Asian Development Bank

Greater Mekong Subregion

Capacity Building for Efficient Utilization of Biomass for Bioenergy & Food Security in the GMS

TA7833-REG

PROGRESS REPORT (APRIL - JUNE 14)

Landell Mills
DEVELOPMENT CONSULTANTS

In association with

nexus
Carbon For Development

KEY DATA

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
APMB	Agricultural Project Management Board
AROS	Asian Regional Organic Standard
ASEAN	Association of Southeast Asian Nations
BEFS	Bioenergy and Food Security
CASP	Core Agricultural Support Program
CDM	Clean Development Mechanism
CEDAC	Centre d'Etude et de Développement Agricole Cambodgien
CER	Certified emissions reduction
CFA	Climate-friendly agriculture
CLV	Cambodia, Lao PDR and Viet Nam
IFOAM	International Federation of Organic Agriculture Movements
DAHP	Department of Animal Health and Production, MAFF Cambodia
DARD	Department of Agriculture and Rural Development (MARD Viet Nam)
DCP	Department of Crop Production (MARD Viet Nam)
DMF	Design and Monitoring Framework
EA	Executing Agency
EOC	Environmental Operations Centre
EoI	Expression of interest
EU	European Union
FAO	Food & Agriculture Organization (United Nations)
GAP	Good Agricultural Practices
GBEP	Global Bioenergy Partnership
GHG	Greenhouse gas
GMS	Great Mekong Subregion
GOMA	Global Organic Market Access
GoV	Government of Viet Nam
IA	Implementing Agency
ICS	Improved cookstoves
ICT	Information and communication technologies
IFOAM	International Federation of Organic Agriculture Movements
LML	Landell Mills Limited
MAF	Ministry of Agriculture and Forestry (Lao PDR)
MAFF	Ministry of Agriculture, Forestry and Fisheries (Cambodia)
MARD	Ministry of Agriculture and Rural Development (Viet Nam)
MEM	Ministry of Energy and Mines
MFI	Microfinance institutions
MIME	Ministry of Industry, Mines and Energy
MOE	Ministry of Education
MoF	Ministry of Finance
MoIT	Ministry of Industry and Trade
MONRE	Ministry of Natural Resources and Environment
MoST	Ministry of Science & Technology
MPI	Ministry of Planning & Investment
NBP	National Biogas Program
NDF	Nordic Development Fund

NFP	National Focal Point (of the Implementing Agency)
NGO	Non-Governmental Organization
NPI	National Project Implementation
PDR	People's Democratic Republic
PGS	Participatory Guarantee Systems
PPP	Public-private partnerships
PPTA	Project Preparatory Technical Assistance
PSC	Project Steering committee
PSD	Private sector development
RETA	Regional Technical Assistance
RfP	Request for Proposals (RfP)
SME	Small and Medium Sized Enterprise
SNV	Netherlands Development Organisation
SOP	Standard operating procedures
SRI	System of Rice Intensification
TA	Technical Assistance
TFP	Technical Focal Point (of the Implementing Agency)
ToR	Terms of Reference
UK	United Kingdom
US$	United States Dollar
WB	World Bank
WGA	Working Group on Agriculture

1. INTRODUCTION

1.1. SUMMARY

The Greater Mekong Subregion (GMS) Working Group on Agriculture (WGA) oversees regional cooperation in agricultural development under a wider GMS regional cooperation program. In 2007, the WGA conducted a regional study on strategic options for biofuel and rural renewable energy development in the GMS. The study developed into a GMS Strategic Framework and Action Plan for Biofuels and Rural Renewable Energy, which was endorsed at the fifth annual WGA meeting in the People's Democratic Republic of Lao (Lao PDR) in 2008. To implement the framework, GMS countries requested Asian Development Bank (ADB) assistance for bioenergy development, including technology transfer from more advanced countries in the GMS to Cambodia, Lao PDR, and Viet Nam, to diversify the region's energy options while ensuring food security.

In response, the ADB confirmed the 'Capacity Building for the Efficient Utilization of Biomass for Bioenergy and Food Security in the Greater Mekong Subregion (TA7833)' project financed with a grant from the Nordic Development Fund (NDF). This grant is administered by the ADB alongside the agriculture ministries of Cambodia, Lao PDR and Viet Nam in the form of a project for implementation during a period of 54 months (July 2011 to December 2015). The project concept was presented and endorsed by the GMS countries at the annual meeting of the WGA in Viet Nam in 2010. A fact-finding mission in early 2011 concluded broad agreement on the concept paper. TA7833 primarily focuses on Cambodia, Lao PDR and Viet Nam (CLV). The project intends to lay the foundations for potential investment projects to subsequently scale-up successful outcomes.

In December 2011, ADB contracted a consortium of consulting firms led by Landell Mills Ltd (LML) of the United Kingdom to provide technical assistance (TA) to support project implementation by the agriculture ministries. The TA Design and Monitoring Framework is provided in **APPENDIX 1**.

By June 2012 the agricultural ministries of CLV, in their respective roles as TA7833 Implementing Agencies (IA), had nominated counterpart government staff and resources to lead implementation of TA7833 with support from the Consultants. During the same period, project start-up was mostly concluded with the CLV governments providing office accommodation, etc.

The early TA activities focused on mapping existing implementation structures in CLV for efficient utilization of biomass for bioenergy and food security. The three national workshops were held during February and March 2012 within which key topics for potential studies and pilot projects were prioritized and agreed, along with recommendations on the advantages and disadvantages of both existing and new implementation structures.

Potential implementation partners such as national and international non-government organizations (NGOs), enterprises, public and private centers of excellence and public-private partnership (PPP) modalities have been identified. In each country, potential implementation partners for capacity development have been identified and shortlisted. In addition, pre-selection criteria have been drawn up for TA7833 to identify suitable public and private institutions as: i) distance learning partners, and; ii) project implementation partners.

This period provided significant input to understanding the current status of priority technologies, policies and standards, in addition to highlighting existing capabilities, priorities and future plans of both Government and key stakeholders. These assessments were built upon the inception workshops and stakeholder meetings in each capital city, initial tri-country missions involving TA experts and the *1st GMS Regional Forum on Harmonization of Standards in Bioenergy and Food Security* in Nanning, China from 1 to 6 July 2012 (see *Report on Proceedings*)[1].

[1] *https://docs.google.com/open?id=0B1wKP1C0cX-jb1gxbm1zVks3c0U*

However, the extended inception phase of the TA and lack of progress on pilot project implementation resulted in the replacement of the TA Team Leader in November 2012. There followed an intensive review process covering work completed to date, development of a comprehensive workplan and schedule and extensive restructuring of the consultant TA team / inputs. These were presented in the revised Inception Report submitted in March 2013.

The following progress report provides a review of the work up to June 2014, as well as a work plan for the remaining period of the contract, which has been extended up to June 2015.

1.2. PROJECT OVERVIEW

TA7833 is a regional capacity development technical assistance project. The project's impact will be to improve the efficient utilization of biomass in Cambodia, Lao PDR and Viet Nam within the wider context of bioenergy and food security. The outcome will be efficiently operating pilot projects in biomass determined by to the following outputs:

i) Output One: Enhanced regional cooperation on bioenergy development to foster and safeguard food security.

The output will be achieved through a regional approach to climate-friendly agricultural development through sharing national experiences with institutional processes and mechanisms for introducing and operating regulatory and non-regulatory approaches for biomass related technologies while ensuring their compatibility with international trade obligations. The primary focus of the TA strategy for output 1 shifted during the extended inception phase away from a purely regional harmonization approach to one of building national level awareness, priorities and institutions that are being shared and discussed collectively through regional forums and sharing of outputs. The change responds to a common concern expressed by the government counterparts that harmonization from regional to national level was simply unacceptable and that the process need to build a national position that could then be modified or adapted in response to regional benefits and opportunities.

The strategy for this output has therefore been modified which created greater ownership but significantly increases the complexity of what is being delivered through the TA due to the range of priorities and the potential scope for some of these i.e., climate friendly rice standards, as well as the vastly differing institutional contexts that the three countries are required to operate within and the limitations over the process for decision making. The TA offers technical input and the institutional knowledge of what is being developed regionally and internationally along with a process through which priorities are shaped and developed.

Using these national programs as a basis for regional learning and sharing is the critical step in achieving the overall output. The overall output as stated has not changed in principle however the indicator targets of the output have been modified.

ii) Output Two: Climate-friendly, gender-responsive biomass investment projects, pilot tested through implementation in Cambodia, Lao PDR, and Viet Nam.

Candidate technologies include, but will not be limited to: biogas & bioslurry; improved cook stoves; biochar production and application, and; climate friendly agriculture value chains. Feasibility studies will be completed for priority topics and used to define pilot projects based on technologies successfully tested on a smaller scale. In addition, business model case studies will be completed for successful projects as a means of identifying potential upscaling modalities. The pilot projects will be used to define future investment options for upscaling in terms of technologies and business modalities if they are identified as being feasible and viable.

A significant constraint for piloting business models is the inability of ADB to use TA funds in a manner that is similar to their usual sovereign lending products and as such the provision of TA funds for government expenditures is simply not possible. Further, many of the business models will build around revolving funds or alternative credit systems that cannot be piloted over a 1 or 2

year TA program. The other challenge is to move away from a supply push for technology to one of demand creation for the use of technology outputs which fundamentally changes the manner in which upscaling is organized.

iii) Output Three: Enhanced capacity for the efficient utilization of biomass.

