecting the national environmental targets to reduce the sources of environmental pollution, improve polluted and degraded areas, mitigate the degradation and depletion of natural resources and deal the climate change mitigation measures. There are government subsidies for biogas plants supporting animal waste treatment with the provision of permissible limitations of effluent discharge. Animal husbandry farms must comply with the environmental protection requirements such as sanitation, waste, water collection and treatment; follow waste management regulations, and other requirements.

Procurement

LIC team supported the project procurement with the finalization of Submission 2 - 3 for research package 25 – 28, and the completion of the technical and financial evaluation of proposals, contract negotiation, and draft contract for research package 25 and 26 (QBS). CSC agreed to the technical proposals evaluation results and CPMU submitted the documents to ADB in mid-September 2017.

Research package 27 (QCBS) related technical proposals evaluation results were approved by CSC, and CPMU submitted the documents to ADB in August 2017.

Other research packages 28 (QCBS), Submission 3 and Submission 1 - 5 of research package 29 (QCBS) are in progress and CPMU plan to submit the documents to ADB in Quarter 4.

Procurement Specialist provided technical assistance to CPMU on the submissions. The support consists of clarifying issues with ADB for approval and coordinating with the Evaluation Committee to work with ADB on the revision of the Bid Evaluation Report of NCB goods package 14, 33 and 36. NOL had been received on research packages 42 and 43.

4.4 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

Various reports as reported in this Quarterly Report were provided to CPMU. Safeguards related reports were already uploaded on the ADB website.

5 SPECIALISTS MOBILIZATION

No new Specialists mobilized during the period.

6 LIC MANAGEMENT

Technical assistance was provided during the period on a demand basis. LIC team members provided their inputs as requested by CPMU and PPMUs. All Provincial Coordinators, except in Son La, were supporting PPMUs on various

activities coordinating with the subject matter Specialists.

LIC team also participated with CPMU in a meeting with ADB on August 2017 regarding the technical aspects of the project implementation.

LIC Specialists also provided comments on PIM revision. The list of various workshops attended by LIC team are provided in Appendix 5.

CPMU LIC Meeting

CPMU LIC meeting was held on 14 July 2017 at Thien Cam town, Ha Tinh province with the objective to review the consultant outputs for the last six months and the work plan for next six months of 2017. During the meeting, the Project Director noted that LIC support should make LCASP different from other similar projects especially bringing recommendations on the overloading of biogas plants, and the optimal use of biogas and technology for the production of organic fertilizers from livestock waste for medium and large-scale farms. LIC should also work with the fertilizer production companies to find the solutions to produce organic fertilizers and bio-slurries. In addition, some policy constraints regarding the use of livestock waste and bio-slurry need to be resolved.

Accordingly, solutions for the overloading of BPs design model had been completed and initial pilot testing in Phu Tho by PPMU is in progress with LIC technical assistance. A study on the policy constraints on livestock waste and bio-slurry management from the production of organic fertilizers had been completed and a report had been provided to CPMU.

LIC team meeting was conducted regularly on a fortnightly basis to review the technical assistance performance of the Specialists, and the findings are recorded in the meeting minutes. DTL/CSAWMP Specialist closely supervised the Provincial Coordinators and finalized the reports.

The PC reporting which covers the technical findings and recommendations should be on time to address the issues. However, some PC reports are still inappropriately late.

Coordination

LIC Specialists efficiently coordinated with the stakeholders at central, provincial

and field levels. Testing of a pilot for the overloading design model has been completed with the cooperation of CPMU, PPMU, LIC team and field stakeholders, along with the excess gas utilization and implementation of demonstration package 32. Two research subprojects received NOL with an effective coordination with MARD and other research institutes including CPMU. LIC is providing weekly reports to CPMU on technical progress.

LIC was able to address various technical issues and provided solutions during the reporting period using teamwork, coordination and timely support to stakeholders. However, proper communication for the professional outputs needs to be improved.

Procurement related procedural formalities on research and demonstration packages are still in progress, technical demand from LIC on its implementation will heavily concentrate in Quarter 4, 2017 and early 2018.

Report Preparation and Submission

In addition to various technical reports, the Quarter 2 Report 2017 was provided to CPMU, and approved during a report acceptance meeting held with APMB on 29 August 2017.

Specialists and Provincial Coordinators Input Period

Specialists and Provincial Coordinators inputs by desk office and field are tabulated in Table 3 for the period of June to August 2017. A total person-months was 33.05, in monthly average, it was 11.02 person-months.

Table 3: Specialists Inputs by Desk Office and Field (June- August 2017)

Names	Desk Office (person-month)	Field (person-month)
Manohar Shrestha	2.77	0.18
Bui Ba Bong	0.32	0.14
Nguyen Van Bo	2.68	0.32
Nguyen Van Huong	2.45	0.23
Bui Van Chinh	2.45	0.55
Pham Thi Vuong	1.64	1.14
Pham Van Binh	0	0
Ta Hoa Binh	0	0.32

Le Thi Mong Phuong	1.36	0.27
Nguyen Ngoc Long	1.68	0.14
Le Thi Thoa	1.09	0.05
Bui The Hung	1.45	0.14
Bui Thi Phuong Loan	1.50	0
Le Ngoc Hung	1.45	0
Dang Thi Phuong Lan	1.95	0
Tong Khiem	1.59	0
Nguyen Dinh Vinh	1.55	0.14
Dao Van Thong	0.82	0.14
Bui Thi Lan Huong	0.82	0.14
Tran Viet Cuong	1.59	0
Total	29.18	3.86

Procurement Specialist had completed six months inputs at the end of September 2017.

Several field trips were conducted during the reporting period by the Specialists covering Ha Tinh, Phu Tho, Lao Cai and Son La provinces.

Amendments of the six Specialists TOR and transfers of some excess person-months from two Specialists had been completed and waiting for implementation. Some of the Specialists had already exhausted the contracted person-months and urgently need the approval for the additional person-months.

7 TA PERFORMANCE ASSESSMENT

The solution on overloading of SBPs and MBPs is an innovative technical design addressing a long-standing issue in the project. The design was developed by LIC technical team under the leadership of BGT Specialist through consultation with stakeholders including CPMU, PPMU, farmers and other concerned. The design had been approved by CPMU and PPMU, Phu Tho and in the process of pilot testing in Phu Tho province. The livestock waste will be used as fertilizer for various crops such as rice, tea, orchard and fodder grass. Various technical options are identified to optimize the biogas use produced from SBPs and MBPs.

LIC team addressed technical issues such as design flaws regarding the manure separator and the solutions will be demonstrated in four provinces. Two research sub-projects with NOL (Packages 42 and 43) and demonstration package 39 were

approved during the reporting period.

Covering a number of training and workshops during the period, training evaluations by the participants had also been initiated based on the Training Master Plan. EMR (Jan-June 2017) and EMDP (Jan-June 2017) were uploaded on the ADB website. Model IEE of MBP (Binh Dinh province) was submitted to CPMU (provided to ADB) and LIC continues to support CPMU during the period on procurement related technical assistance.

8 WORK PLAN FOR NEXT QUARTER

Detail work plan for the Quarter 4 is provided (Table 4).

Table 4: Work Plan Quarter 4, 2017

No.	Activities	10 [1]	11	12	Remarks
1	**Biogas Technology**				
1.1	Review solutions on overloading of SBPs and MBPs				
1.2	Technical support on pilot model addressing overloading of SBP and MBP in Phu Tho				
1.3	Support O&M of manure separator system				
1.4	Technical support on livestock waste treatment				
1.5	Support the provinces on MBP installation				
1.6	Data analysis on the cost of MBPs				
1.7	Article preparation of LCASP website				
2	**Biogas Value Chain**				
2.1	Effective use of biogas				
2.2	Methodology for measuring and quantification of GHG emissions				
2.3	Support to biogas use solutions with various purposes				
2.4	Design and assess solutions for biogas use at industrial scale				
2.5	Support to PPMU on demonstration implementation				
2.6	Technical support on to finalize additional package of P 32				
2.7	Prepare two articles for LCASP website				
3	**CSAWMP**				