The output will raise awareness of the biomass resources and their potential uses amongst officials and policy makers as well as decentralized agencies and supporting civil society groups to enable potential investment options to be fully understood. Gender-sensitive capacity-building will be provided to participating central and local governments, service providers, communities and women's groups. Activities will strengthen institutional and technical capacity to expand biomass investments and ensure sustainable uptake by rural communities. Videos and a blended distance learning approach will be used to reach stakeholders. Capacity building for ADB safeguards, feasibility assessment and project approval due diligence will be provided.

iv) Output Four: Development and dissemination of knowledge products.

Using output from the Global Bioenergy Partnership (GBEP), the TA will develop a common methodology for assessing the supply of biomass and prioritizing its use for enhancing energy and food security. Knowledge products will be developed to promote knowledge transfer and cooperation between more advanced GMS countries and CLV. Baseline surveys will be carried out and a monitoring system established.

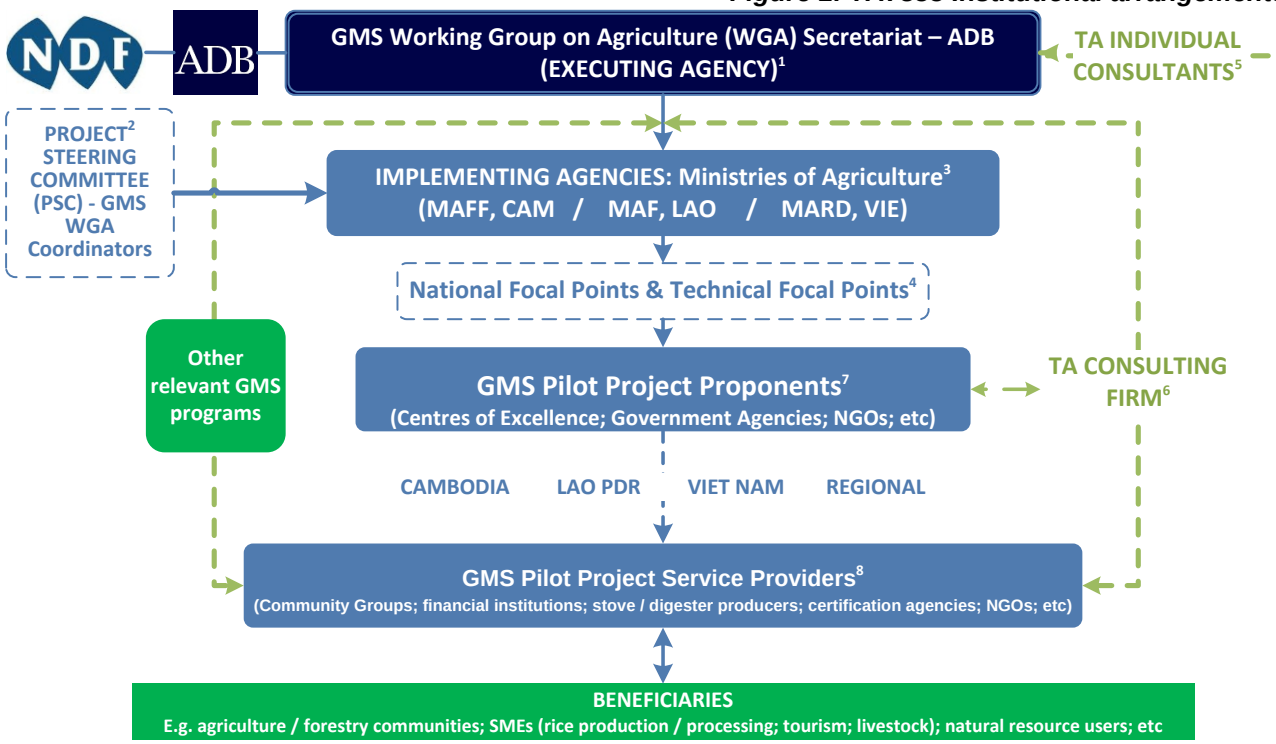
1.3. IMPLEMENTATION ARRANGEMENTS

As presented in the figure below, the *Executing Agency (EA)* for this project is the GMS Working Group on Agriculture (WGA) Secretariat, supervised by staff from the ADB's Southeast Asia Department[2]. High-level project supervision function is provided by the National Coordinators of the GMS WGA from Cambodia, Lao PDR and Viet Nam, which together form the TA7833 Project Steering Committee (PSC).

The Ministry of Agriculture, Forestry and Fisheries (MAFF), Cambodia; Ministry of Agriculture and Forestry (MAF), Lao PDR; and Ministry of Agriculture and Rural Development (MARD), Viet Nam are the official Implementing Agencies (IA).

[2] *Dr. Sununtar Setboonsarng, TA7833 Project Officer & Principal Natural Resources and Agriculture Economist, Environment, Natural Resources and Agriculture Division, Southeast Asia Department, ADB*

Figure 1: TA7833 Institutional arrangements



The GMS Environmental Operations Center (EOC), Bangkok supports administration of the TA and provides access to regional data and information. The EOC seeks to identify synergies and collaboration with other GMS-wide initiatives such as the ADB's Core Environment Program and Biodiversity Corridor Initiatives.

As of July 2012, each IA (MAFF / MAF / MARD) had identified and officially nominated *national focal point* (NFP) agencies or individuals to lead implementation of TA7833's project activities on behalf of each country according to the wider arrangements detailed in the figure above. In further discussions with each IA and based on initial lessons learned from TA7833 coordination under project implementation, additional *technical focal point (TFP)* personnel were identified and recommended to take the lead in technical coordination of country-level activities (see the table below).

Table 1: Government counterpart agencies and personnel for TA7833

ROLE	NAME	POSITION
Cambodia		
WGA Coordinator	H.E. SAN Vanty	Under-Secretary of State, Ministry of Agriculture, Forestry & Fisheries (MAFF)
WGA National Secretariat Support Unit (NSSU) National Focal Point	Mr. Prum Somany	Deputy Director, Department of International Cooperation, Ministry of Agriculture, Forestry and Fisheries (MAFF)
GMS-WGA National Secretariat Specialist	*Mr. NAT Chan Tola*	*Individual consultant contracted by ADB, to help co-ordinate all activities under CASP II's TAs including TA7833.*
National Focal Point (NFP)	Dr. Sar Chetra	Department of Animal Health & Production, MAFF
Technical Focal Points (TFP)	Biogas - Dr. Sar Chetra	Deputy Director of DAHP
	Biochar - Dr. Chan Saruth	Director of Department of Agricultural Engineering of General Directorate of Agriculture, MAFF

ROLE	NAME	POSITION
	Biofuel - Mr. Iv Phirun	Deputy Director of Department of Industry Crop of General Directorate of Agriculture, MAFF
	ICS - Mr. Khorn Saret	Deputy Director of Forestry & Community Forestry of Forestry Administration, MAFF
	Standards - Mr. Chheng Uddara	Director, Standards Development, Training & Consultancy Dep., Institute of Standards, Ministry of Industry, Mines & Energy (MIME)3
Lao PDR		
WGA Coordinator	H.E. Phouang Parisak Pravongviengkham	Vice Minister, Ministry of Agriculture and Forestry (MAF)
WGA National Secretariat Support Unit (NSSU) National Focal Point	Mr. Inthadom AKKHARATH	Director of Economic Integration Division, Department of Planning and Cooperation, MAF
GMS-WGA National Secretariat Specialist	*Sengphet (Anna) Lattanavong*	*Individual consultant contracted by ADB, to help co-ordinate all activities under CASP II's TAs including TA7833.*
National Focal Point (NFP)	Mr. Inthadom AKKHARATH	Director of Economic Integration Division, Department of Planning and Cooperation, MAF
Technical Focal Points (TFP)	Biogas - Mr. Nivat PHANAPHET	Deputy head of Livestock Management Center, Department of Livestock & Fisheries, MAF
	Biochar - Mr. Lattana PHASAYSOMBATH	Director of Technical Agriculture Systems Training Centre, Department of Agriculture Extension and Cooperatives (DAEC), MAF
	Biofuel - Mr. Khamphone MOUNLAMAI	Deputy Director of Research Management Division (NAFRI)
	ICS - Mr. Boualom XAYSANAVONG	Technical staff, Institute of Renewable Energy, Ministry of Energy & Mines (MEM)
	Standards - Ms. Nisith KHAMMOUNHEUANG	Head of Standards Division, Ministry of Science & Technology (MoST)
Viet Nam		
GMS-WGA Coordinator	Mr. Tran Kim Long	Director General, International Cooperation Department, Ministry of Agriculture and Rural Development (MARD)
WGA National Secretariat Support Unit (NSSU) National Focal Point	Mr. Nguyen Thanh Dam	Deputy Head in charge, Multilateral Cooperation Division, International Cooperation Department, Ministry of Agriculture and Rural Development (MARD)
GMS-WGA National Secretariat Specialist	*Ms. Truong Thi Van Anh*	*Individual consultant contracted by ADB, to help co-ordinate all activities under CASP II's TAs including TA7833.*
National Focal Point (NFP)	Mr. Nguyen The Hinh	Agricultural Project Management Board (APMB), MARD
Technical Focal Points (TFP)	Biogas - Ms. Nguyen Quynh Hoa	Official, Livestock Environment Division, Department of Livestock Production, MARD
	Biochar - Mr. Vu Tien Dung	Deputy Director of AST project, APMB, MARD
	Biofuel - Mr. Nguyen Tu Hai	Official, Department of Crop Production, MARD

[3] *www.isc.gov.kh*

ROLE	NAME	POSITION
	ICS - Mr. Tran Ngoc Tue	Deputy Head, Biomass Energy Division, Forestry Science Technique Application Centre, MARD
	Standards – TBD	Awaiting approval by MARD

In addition to the Consultant firm, ADB contracted a *Regional Cooperation and Trade Facilitation Specialist* and *Regional Knowledge Management Specialist* as individual consultants located in the WGA Secretariat that will work with the Consultants during TA7833 implementation, starting from June 2012. To date the integration of these roles within the TA has been limited.