[1] Month

No.	Activities	10 1	1 1	1 2	Remarks
3.1	Utilisation of bio-slury in the fields and full utilization of fertilizer value				
3.2	Composting technology for medium and large- scale livestock farms				
3.3	Support CPMU to finalize procedure for contract award of research package 25, 26, 27 and 28				
3.4	Support to CPMU to finalize procedures for contract award of Package 29 (Q1, 2018)				
3.5	Support CPMU to prepare Submission 1-3 for Packages 42 and 43				
3.4	Technical support to implement two models on overloading of BPs				
3.5	Technical assistance to finalise the design and structures for Package 32 (Manure Separator)				
3.6	Technical support to monitor the implementation of Manure Separator				
3.7	Draft document for the workshop on consultation on policies and financial mechanism for effective and sustainable treatment of livestock waste				
4	**Training, Extension, and Communication**				
4.1	Support to organize “Production and Utilization of Organic Fertilizer in Agriculture Workshop”				
4.2	Support to communication materials design, production and dissemination				
4.3	Follow up and support the training evaluation of training courses conducted by CPMU and PPMUs				
4.4	Follow up the training and communication materials on BP overloading prevention				
4.5	Follow up and support the compilation of three primary level vocational curricula				
4.6	Support to various training courses of CPMU and PPMUs				
5	**Environmental Safeguard**				
5.1	Support and review IEE on MBP construction proposed by PPMUs				
5.2	Revise and support the preparation of REA and environmental categorization of proposed MBPs				

No.	Activities	10 1	11	12	Remarks
5.3	Support to prepare Semi-annual Environmental Monitoring Report (July – December 2017)				
5.4	Regular environmental monitoring support to CPMU and PPMUs				
6	**Project Management**				
6.1	Quarterly and annual reports preparation in both English and Vietnamese languages				
6.2	Support CPMU to organize the workshop on production and utilization of organic fertilizer in Vietnam				

9 CONCLUSIONS AND RECOMMENDATIONS

The success of the innovative technical design proposal, which addresses overloading of biogas plants, especially SBP and MBP, by CPMU and PPMU, Phu Tho is one of the major LIC achievements during the reporting period. PPMU, Phu Tho already started the implementation of the pilot testing. In addition, PPMU, Nam Dinh is also pilot testing improved MBP overloading technical solutions. Excess biogas use optimization is another technical intervention supported to PPMUs and farmers.

All the TORs for research packages are completed including two new research sub-projects. In addition, the study on organic fertilizer production for medium and large livestock farms in terms of livestock waste and bio-slurry is widely covered. The livestock waste will be used as fertilizers for various crops such as rice, tea, orchard and fodder grass. Technical support was provided to contractors on manure separators e.g. the reviews of the designs among other actions.

Training evaluations of some training organized by CPMU, based on the Training Master Plan, have provided feedback to CPMU and LIC. The comments will be used to support and to improve the training contents and quality. EMR (Jan-June 2017) and EMDP (Jan-June 2017) were uploaded on the ADB website. Meanwhile, the model IEE of MBP developed for Binh Dinh province will contribute to the preparation of other IEE of MBPs in other provinces.

CPMU LIC meeting on LIC Specialist inputs in Ha Tinh is another milestone of the period for effective coordination and transparency. Decisions made at the meeting were followed-up by implementation and actions.

Recommendations:

- Bio-slurry treatment should be addressed with effective utilization in fertilizing crops such as rice, vegetables, and fruit trees.
- LCASP related technical achievements should be published to disseminate the technical interventions and increase learning.
- With the experience learned from model IEE prepared for Binh Dinh, a sharing workshop targeting Provincial Coordinators should be conducted for an efficient support to PPMUs.
- CPMU and LIC should conduct more site visits in order to identify issues and work on technical solutions.
- Regular review meeting of ICD with ADB should continue to address issues and problems on time.
- CPMU should continue to send technical tasks with enough lead-time so that the monthly planning can be effective.

APPENDICES

Appendix 1: Documents and Reports Produced

No	Document Name	Document Nature	Month
1	Negative impacts of bio-slurry and its utilization in Vietnam and the world	Technical Document	Sep
2	The negative impact of animal wastewater and solutions for crop use	Technical Document	Sep
3	Presentation document on BP overloading solution (for meeting in Ha Tinh)	Technical Document	July
4	Questionnaires to collect data of cost of different types of BPs (version 2)	Technical Document	July
5	Assessment of potential biogas utilization of five households in Son La province (version 2)	Technical Document	July
6	Questionnaires to assess the utilization of biogas infrared lamps for young animals	Technical Document	July
7	Questionnaires to assess the current management of livestock waste of large farms and producing organic fertilizer	Technical Document	July
8	Household related commitment on full use of biogas by households to install MBPs in Son La (version 3)	Technical Document	August
9	Two field trip reports to Phu Tho on BP overloading assessment	Technical Document	August
10	Design proposal for overloading solution of SBP (Mr. Dzung) and Power Point presentation	Technical Document	August
11	Design proposal for overloading solution of MBP (Mr. Tuyen) and Power Point presentation	Technical Document	August
12	Household related commitment on full use of biogas by households to install MBPs in Ha Tinh	Technical Document	August
13	Two reports on slurry	Technical Document	August
14	Technical feasibility assessment for P34 and P37 (2 files)	Technical Document	July
15	Standard forms for P39 (3 files)	Technical Document	Jul/Aug
16	Report template for MBP and LBP monitoring	Technical	July

		Document	
17	Questionnaires for MBP and LBP monitoring	Survey form	July
18	Report on MBP and LBP monitoring	Technical Document	August
19	Report on bio-power generation development	Technical Document	September
20	Solutions for using biogas in MBP	Report	September
21	Use of biogas for power generator in the world	Report	September
22	Field trip report for Bac Giang and Lao Cai	Report	September
23	Installation of biogas for greenhouse gas reduction	Report	August
24	Composting technologies for piggery waste treatment	Report	September
25	Composting of pig slurry – a review	Report	September
26	Sedimentation process for pig slurry	Report	September
27	Policy constraints on livestock waste and bio-slurry management for organic fertilizer production	Report	September
28	Bio-slurry as fertilizer	Report	September
29	Productivity from bio-slurry application	Report	September
30	Quarter 2 Report, 2017 (English and Vietnamese)	Report	July

Appendix 2: Documents Reviewed

No.	Document Names	Document Nature	Month
1	Review of LIC Quarter 2 Report, 2017 (English and Vietnamese version)	Report	July
2	Assessment of current status of biogas utilization at household level	Technical Document	July
3	Assessment of biogas use by households of MBP in Ha Tinh	Technical Document	August
4	Training document on feed production	Technical	August

	from crop by-products	Document	
5	Assessment of actual use of biogas generators in project provinces	Technical Document	August
6	Environmental category for IEE in Binh Dinh	Technical Document	August
7	REA checklist for IEE in Binh Dinh	Technical Document	August
8	Field trip to Bac Giang	Technical Document	September
9	Demonstration proposal on overloading solution of MBP in Nam Dinh province	Technical Document	September
10	MBP and LBP monitoring report from Ha Tinh, Phu Tho and Nam Dinh	Report	July/ Aug
11	Environmental appraisal from the provinces	Technical Document	Aug/Sep
12	BP overloading problem in Phu Tho	Technical Document	July