The GMS EOC in Bangkok serves as the facility for accessing regional data and information of relevance. In addition, the EOC plays a key role in identifying synergies with and fostering collaboration with other GMS-wide initiatives such as the ADB's Core Environment Program and Biodiversity Corridor Initiatives. Here the role of the public private partnership expert was providing a promising platform on which TA7833 and EOC could develop joint programs. Unfortunately the EOC position is currently concluded.

1.4. PROJECT SCOPE AND DEFINITION

Biomass provides a locally available, and renewable, source of energy, particularly in rural areas in CLV, where biomass based energy remains the predominant energy source. In areas endowed with forest and/or agricultural, food processing, agro-industrial and domestic organic residues, bioenergy production is increasingly cost effective and a competitive energy alternative.

The TA terms of reference scope includes the need to improve the quality of country-level data on biomass resources and to strengthen national and institutional capacities to collect, analyze and disseminate information related to efficient utilization of biomass for energy and food security, by focusing on key technologies that contribute to both. TA scope is limited to pilot biomass utilization technologies that use small-scale technology operating at the household and the community level. Institutional and regulatory frameworks, capacity development and knowledge management will reflect the wider biomass utilization subsector needs.

The TA supports the continued strengthening of cooperation between member countries, acting as a catalyst for building development dividends not always possible at the national level. The TA will support dialogue between regional actors (top-down), as well as support the scaling-up of local community-based initiatives (bottom-up). At the regional level, the project facilitates high-level dialogue on a common approach to bioenergy development for pro-poor climate change mitigation, energy self-sufficiency and food security. The project also works with local governments and stakeholders to put in place the human and institutional capacity to increase adoption of technologies to promote the efficient use of biomass for the benefit of rural poor while enhancing food security.

The efficient utilization of biomass requires technologies that transform agricultural and forestry residues, which create environmental problems and pollute waterways when left to decay, to produce bioenergy, biochar and organic fertilizers[4]. Currently, technologies and the required skills for the conversion of agricultural and forestry residues into bioenergy carriers like biogas, wood or straw-based pellets / briquettes and biochar have been promoted by a range of stakeholders and donors with mixed results. Some of the initiatives have entered into upscaling, whilst others remain in various stages of technology readiness and are present only on a limited scale.

Bioenergy can be generated from biomass either directly or indirectly converted in either: solid, liquid or gaseous forms. Modern bioenergy relies on efficient conversion technologies which are increasingly available. The project defines bioenergy as: *"…renewable energy from plants and*

[4] ADB's 'Technical Assistance Report 44474-01, Capacity Building for the Efficient Utilization of Biomass for Bioenergy and Food Security in the Greater Mekong Subregion' (ADB, 2011)

animals. Organic matter containing bioenergy is known as biomass that can produce heat … or be modified to create cellulosic ethanol. Since almost all bioenergy can be traced back to solar energy, bioenergy has the advantage of being a renewable energy source, and should be harnessed in a sustainable manner."

ADB's bioenergy policy states that it can only support bioenergy sourced from non-food crops and 'agro-waste'. The TA scope is defined by this policy which requires: (i) the feedstock is not a food crop; (ii) any land involved in bioenergy development is unsuitable for food crops; (iii) no deforestation is associated with bioenergy development, and; (iv) the net energy balance is positive. The scope of the TA excludes liquid bioenergy for transportation (transport biofuel as bioethanol or biodiesel).

The scope of biomass feedstock for bioenergy is further limited by CLV government representatives to include only (i) rice husks, (ii) straw, (iii) bamboo, (iv) nut shells, (v) fruit waste, (vi) non-food oil bearing plants, (vii) animal manure and (viii) other agro-waste wherever these are abundant with the potential to create environmental problems[5].

The development of skills required for production of bioenergy carriers like biochar, briquetting and plant oil targets households and small community-based enterprises as the development of a viable bioenergy market is not possible without the involvement of the private sector. Therefore counterparts and key informants sought by the project include public and private sector enterprises, as well as research centers, universities and vocational training centers in the TA stakeholder group.

[5] *WGA meeting, 12 July 2012, Nanning, China*

2. SUMMARY OF PROGRESS AGAINST OUTPUTS

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – MARCH 2014	PROGRESS THIS PERIOD (APRIL – JULY 2014)	PLANNED ACTIVITIES (JULY – SEPT 2014)
OUTPUT 1: ENHANCED REGIONAL COOPERATION IN BIOENERGY DEVELOPMENT TO FOSTER AND SAFEGUARD FOOD SECURITY Mechanism tested for harmonizing at least three bioenergy standards[6] and certification systems, and a common method of assessing greenhouse gases	See below.	See below	See below
1.0 Holding of regional forums to facilitate high-level dialogue within the region on bioenergy and food-security policy issues	1st GMS Forum for was successfully accomplished in Nanning in July 2012 and reported in the IR and the '***Report on Proceedings'*** TORs prepared and agreed for policy working groups to prepare policy road maps for standards, certification and labeling for biomass related technologies and climate friendly agriculture based on the national forums completed during this progress period – see 1.1. WGs formed. 2 WG meetings held in Laos and Cambodia. See 1.1. Vietnam WG on hold pending discussions on what can be achieved in the scope of the project.	Third WGs meetings held in Laos and Cambodia. Draft organic rice standard prepared in Cambodia and Laos. As a result of the work on a standard in Laos, rice husks biochar and mixed biomass converted into biochar adopted in Laos PP; and 4 Formulations of Biochar Organic Fertilizers designed for practicing at LPP testing and demo..	National workshops to agree on a roadmap for each of the priority products / technologies
1.1 Testing of mechanisms to facilitate adoption of common set of sustainable indicators, bioenergy and trade standards, certification systems an	Harmonization Roadmap devised and agreed at 1st GMS Forum as initial mechanism for facilitating dialogue and ultimate adoption of common	Draft organic rice standard prepared in Cambodia and Laos Report on National Legislation and	Report on National Legislation and Policy Review submitted Finalise draft biodigester standard in

[6] *Including standards set by such organizations as the Global Alliance on Clean Cookstoves and the Roundtable on Sustainable Biofuels, along with quality assurance from regional quality assurance centers to be established for biogas, improved cookstoves, bio-char, etc.*

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – MARCH 2014	PROGRESS THIS PERIOD (APRIL – JULY 2014)	PLANNED ACTIVITIES (JULY – SEPT 2014)
eco-labeling	standards. See p12 of '***Report on Proceedings'*** 3 National policy forums (May 2013) - one in each country, which involved a more intensive mechanism for national-level dialogue for wider harmonization. The forums provided a venue for policymakers and public officials to discuss policies and opportunities relevant to their country, and engage with other stakeholders and experts. The forums provided a process for developing policy strategies that will be presented at the 2nd regional forum. Reports on the 3 national policy forums submitted Report on 'Introduction to Standards, Certification and Labelling Systems for Sustainability' finalized (Oct 2013) Roadmaps in Laos and Cambodia under partial development Draft organic rice standard prepared in Cambodia and shared with Laos PDR	Policy Review finalized	Cambodia Finalise draft organic/biofertiliser standard prepared in Laos National workshops to agree on a roadmap for each of the priority products / technologies Biochar Organic Fertilizers (3 formulations) ready for application on farm demo in Laos.
1.2 Holding of annual international workshop on household bioenergy and food security to foster exchange of information, particularly between more advanced Greater Mekong Subregion countries and Cambodia, the Lao PDR, and Viet Nam	Regional Conference held in Hanoi in Dec 2013. Included training on FAO-BEFS.	None	None

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – MARCH 2014	PROGRESS THIS PERIOD (APRIL – JULY 2014)	PLANNED ACTIVITIES (JULY – SEPT 2014)
OUTPUT 2: PILOT TESTED CLIMATE FRIENDLY BIOMASS INVESTMENT PROJECTS FOR WIDER IMPLEMENTATION Construction of at least 500 bio-digesters, 600 biochar kilns, 75,000 improved cookstoves; and introduction of at least 300 farmers to sustainable certification standards	See below.	See below.	See below.
2.0 Conduct biomass assessment and development of criteria for selection of pilot project areas by 2012	Regional biomass resource assessment submitted. Options for integrating this within a multi-criteria decision support tool linked to life cycle analysis have been developed and are being reviewed. It is proposed to use these as an integral part of the compendium on biomass under Output 4 Feasibility studies underway.	None	None Biomass assessment conducted at the provincial level in Laos.
2.1 Implementation of pilot projects in lower cost biogas technologies as investment options involving use bioslurry for high vale crop production	- Priority topics by country agreed - Terms of reference for feasibility studies prepared and approved by ADB and IAs. - Expression of interest for feasibility studies in Viet Nam and Cambodia received and evaluated. Laos PDR had no national EOI despite a second round of advertisement although an EOI was received from a Viet Namese contractor for Bioslurry and Biochar work but was not approved by government - WB, AUSAID and GERES/EU have completed reviews of ICS sector for the purpose of undertaking pilot upscaling	- Pilot projects being implemented and monitored	- Continue implementation and monitoring of pilot projects

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – MARCH 2014	PROGRESS THIS PERIOD (APRIL – JULY 2014)	PLANNED ACTIVITIES (JULY – SEPT 2014)
	investments – raises the need for FS and or pilot in ICS for Laos - FS in Cambodia and Viet Nam contracted - Value chain business models for potential upscaling case studies identified - 4 FS studies completed and reported – 2 FS finalized, 2 drafts have been commented and are being revised. - 2 are late in submission due to Cambodian – elections delaying field work - Procurement using a shopping and RFP modality approved by ADB - TORs approved for proposed pilots - 1 TOR awaiting Govt approval - Rapid appraisal of options undertaken in Laos - All FS Reports finalized and submitted - Business model report finalized and submitted - All pilot projects contracted and underway - Baseline data being collected		
2.2 Conduct of reviews to identify appropriate biochar, ICS and biofuel investment modalities by 2012 and implementation of pilot project by 2014	- Summary reviews of ICS, Biochar and carbon emissions, the private sector, financing modalities, and the institutional frameworks in CLV completed. - Technology commercialization status assessment based on NASA's Technology Readiness Levels (TRL) completed and included in inception report –	- Biochar testing continued - Biochar converted from mixed biomass and rice husks testing in Laos PP - Training undertaken – see 3 below - Additional KPs produced – see 4 below	- Submit biochar testing and analysis report (including risk analysis) - Submit biochar organic fertilizers testing and analyzing reports for Laos - Continue training - Continue preparation of KPs

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – MARCH 2014	PROGRESS THIS PERIOD (APRIL – JULY 2014)	PLANNED ACTIVITIES (JULY – SEPT 2014)
	highlighting the immature nature of biochar and bioslurry technologies for widespread up-scaling. - Biofuel technology has been dropped based on TA team findings and CLV Government skepticism. - ICS review drafted and distributed for review - Biochar testing undertaken - Financing modalities report finalized - Training in Cambodia for participants from CLV on how to develop knowledge and consensus on procedures and ingredients for specifying 4-5 biofertilizer products in terms of their ingredient mixes and formulations to be used in the pilot farm demonstration programs (see also 3.2) - Further dialogue on the design of rice straw kilns for turning surplus straw to biochar in the field immediately after harvesting has proposed alternate designs for inclusion in pilot program		
OUTPUT 3: ENHANCED CAPACITY FOR EFFICIENT USE OF BIOMASS Increased capacity for gender-sensitive investment among at least 500 government officials, 400 service providers, and 3,000 lead farmers (i.e., at least 55% of those to be trained will be women and at least 70% of those	See below	See below	See below

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – MARCH 2014	PROGRESS THIS PERIOD (APRIL – JULY 2014)	PLANNED ACTIVITIES (JULY – SEPT 2014)
trained will have increased capacity)			
3.0 Development of gender- sensitive training programs including distant learning activities, use of these for training local and central govt officials, farmers organization and womens groups (30% women by 2013)	- Awareness-raising activities were initiated through inception workshops (Cambodia and Lao PDR) and a stakeholder meeting in Viet Nam in February 2012. Participation at these events totaled 121 government and non-government stakeholders (32% women) from across the GMS. - In September 2012, TA7833 provided support for attendance of the TFP-Biochar from CLV (total 3 participants; 0% women) at the International Biochar Initiative (IBI) Congress in Beijing, China. - From 04-07 March 2013, TA7833 hosted the *Regional Workshop & Study Tour on Efficient Utilization of Biomass for Biochar Production & Application Biochar* in Siem Reap, Cambodia. The event was attended by 33 government and non-government CLV stakeholders (19% women). See *Report on Proceedings*. - Awareness program developed - FS will develop a capacity building proposal for each pilot that will be developed and delivered during the pilot implementation - 5 biobriefs disseminated (based on knowledge products (KPs) – see output 4	- Distance-learning proposal finalized - Video proposal finalized	- Continue dissemination of biobriefs - Start distance learning activities - Start video preparation

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – MARCH 2014	PROGRESS THIS PERIOD (APRIL – JULY 2014)	PLANNED ACTIVITIES (JULY – SEPT 2014)
3.1 Conduct training in the implementation of the investment project by 2014	None	None	None Training to be implemented in 2014 as part of the finalization of subprojects for the loan project. Training to be provided on: – Innovative financing – ADB project preparation and implementation training
3.2 Conduct of training in the use of biomass to enhance food security and soil carbon sequestration by 2014	- Biochar/ICS study-tour and training – see 3.0 above - Study-tour and training on biochar in PRC (Oct 13) - Training in Cambodia for participants from CLV on how to develop knowledge and consensus on procedures and ingredients for specifying 4-5 biofertilizer products in terms of their ingredient mixes and formulations to be used in the pilot farm demonstration programs. - Field trip organized for NDF and ADB in Cambodia - Proposal developed for specific gender-based training in Cambodia linking biochar to home garden systems	- Gender-based training in Cambodia linking biochar to home garden systems - Training undertaken under each pilot - Video programme started - Blended Learning programme prepared	- Continue specific gender-based training in Cambodia linking biochar to home garden systems - Continue training under pilots - Continue production of videos - Start blended learning programme
OUTPUT 4: DEVELOPMENT AND DISSEMINATION OF KNOWLEDGE PRODUCTS Methodology for assessing and prioritizing the use of biomass for bioenergy and food security	See below	See below	See below

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – MARCH 2014	PROGRESS THIS PERIOD (APRIL – JULY 2014)	PLANNED ACTIVITIES (JULY – SEPT 2014)
Compendium of good practices in biomass use Booklets on different models of improved cookstove, biochar kiln, and biodigesters			
4.0 Development of methodology for assessing and prioritizing the use of biomass for energy and food security by 2012 and dissemination of the methodology through regional forums, training, and capacity building by 2014	Existing resource assessments for CLV have been compiled. international assessment methods identified and a proposed assessment framework is being reviewed Draft high level assessment completed and submitted	None	None
4.1 Establishment of baseline information and monitoring and evaluation system for pilot projects by 2012	- Baseline requirements specified in the pilot feasibility study ToR - Baseline and on-going monitoring requirements specified in pilot project TORs - Baseline data being collected	- Monitoring of pilots	- Continue monitoring of implementation of pilot projects
4.2 Conduct key studies such as life cycle assessments, least cost options, and eco-labeling by 2013	Options have been outlined for using the pilot projects as case studies for lifecycle and least cost assessments and how these could be combined with the biomass assessment framework within a multi-criterion decision framework.	None	None
4.3 Publication of compendium of good practices in biomass use and booklets containing information on different models of ICS biochar kilns and bio-digesters by 2014	List of KPs to be produced developed A number of KPs produced: - Standards and Certification – submitted (See output 1) - Climate Change, Food Security & Bioenergy – submitted - Improved Cookstoves KP – partly drafted	- Soils and Biomass Amendments – draft submitted for review	Finalise and submit: - Soils and Biomass Amendments KP - Biogas / Bioslurry KP - Improved Cookstoves KP - Biochar KP Prepare: - Climate-Friendly Agricultural Value-Chains KP

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – MARCH 2014	PROGRESS THIS PERIOD (APRIL – JULY 2014)	PLANNED ACTIVITIES (JULY – SEPT 2014)
4.4 Analysis of potential climate change scenarios and their likely impact on the availability of different type of biomass and assessment of need for the development of alternative biomass sources by 2013	None	None	None

3. DETAILS OF PROJECT PROGRESS (APRIL - JUNE 2014) AND PLANNED ACTIVITIES (JULY – SEPTEMBER 2014)

A work plan for activities and inputs from July 2014 to June 2015 is provided in **APPENDIX 2**.

3.1. OUTPUT 1: MECHANISMS FOR ENHANCING REGIONAL COOPERATION AND DEVELOPMENT OF BIOENERGY AND FOOD SECURITY HARMONIZED

3.1.1. Project Progress (April - June 2014)

i) Cambodia

Further meetings of the working group took place. A draft organic rice standard has been agreed while work on development of a draft biodigester standard continues. The organic rice standard is the most advanced. Drafts were reviewed at working group meetings on 21 February 2014 in Takeo province and on 11 April in Phnom Penh. Both consultative meetings aimed at reviewing and making comments on the draft and recommended this wider consultation which will be achieved at a workshop on 30th July 2014. At this workshop the following will be discussed: How the draft standard is compatible with the legal framework; How civil society groups and farmer groups can be strengthened to produce organic rice production and receive certification; what should be the traceability process.

ii) Laos

Further meetings of the working group took place. A draft organic rice standard has been agreed while work on development of a draft biofertiliser standard continues. The organic rice standard used the Cambodia standard as an example. Similarities between these two standards will help increase cross-border trade. The draft organic rice standard will be reviewed in a public consultation workshop.

Further meetings of the working group took place. A draft organic rice standard has been agreed while work on development of biochar production and biochar organic fertilizer standards adopted with 4 formulations designed and production/processing cycle has been carried out at 2 small enterprises. To date tangible products are in place for packaging (with trade mark, ingredients/composition, purposes of use, application ratio, and using on pilot project farm demo. and testing (based on soil analysis results). The organic rice standard, using the Cambodia standard template as an example, has been developed based on Laos Organic Standards and ASEAN STANDARD for ORGANIC AGRICULTURE (final draft of April 2014). Similarities between the Loas standard and the Cambodia and ASEAN standard will help increase cross-border trade. The draft organic rice standard will be reviewed in a public hearing workshop.

iii) Vietnam

In Vietnam the first meeting is still pending agreement with the NFP on the priorities to be targeted since these have yet to be established. The first set of priorities (development of SRI standards) was deemed unachievable within the scope of the TA.

The Report on National Legislation and Policy Review has been finalized.