Appendix 3: Training Assessments

Training: Gender and EM Training, Can Tho

Duration: 3 days

Trainees: Extensionists, Technicians; and Focal Person on Gender/ EM of PPMU

Total: 33 persons

Trainer/s: Training Specialist

Training Assessment by number of Trainees

Assessment	Excellent	Very Good	Good	Fair
Training course	3	18	12	0
Trainer	6	17	11	0
Self-assessment	4	19	11	0
Average	4	18	11	0
%	13	54	34	0

Note: Due to the rounding, some figures do not tally to the total

Training: Gender and EM Training, Binh Dinh

Duration: 3 days
Trainees: Extensionists, Technicians; and Focal Person on Gender/ EM of PPMU
Total: 36 persons
Trainer/s: Training Specialist

Training Assessment by number of Trainees

Assessment	Excellent	Very Good	Good	Fair
Training course	9	21	6	0
Trainer	8	23	4	0
Self-assessment	3	28	4	1
Average	7	24	5	0
%	18	66	15	1

Note: Due to the rounding, some figures do not tally to the total

Training: Value Chain on Organic Fertilizer Production from Agricultural Waste, Hanoi
Duration: 3 days
Trainees: Researchers Total: 30 persons
Trainer/s: VAAS, Project Director, CPMU and Training Specialist, LIC (three trainers)

Training Assessment by number of Trainees

Assessment	Excellent	Very Good	Good	Fair
Training course	2	8	16	4
Trainer	5	14	10	2
Self-assessment	2	9	15	5
Average	3	10	14	4
%	10	34	45	12

Note: Due to the rounding, some figures do not tally to the total

Appendix 4: Milestones for the Research Packages

No.	Milestones	Deadline
1	CPMU and LIC submit DSTE the list of research projects for endorsement, then, CPMU sends ADB for no objection	29 Apr 2016
2	ADB comments and provide no objection	14 May 2016
3	DSTE submits MARD for approval of the research projects list	16 May 2016
4	CPMU sends ADB the updated procurement plan for no objection	18 May 2016
5	ADB comments and provide no objection	02 Jun 2016
6	DSTE submit MARD for approval of the research project procurement plan	09 Jun 2016
7	DSTE, CPMU and LIC prepare Submission 0 and CPMU sends ADB for no objection	14 Jul 2016
8	ADB comments and provide no objection	29 Jul 2016
9	DSTE submit MARD for approval of Submission 0	13 Aug 2016
10	Advertise on CRSN and mass media for expression of interest	18 Aug 2016
11	DSTE, CPMU and LIC prepare Submission 1 and CPMU sends ADB for no objection	19 Oct 2016
12	ADB comments and provide no objection	03 Nov 2016
13	DSTE submits MARD for approval Submission 1	13 Nov 2016
14	CPMU sends RFP to the shortlisted firms	18 Nov 2016
15	DSTE, CPMU and LIC prepare the Submission 2 and CPMU sends ADB for no objection	27 Jan 2017
16	ADB comments and provides no objection	11 Feb 2017
17	DSTE submits MARD for approval of Submission 2	21 Feb 2017
18	DSTE, CPMU and LIC prepare the Submission 3 and CPMU sends ADB for no objection	20 Mar 2017

19	ADB comments and provides no objection	04 Apr 2017
20	DSTE submits MARD for approval of Submission 3	06 Apr 2017
21	DSTE, CPMU and LIC prepare the Submission 4 and CPMU sends ADB for no objection	19 May 2017
22	ADB comments and provides no objection	03 June 2017
23	DSTE submits MARD for approval of Submission 4	13 June 2017
24	CPMU signs the contract with the contractor	23 June 2017
25	CPMU advance 50% contract amount to the contractor	24 June 2017
26	Contractor completed the research project	30 June 2019
27	CPMU makes the final payment of the remaining 50% contract amount	30 Sep 2019

Appendix 5: Workshop/Seminars Attended

No.	Workshop Title	Organised by	Participants	Month
1	Policies for livestock waste management	CPMU/IPSARD	TL, Training Specialist	August 2017
2	Review of LIC Specialists of first six months and planning for next period, Ha Tinh	ACI/AD Consult	LIC team	July 2017