3.1.2. Planned Activities (July - September 2014)

i) Cambodia

- Contionue preparation of the draft biodigester standard
- Present draft organic rice and biodigester standard in Cambodia at a national workshop
- Finalise a roadmap in Cambodia for the necessary elements for advancing the implementation of the organic rice and biodigester standards including certification,

inspection and labelling systems and necessary institutional support. Provide training/awareness-raising as appropriate.

ii) Laos

- Continue work on the biochar production and biochar organic fertilizer standards, implication and application
- Present draft organic rice standard in Laos at a public consultation workshop
- Finalize a roadmap in Laos for the necessary elements for advancing the implementation of the organic rice and biochar production and biochar organic fertilizer standards, including quality control, production cycle, certification within regulatory framework in Lao PDR, inspection and labelling systems and necessary institutional support. Provide training/awareness-raising as appropriate.

iii) Vietnam

- Agree on the scope of work in Vietnam

In addition, the Report on National Legislation and Policy Review will be distributed.

3.2. OUTPUT 2: MECHANISMS FOR SCALING-UP BIOMASS INVESTMENT PROJECTS FOR BIOENERGY AND FOOD SECURITY DEMONSTRATED THROUGH PILOT PROJECTS

3.2.1. Project Progress (April - June 2014)

All pilot projects have started and a number of milestones have been met. Details of progress are shown in **APPENDIX 3**.

Regular monitoring trips have been conducted to the pilots by the National Project Implementation specialists, as well as the international team, in order to verify progress and check on the quality of outputs. So far we have been happy with both the progress and the quality.

The table below provides details of progress against payment deliverables. Almost 50% of the payment deliverables have now been achieved.

Linked to this output, additional biochar analysis has been undertaken at the University of Edinburgh as due diligence to identify potential silicosis risk from the production, handling and use of rice husk biochar. The report will be available in July.

Table 2: Pilot Project Output and Payment Tracking Sheet

Contractor	Start / End Date	Schedule of Payments	Amount (US$)	% of Contract	Output approved	Amt invoice received	Amt Invoice paid
CAMBODIA							
Mekong TT - Mr. PROM NGA [ngaprom@mekongthinktank.com]; +855 12 345 222 (PP#1: Improved Cook Stove Up-scaling)	17.2.2014 / 30.11.2014	Contract signing	8,175	15%	Y	8,175	8,175
		Approval of work plan (5 weeks after contracting) Including disbursement of $28,000 revolving fund to ICS producers and women groups for ICS sale incentives (After contract signed with ICS producers and women group)	16,350	30%	Awaiting copies of contracts	16,350	
		Approval of Mid-Term Report – by end of Month 3 Output 1: Contracts with suppliers and capacity strengthening revolving grants awarded Stove producer linkages to Womens unions established Output 2: Womens Unions letter of agreement completed Capacity strengthening and awareness raising undertaken	13,625	25%			
		Submission of Draft Final Report including training summary and pilot evaluation report	10,900	20%			
		Approval of Final Report	5,450	10%			
			54,500			**24,525**	**8,175**
CelAgrid - Mr. KHIEU BORIN [khieu_borin@celagrid.org; +85512828942; +85523223640]. (PP#2: Farm Demonstration of Biofertilizers for Upscaling Investment)	07.02.2014 / 30.12.2014	Contract signing	10,754	15%	Y	10,754	10,754
		Approval of work plan (5 weeks after contracting)	17,924	25%	Y	17,924	17,924
		(i) Approval of Mid-Term Report (ii) TULD Kilns operating (iii) Farm Demonstrations established and Training program tested and being implemented (iv) Farm demo monitoring framework agreed and operating	17,924	25%			
		Submission of Draft Final Report including product testing findings, and training evaluation report	14,339	20%			
		Approval of Final Report	10,755	15%			
			71,696			**28,678**	**28,678**
Mekong Carbon - Mr. Sar Samnang	06.02.2014 / 30.11.2104	Contract signing	10,338	15%	Y	10,338	10,338
		Approval of work plan (5 weeks after contracting)	17,230	25%	Y	17,230	17,230

[sarsamnang7@gmail.com; +85512481169]. (PP#3: Production and Testing of Biofertilizers)		Approval of Mid-Term Report – App product formulations and supporting lab tests	17,230	25%			
		Submission of Draft Final Report including product testing findings, and training evaluation report	13,784	20%			
		Approval of Final Report	10,339	15%			
			68,921			**27,568**	**27,568**
VIET NAM							
EPRO Consulting JSC (EPRO) and Centre for Social Initiatives Promotion (CSIP) Ms. Tang Thi Hong Loan Email: loan.tth@eprovn.com Tel: +84913211299 (PP#1: Improved Cook Stove Use)	15.12.2013 / 15.10.2014	Contract signing	9,977	15%	Y	9,070	9,070
		Approval of work plan	23,280	35%	Y	24,187	24,187
		Approval of Mid-Term Report (Mth 6)	19,954	30%	Y - awaiting TL approval	19,954	
		Submission of Draft Final Report	6,652	10%			
		Approval of Final Report	6,652	10%			
			66,515			**53,211**	**33,257**
Associate of Center for Agricultural and Ecological Studies ("**CARES**") and Sustainable Energy Development Consultancy Joint Stock Company ("**SEDCC**") Ms. Nguyen Thi Bich Yen Email: ntbyen@hua.edu.vn; Tel: 84-438768046 (PP#2: Bioslurry Management)	28.2.2014 / 30.10.2014	Contract signing	11,407	15%	Y	11,407	11,407
		Approval of work plan (5 weeks after contracting)	22,814	30%	Y	22,814	22,814
		Approval of Mid-Term Report – and delivery of knowledge product, production of bioslurry compost products and the design of crop demonstration program	19,011	25%			
		Submission of Draft Final Report including crop demonstration findings, and training evaluation report	11,407	15%			
		Approval of Final Report	11,407	15%			
			76,046			**34,221**	**34,221**
Centre for Technology Development and Environmental Protection (**COTDEP**) Dr. Nguyen Dinh Manh, Vice Director and Dr Nguyen Cong Vinh Vinhsfri@gmail.com (PP#3: Biochar based soil amendments)	1.3.2014 / 30.12.2014	Contract signing	12,898	15%	Y	12,898	12,898
		Approval of work plan (5 weeks after contracting)	21,496	25%	Y	21,496	
		Approval of Mid-Term Report – App product formulations and supporting lab tests	25,795	30%			
		Submission of Draft Final Report including product testing findings, and training evaluation report	17,197	20%			
		Approval of Final Report	8,599	10%			
			85,985			**34,394**	**12,898**

LAO PDR							
National Consulting Group (NCG) Mr. Videth Visounnarath General Director National Consulting Group (visounnarath@yahoo.com) (PP#1: Biomass Utilization Cluster Pilot Upscaling)	10.02.2014 / 31.03.2015	Contract signing	34,855	15%	Y	34,855	34,855
		Approval of work plan (5 weeks after contracting)	69,709	30%	Y	69,709	69,709
		Approval of Mid-Term Report – App product formulations and supporting lab tests	46,473	20%			
		Submission of Draft Final Report including product testing findings, and training evaluation report	58,091	25%			
		Approval of Final Report	23,237	10%			
			232,365			**104,564**	**104,564**
Total			**656,028**			**307,161**	**249,361**
%						**47%**	**38%**

3.2.2. Planned Activities (July - September 2014)

- Continue pilot project implementation
- Continue monitoring implementation
- Finalise and submit report in the potential silicosis risk from the production, handling and use of rice husk biochar

3.3. OUTPUT 3: STRENGTHENED CAPACITY OF PROJECT STAKEHOLDERS FOR THE EFFICIENT USE OF BIOMASS

3.3.1. Project Progress (April 2014 – June 2014)

i) Stand-alone training and study-tours

A gender based training programme has been developed in Cambodia that will align with the farm demonstration plots but will involve women only and target building their understanding of nutrients, crop needs, and the use of slurry compost and biochar. The training will target women from all villages in each commune. There should be 2 -3 lead women from each village, who are willing and have experience in planting vegetables. The lead women who are respected by other women in the village can become trainers in the future – these lead women will be the focus of the training program in the expectation that they become commune resource persons in these subject areas. A total of 20 to 30 women would participate in each training with up to 6 training locations/events held in Cambodia. If successful the extension of the training to Laos and Viet Nam will be assessed.

The first of these events has taken place as follows:

Table 3: Training on Vegetable – Nutrient Planning and Management Using Biochar in Takeo

Location:	Takeo province
Date:	23 – 26 June 2014
Participants:	59, including 53 women During day 1 (24-06-2014), the training was conducted in Trapaing Thom Choeung commune in the pagoda area. There were 29 participants from this commune participated in the training, 26 women and 3 men. On day 2 (25-06-2014), the training was conducted in O'Saray commune in the commune hall. There were 30 participants from this commune who participated in the training, 27 women and 3 men.
Details:	The morning session was for a short lesson and discussion with the participants on their experience, issues related to vegetable plantation, further needs/requirements. The afternoon session was practice on the field as a demonstration on how to mix biochar with cow and chicken manures and also urea. Three formulas of mixing were introduced (i.e. 1. biochar + cow manure + urea; 2. biochar + chicken manure; 3. biochar + cow manure) and applied each formula in each vegetable row. At the end of the session, all participants evaluated the training according to the training evaluation template. The combined results of the evaluation from both communes are as follows: - SATISFIED: 39 participants - GOOD: 20 participants - UNSATISFIED: 0 participants After the training, each participant received three types of vegetables for their own practice their fields. Further details of the training, including findings and observations, are included in the training report.


Training on Vegetable – Nutrient Planning and Management Using Biochar in Takeo

Table 4: Training on Vegetable – Nutrient Planning and Management Using Biochar in Battambang

Location:	Battambang province
Date:	2 – 5 July 2014
Participants:	60 (including 54 women) During day 1 (03-07-2014), the training was conducted in Chrab Krasaing village, Wat Kor commune at the village chief's house. The day 2 (04-07-2014), the training was conducted in O'Tanhea village, Takream commune at a villager's house. There were 30 participants from each commune (the same numbers per each commune), 27 women and 3 men participated in the training.
Details:	The morning session was for a short lesson and discussion with the participants on their experience, issues related to vegetable plantation, further needs/requirements. The afternoon session was for practice on the field as a demonstration on how to mix biochar with cow and chicken manures also urea. Three formulas of mixing were introduced (i.e. 1. biochar + cow manure + urea; 2. biochar + chicken manure; 3. biochar + cow manure) and applied each formula in each vegetable row. At the end of the session, all participants evaluated the training according to the training evaluation template. The combined results of the evaluation from both communes are as follows: - SATISFIED: 39 participants - GOOD: 21 participants - UNSATISFIED: 0 participants After the training, each participant received three types of vegetables for their own practice their fields. Further details of the training, including findings and observations, are included in the training report.


Training on Vegetable – Nutrient Planning and Management Using Biochar in Battambang

ii) Training under the pilot projects

Training has been undertaken under the pilot project contracts as follows:

Table 5: Pilot Project Training Events

Pilot Project	Training	No. of Trainees
Cambodia		
PP#1: Improved Cook Stove Up-scaling (Mekong TT)	ICS technical training for ICS enhancement	3 ICS producers (0 women)
	ICS user training on different kinds of ICS and different biomass use	44 people (all women)
PP#2: Farm Demonstration of Biofertilizers for Upscaling Investment (CelAgrid)	Orientation staff and training on farmer field school on rice and vegetable production	12 (including 4 women)
	Biochar Making and Application in Agricultural Crops	30 farmers (0 women)
PP#3: Production and Testing of Biofertilizers (Mekong Carbon)	None this period	
Vietnam		
PP#1: Improved Cook Stove Use (EPRO)	Training in marketing, communication skills and efficient biomass use for union reps, showrooms and stove producers	28 (including 15 women)
PP#2: Bioslurry Management (CARES)	2 Training courses on biogas technology and its benefits	28 people/each (8 women)
	2 Training courses O&M biogas digester	25 people/each (8 women)
PP#3: Biochar based soil amendments (COTDEP)	4 Training courses on operation of biochar kiln and application	37 farmers (5 women) 34 farmers (2 women) 47 people (5 women) 40 people (4 women)
Lao PDR		
PP#1: Biomass Utilization Cluster Pilot Upscaling		
Output#1 ICS program: scaling up ICS use in project clusters		
A#1.1 Scaling up ICS use and	Hands-on/OJT ICS production	1 local producer and 4 labors,

Education Campaign	focus on Super Stoves and Work Bank Stoves	0 women
A#1. 2 ICS use and education program	ICS demonstration and efficient use of biomass for bioenergy	18 people including 8 women
A#1.3 ICS Business planning	ICS Sale projection and Incentive –Based Systems	7 women
A#1.4 ICS Inventory	ICS Shop design and Promotion Campaign	7 women and 3 ARMI/NCG staff
A#1.5 Practical knowledge transfer	ICS practical training and marketing /after sale services	49 people, including 46 women (cost sharing workshop)
A#1.6 ICS sale recording	Monitoring and ICS users survey	7 women
A#1.7 Biomass stoves (metal)	Rice husks stoves and other biomass stoves promotion	1 local producer / inventor and 6 labors, 0 women
Output#2: Biomass for bio-fertilizers and soil amendments		
A#2.1 Biochar and Biochar Organic Fertilizers	How to make biochar and effective use for soil improvement Organic farming by using biomass for BOF	19 people, including 3 women
A#2.2 Biomass feedstock and soil conditions	Biomass feedstock and soil samples collection and analysis - Healthy Soil Requirements	35 Veggies growers (28 women) 7 rice farmers (4 women)
A#2.3 Cross-study tour	GAP practices and Organic Vegetables and Market Places	20 veggies and rice farmers, including 12 women
A2.4. BOF – Volunteer Soil Doctor	BOF/BCF and Use Theory on good soil and Biomass/BOF for healthy soil	22 people, including 12 women (of which two women trainers)
A2.5 Biochar Organic Fertilizers	How to produce BOFs and Processing and Application	31 people, including 16 women
A#2.5 MEKSAVAN Enterprise	On the job-training /learning by doing: BOF Formulation 1	22 persons, including 15 women
A#2.6 KONGKHAM Enterprise	On the job-training/learning by doing – kilns and machines tested to produce BOF Formulations 2	14 people, including 7 women
A#2.7 Compost at fields	How to make compost in the fields / practices at KM 52	18 people, including 12 women
A#2.8 Biogas composite digesters	Installation, Use, Operation and Maintenance	12 families
A#2.9 Veggies demo	28 green houses installation	28 women and family members
A#2.10 Rice fields demo	7 plots preparedness	7 women and family members
A#2.11 Application and follow up	Routine and periodical learning by practicing / hands-on advice	Demo. plots (44 locations) owners and their family members, more are women

iii) Biobriefs

None this period.

iv) Videos

A *Training Video Series* has been started. This which aims to address these two principle capacity development requirements:

- Enhancing target farmers' understanding of the true value of biomass resources, knowledge of various resource use options and confidence in applying this knowledge within biomass use);
- Enhancing target stakeholders' understanding of successful approaches for scaling-up the dissemination of improved cookstoves (ICS).

Details on the videos planned are available on request

v) Blended Learning

A blended learning programme, using distance learning and other tools, has been prepared, following extensive consultations with stakeholders in CLV. This is being reviewed for submission to ADB for approval.

3.3.2. Planned Activities (July - September 2014)

- Continue training under the pilots
- Continue the gender-based training in Cambodia linking biochar to home garden systems
- Prepare and disseminate additional biobriefs
- Continue video production
- Implement the distance learning programme

3.4. OUTPUT 4: KNOWLEDGE PRODUCTS DEVELOPED AND DISSEMINATED

3.4.1. Project Progress (April - June 2014)

Knowledge products are being prepared which will eventually feed into a compendium to be developed at the end of the project. So far the following have been produced:

- Standards and Certification – submitted (linked to output 1)
- Business models– submitted (linked to output 2)
- Biomass resource assessment
- Climate Change, Food Security & Bioenergy
- Soil and Biomass Amendments - draft submitted for review
- Biochar – draft to be submitted for review in July
- Biogas / Bioslurry - draft submitted for review
- Improved Cookstoves KP – partly drafted

3.4.2. Planned Activities (July - September 2014)

Finalise and submit the following KPs:

- Soil and Biomass Amendments
- Biochar
- Biogas / Bioslurry
- Improved Cookstoves

4. PROJECT MANAGEMENT

4.1. SUMMARY OF CONSULTANT TA TEAM

Only those experts (the core team) with inputs remaining, and who will continue to work on the project, are included below.

Table 6: International staff engaged on TA7833 (contract variation#3)

NAME	SPECIALIST POSITION	TOTAL INPUTS (MONTHS)	INPUTS UTILIZED (MONTHS)	INPUTS REMAINING (MONTHS)
INTERNATIONAL				
Lindsay SAUNDERS	Team Leader	13.52	8.03	5.49
Greg MUNFORD	Capacity Building & Distance Learning Specialist	6.7	2.58	4.12
Simon SHACKLEY	Biomass / Biochar Technology Specialist	8.03	3.78	4.25
Stephen JOSEPH	Biofertoliser Specialist	2.5	0	2.5
NATIONAL				
Mao Moni RATANA	Cambodia National Project Implementation Specialist (NPI)	19.7	11.91	7.79
Bounthavy CHALEUNPHONH	Laos National Project Implementation Specialist (NPI)	21	12	9
Li Thi THOA	Vietnam National Project Implementation Specialist (NPI)	19	14.18	4.82

4.2. PROJECT REIMBURSABLE EXPENDITURE

Table 7: Summary of TA7833-REG Project Reimbursable Expenditure (US$)

Category	Budget (VO#3)	Disbursed	Balance
1200 Equipment	32,391	27,390.93	5,000.07
1300 Seminars, Workshops & Training	443,709	176,757.12	266,951.88
1400 Studies, Surveys & Reports	925,000	505,924.74	419,075.26
TOTAL		**710,072.79**	**691,027.21**

Note the above table shows expenditure to date, not amounts invoiced to or paid by ADB.

5. IMPLEMENTATION ISSUES, LESSONS LEARNT AND RECOMMENDATIONS

The major lessons learned during the implementation of the TA are presented in the following table.

Table 8: Issues Encountered, Recommendations and Remedial Actions

ISSUES ENCOUNTERED	RECOMMENDATIONS & REMEDIAL ACTIONS
Regional cooperation Lack of operational procedures for ADB implementation and procurement in Regional Technical Assistance Projects	WGA standard operating procedures (SOPs) covering the role of the public sector in Regional TA projects and the basis for their engagement for services supported by an ADB OSFMD agreement for the procurement systems and documentation is required. SOPs have been under preparation by the ADB TA7833 Regional Cooperation Specialist, but despite repeated requests the TA team has not yet received these. Significant delays were experienced with respect to clarifying ADBs procurement options for supporting public sector participation. The inability to pay for participation and the lack of government funding for participation will slow and minimize the value of policy work and counterpart participation
Implementing Agency engagement Official IA counterpart staff nomination and resource allocation process was only completed on 08 June 2012, resulting in delays in completing the inception phase and commencing implementation. The ADB and Consultant have raised concerns about these initial delays in TA inception and implementation and their knock-on effect on the project performance – e.g. the DMF references milestones in 2011, even though the contract was not signed until December 2011.	Such constraints are to be expected due to the complex regional nature and innovative, pioneering approach of TA7833. All parties continue to work hard to recover the lost time. Enhancing opportunities for communication and collaboration are considered prime approaches for enhancing engagement.
TA Team leadership TA7833 complexity (different perspectives on immature technologies; difficult regional cooperation and varying IA priorities; specification to use innovative financing mechanisms; etc.) led to a loss of direction by the TA Team Leader and a lack of project progress.	Team leader replaced and TA team and approach streamlined. Revised work plan elaborated and distributed to project partners. Extra backstopping resources provided through a Landell Mills Director.
Intermittent inputs do not work effectively	The TA team was resourced with a large number of experts in each country but most of these were part time. Part time work may appear to be attractive but for most nationals it is in fact extremely difficult to organize and then manage time inputs to enable a genuine team participation and approach. The team has operated far more smoothly since the reduction in the number of experts and the increased duration of inputs. A key lesson for future TAs is the need for a national coordinator to be full time to ensure that programs and processes are being sustained.
Immature technologies The ToR specify up-scaling of a wide range of	Liquid biofuels such as jatropha-derived biodiesel

technologies, however many of these are not sufficiently mature for up-scaling.	will not be included in TA activities due to key concerns about the feasibility of jatropha, lack of farmer / government commitment and interest and the broad-based questions regarding the potentially negative correlation between jatropha production and food security. Biochar and bioslurry technologies are also assessed to be too immature and as such the targets for their adoption in the DMF are considered too optimistic. Pilot projects will focus on demonstrating production and management of the more immature technologies and how these products can be integrated into greener value chains. The immaturity of technology has been highlighted in biochar and bioslurry. The need for both is to shift the focus from which technology to product development and formulation linked to fertilizer supply chains.
Technology adoption indicators are not realistic For example, the DMF indicates the following: Construction of at least 500 bio-digesters, 600 biochar kilns, and 75,000 improved cookstoves	A program target to upscale 75,000 cook stoves in the three countries far exceeds both the resources available and the likely uptake rate – further it would exceed the ICS stove producer capacity 500 biodigesters is optimistic given that the ADB has existing lending products in place for biodigesters in Viet Nam and the assessment of biodigesters in Cambodia and Laos is negative 600 biochar kilns is simply unsupportable – there is no local production of kilns that has a commercial basis. Kiln technology and feed stocks are not well known and the benefits of biochar may not warrant the investment of resources. Further, the international experience with biochar is to move away from high volume soil amendments to incorporation of biochar into nutrient products where the biochar changes the characteristics of the biochar through reduced volatilization and provides potential water and nutrient release benefits lowering overall demand for nutrients.
Scale of technology	The preference for household-level technology, while appropriate for ICS, may be inappropriate for biochar and to a lesser extent bioslurry. The financial viability of such technologies will determine the extent of their adoption. However TA findings and expert opinion currently suggests that the viability of small-scale technology that has adequate safeguards may be insufficient to generate viability and attract investment and adoption. Experience in Thailand and China suggest that the biochar and bioslurry sectors emerge from a

	demand for biofertilizer from specialist agents that collect from product catchment areas. The focus should maybe move away from technology of production to how to build supply chains – a key finding from the assessment of climate friendly value chains in GMS
Donor crowding within the ICS sector	The ICS sector has a range of players many of whom offer subsidies and grants for the adoption of ICS technologies. The continued investment from the WB, EU and other ADB TAs that offer more concessional investment makes a purely commercial value chain less likely. The TA is focusing its ICS pilots on stove producer risk reduction through skill development, and demand aggregation through women's unions. ICS technology in GMS is highly visible, however the gains from the technology are relatively small and with most improved stoves failing to address the durability of stoves it is questionable if significant gains are being achieved.
Innovative financing mechanisms The purpose of the TA is to pilot implementation mechanisms. The assumption being that innovative implementation mechanisms will support up-scaling initiatives more effectively. Numerous innovative financing mechanisms were identified by the TA in 2012 and provisionally endorsed by the ADB and team leadership in relation to proposed potential pilot implementation modalities. However, rigorous internal review has revealed that: (i) the nature of the modalities is not fully understood by all project parties; (ii) the complex institutional requirements for options including revolving funds and social merchant banking are not in place; (iii) the constraint of timelines for outcome-based funding would ensure that the TA would be closed prior to outcomes being achieved, making financing impossible; (iv) the TA resources are too limited to adequately finance the required investment funds including development bonds and social merchant banks at sufficient scale; (v) the risk averse nature and novelty factor of national and regional private sector stakeholders for engaging in such innovative modalities, and; (vi) the questionable performance of some of the proposed mechanisms, across a range of scenarios (e.g. Nepal), and the degree to which critical success factors are represented within the GMS – e.g. social merchant banking is a mix of financing modalities that individually are used in other ADB loan projects, many of which require 1-2 years to establish.	The TA has modified its position on innovative financing and will limit its modalities to a focus on the use of output-based financing to offset the business and market risk of stove producers. The financing modality for biogas and biochar will continue to emerge throughout the pilot projects and their implementation. Private-sector stakeholders and financing institutions will continue to be targeted for relevant awareness-raising and capacity building activities so as to raise the profile and confidence levels of potential future investors re. TA7833-relevant themes. One option of output based funding is for new product formulation for biochar supply chain development. An important question to be asked is can an ADB TA operating for 2-3 years be expected to pilot innovative financing arrangements that require new or reformed institutions to operate them, and can a TA flow funds into such institutions in a cost effective and transparent manner
Focus on standards and certification	The TA team has adapted its approach and has focused on areas where the government has requested assistance i.e. demand-led. This has led to improved engagement, ownership and results, particularly in Laos and Cambodia. In Vietnam the exact scope of work is still to be determined due to concerns that the request for project assistance (for an SRI standard) may be outside the scope of the

	project given the complexities.
ADB procurement	A critical, if not unique, experience of the TA7833 is the ability to use ADB procurement modalities in a manner that enables implementation of a pilot program. Many contracts for services are small, target local service providers and are as such unattractive to these firms due to the cost of competing compared to the potential benefits. The TA ToR indicated the use of innovative PPP modalities. Achieving these through a TA financing modality is remarkably difficult, time consuming and uncertain. Differing interpretation of rules and processes has resulted in repeat actions and time delays.

APPENDIX 1: DESIGN & MONITORING FRAMEWORK

Design Summary	Performance Targets & Indicators with Baselines	Data Sources & Reporting Mechanisms	Assumptions and Risks
Impact Improved use of biomass in Cambodia, the Lao PDR, and Viet Nam	By 2020: 5% increase in production of clean bioenergy from biomass (2011 baseline: 0.1%) 5% increase in use of by-products of bioenergy systems (bio-slurry and biochar) (2011 baseline: 0%)	Project baseline and benchmark surveys Periodic surveys and annual reports of agriculture and energy ministries of Cambodia, the Lao PDR, and Viet Nam[7]	**Assumptions** The governments of Cambodia, the Lao PDR, and Viet Nam remain committed to regional cooperation in clean bioenergy and food security. **Risk** Private sector investment is constrained by over-regulation.
Outcome Efficiently operating pilot projects in biomass use	By 2014: At least two investment modalities for biogas and bioslurry (Cambodia and the Lao PDR); three for biochar (Cambodia, the Lao PDR, and Viet Nam); two for improved cookstoves (the Lao PDR and Viet Nam); and three for inclusive supply chain of certified biofuel and organic crops in (Cambodia, the Lao PDR, and Viet Nam)	Project completion report Annual reports from agriculture ministries of Cambodia, the Lao PDR, and Viet Nam	**Assumptions** The central and provincial governments remain committed to working with the poor in remote areas. **Risk** Pilot projects are not successfully implemented.

[7] *a Ministry of Agriculture, Forestry and Fisheries (Cambodia); Ministry of Agriculture and Forestry (Lao PDR); and Ministry of Agriculture and Rural Development (Viet Nam)*

Outputs *1. Enhanced regional cooperation in bioenergy development to foster and safeguard food security*	By 2014: Mechanism tested for harmonizing at least three bioenergy standards[8] and certification systems, and a common method of assessing greenhouse gases	Consultants' reports and document records of agriculture ministries of Cambodia, the Lao PDR, and Viet Nam Agricultural household survey reports of Cambodia, the Lao PDR, and Viet Nam	**Assumptions** The consulting team is given timely access to records, information, personnel, and relevant geographic sites.
2. Pilot-tested climate-friendly biomass investment projects for wider implementation	Construction of at least 500 bio-digesters, 600 biochar kilns, 75,000 improved cookstoves; and introduction of at least 300 farmers to sustainable certification standards	Benefit and impact monitoring reports Project review missions	Local officials, technicians, and lead farmers are available to participate in training Development partners and the private sector are keen to participate in the TA activities.
3. Enhanced capacity for efficient use of biomass	Increased capacity for gender-sensitive investment among at least 500 government officials, 400 service providers, and 3,000 lead farmers (i.e., at least 55% of those to be trained will be women and at least 70% of those trained will have increased capacity)		**Risks** Cambodia, the Lao PDR, and Viet Nam cannot agree on harmonized standards and certification systems
4. Development and dissemination of knowledge products	Methodology for assessing and prioritizing the use of biomass for bioenergy and food security Compendium of good practices in biomass use Booklets on different models of improved cookstove, biochar kiln, and biodigesters		

[8] *b Including standards set by such organizations as the Global Alliance on Clean Cookstoves and the Roundtable on Sustainable Biofuels, along with quality assurance from regional quality assurance centers to be established for biogas, improved cookstoves, bio-char, etc.*

Activities with Milestones	Input
1.0 Holding of regional forums to facilitate high-level dialogue within the region on bioenergy and food-security policy issues, by 2011 1.1 Testing of mechanisms to facilitate adoption of common sets of sustainable indicators, bioenergy and trade standards, certification systems, and eco-labeling systems, by 2012 1.2 Holding of annual international workshop on household bioenergy and food security to foster exchange of information, particularly between more advanced Greater Mekong Subregion countries and Cambodia, the Lao PDR, and Viet Nam 2.0 Conduct of biomass assessment and development of criteria for the selection of pilot project areas, by early 2012 2.1 Implementation of pilot projects in lower-cost biogas technologies as investment project with a component involving the use of bio-slurry for high-value crop production, by 2012 2.2 Conduct of reviews to identify appropriate biochar, improved cookstove, and biofuel investment modalities, and implementation of pilot project, by 2013 3.0 Development of gender-sensitive training programs, including distant learning modalities, and use of these programs in the training of central and local government officials, farmers' organizations, women's groups, and service providers (of which at least 30% are women), by 2012 3.1 Conduct of training in the implementation of the investment project, by 2013 3.2 Conduct of training in the use of biomass to enhance food security and soil carbon sequestration, by 2013 4.0 Development of methodology for assessing and prioritizing the use of biomass for energy and food security, by 2011, and dissemination of the methodology through regional forums, training, and capacity building by 2012 4.1. Establishment of baseline information and monitoring and evaluation system for pilot projects, by 2012; 4.2 Conduct of key studies, such as studies on life-cycle assessments, least-cost options, and eco-labeling, by 2013 4.3 Publication of compendium of good practices in biomass use and booklets containing information on different models of improved cookstoves, biochar kilns, and bio-digesters, by 2014 4.4 Analysis of potential climate change scenarios and their likely impact on the availability of different types of biomass, and assessment of need for the development of alternative biomass sources, by 2013	Total cost: $4.6 million equivalent

APPENDIX 2: WORK PLAN (JULY 2014 – JUNE 2015)

	Tasks and Activities	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
		2014/2015											
		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2
Output 1: Enhanced regional cooperation in bioenergy development to foster and safeguard food security													
1.1 Identify & recommend policy, standards and indicators for bioenergy technologies & climate-friendly agriculture													
i	***Facilitation of national forums on policy and standards for bioenergy technology and climate-friendly agriculture***												
	<u>Cambodia</u>												
	Preparation of draft organic rice standard (through policy working groups)												
	Preparation of draft biodigester standard (through policy working groups)												
	National roadmap elaboration												
	<u>Laos</u>												
	Preparation of draft organic rice standard (through policy working groups)												
	Preparation of draft biofertiliser standard (through policy working groups)												
	National roadmap elaboration												
	<u>Vietnam</u>												
	To be decided												
ii	***Facilitation of regional dialogue on policy and standards for climate-friendly agriculture, bioenergy & food security***												
	GMS Forum on Policy, Standards & Indicators for Bioenergy, Food Security & Climate-Friendly Agriculture												
	Development / update of a roadmap for regional dialogue												
	Training of national staff and key stakeholders												
iii	***Development of national guidelines on sustainability indicators***												
	Review national sustainability requirements for public sector investment (social/economic/environment)												
	Comparative analysis with GBEP with recommendations/guidelines for strengthening national guidelines (feeds												
1.2 Establish systems to support eco-product development & cross border trade													
i	***Establishment of national pools of capable standards quality control inspectors***												
	Collate national databases of existing and potential inspectors / bodies for priority commodities from roadmap	Dependent on roadmap and other TA project											
	Conduct training needs assessment & prepare training plan for approval	Dependent on roadmap and other TA project											
	Contract and deliver training	Dependent on roadmap and other TA project											
	Training evaluation	Dependent on roadmap and other TA project											
ii	***Study on the feasibility of a CLV traceability system***												
	Review need for traceability for priority commodities (done by WGs as part of roadmap prep)	Dependent on roadmap											
	ToR preparation/approval/contract	Dependent on roadmap											
	Implementation	Dependent on roadmap											
	Delivery of final report	Dependent on roadmap											
iii	***Study of need for labels***												
	Review need for labels (or just chain of custody) for priority commodities (from roadmaps)	Dependent on roadmap											
	If no existing label, and a need, provide training/guidelines on what a good label should include or develop label	Dependent on roadmap											
1.3 Inform & enhance biomass, bioenergy & food security policy dialogues relating to standards operationalization & quality control													
i	***Review of international standards and certification systems on bioenergy and climate-friendly agriculture***	Done											
ii	***Review of relevant national laws, regulations, policies and plans***												
	Study implementation (take from inception report and updates/extras from NPIs)	Done											
	Initial comments	Done											
	Recommendations and completion												
	Delivery of knowledge product (feeds into gaps for policy matrix/roadmap)												

	Tasks and Activities	2014/2015																																			
		Jul				Aug				Sep				Oct				Nov				Dec				Jan				Feb				Mar				Apr				May				June	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
Output 2: Pilot-Tested Climate Friendly Investments for wider Implementation																																										
2.1 Selection of Priority Technologies		Done																																								
2.2 Pilot Feasibility studies and due diligence		Done																																								
2.3 Pilot implementation and monitoring																																										
i	***Definition of terms of reference***	Done																																								
ii	***Procure/approve/contract implementation service providers (CQS/SSS)***	Done																																								
iv	***Pilot implementation (will include a training element for farmers/communities/gov)***																																									
v	***Analysis of Biochar Samples (incl H&S risks from crystalline silica)***																																									
vi	***Final Report Review and Consultation***																																									
2.4 Regional investment subproject model formulation																																										
i	***Stakeholder Meeting to review each subproject***																																									
	- lessons learned proposed outputs																																									
	- draft DMF																																									
	- subproject model specification, implementation arrangements																																									
ii	***Regional meeting to share lessons and approaches***																																									
iii	***Final preparation of core subprojects for follow-on investment programs***																																									
2.5 Development of a social baseline for the proposed investment project																																										
i	***Incorporation in Feasibility Terms of Reference***	Done																																								
ii	***Social survey completed by FS service providers***	Done																																								
iii	***Baseline completed for each pilot project***	Done																																								
iv	***Draft SPRSS report for each investment loan (TBD)***																																									

	Tasks and Activities	2014/2015
		Jul: 1 2 3 4 | Aug: 1 2 3 4 | Sep: 1 2 3 4 | Oct: 1 2 3 4 | Nov: 1 2 3 4 | Dec: 1 2 3 4 | Jan: 1 2 3 4 | Feb: 1 2 3 4 | Mar: 1 2 3 4 | Apr: 1 2 3 4 | May: 1 2 3 4 | June: 1 2
Output 3: Enhanced Capacity for Efficient Use of Biomass		
3.1 Develop and deliver awareness-raising program		
i	***Develop & deliver awareness-raising material on efficient use of biomass for bioenergy & food security***	
	Collation and consolidation of existing resources	Done
	Finalise list of target agencies and individuals	Done
	Plan awareness-raising program strategy and plan	Done
	Prepare and disseminate briefs/spotlight on….(taken from KPs - see 4.3)	
	Prepare training video plan	Done
	Contract video production companies and link implementation to pilots	
	Collate feedback, evaluation findings and experiences	
	Incorporate lessons learned & key resources into compendium (4.2)	
3.2 Develop and deliver capacity building program		
i	***Training, Workshops and Study Tours***	
	Biochar - IBI Congress, Beijing	Done
	Biochar study tour - Siem Reap	Done
	ICS - GACC Forum, Phnom Penh	Done
	Biochar study tour - PRC (and follow-on events in each country led by study-tour participants)	Done
	BEFS Approach - w. conference 2013, Viet Nam	Done
	Biofertiliser training, Cambodia	Done
	Biochar training and field practise (gender)	
	AROS/Organic agricultural value chains, Lao PDR?	July onwards - dates to be decided
	Biogas, bioslurry & CFA (SRI) - Viet Nam?	July onwards - dates to be decided
	Biomass resource assessment - Land Development Dept, Kasetsart Uni, Thailand?	July onwards - dates to be decided
	Sustainability indicators - w. conference 2014, Lao PDR?	July onwards - dates to be decided
	Innovative financing mechanisms / Private sector engagement	July onwards - dates to be decided
	ADB investment project readiness & implementation	July onwards - dates to be decided
	Incorporate lessons learned & key resources into compendium (Output 4)	
ii	***Distance learning for Provincial Officers***	
	Prepare pilot blended DL programme (based on KPs and 3.1 materials)	
	Implement blended DL programme	
	Evaluate and provide (project/GMS) certification	
	Package-up and offer to AIT, ADBI…etc. as future hosts	
3.4 Organize annual international conference on household bioenergy and food security		

	Tasks & Activities	Contract Variation Pending Jul				Aug				Sep				Oct				Nov				Dec				Jan				Feb				Mar				Apr				May				June	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
OUTPUT 4: DEVELOPMENT & DISSEMINATION OF KNOWLEDGE PRODUCTS																																											
4.1 Studies and Assessments for Development and Dissemination of Knowledge																																											
i	***Agricultural Biomass Resource Assessment in CLV***	Done																																									
ii	***Complete a least costs assessment of available biomass technologies (feeds into compendium)***																																										
iv	***Conduct a lifecycle assessment for alternative biomass resources and technologies (feeds into 4.2 and 2.4)***																																										
4.2 Compile compendium of best practice in efficient utilization of biomass																																											
	Develop a proposed scope and outline of compendium																																										
	Update scope based on comment																																										
	Identify international, regional and national best practices (examples) for inclusion																																										
	Review examples and select for inclusion write up																																										
	Distribute for reviews and include comments																																										
	Peer review draft																																										
	External peer review																																										
	Finalise and distribute																																										
4.3 Develop & disseminate knowledge products to support efficient biomass utilization technology *(Knowledge products feed into awareness raising (biobriefs/videos/distance learning))*																																											
	Devise knowledge product development and dissemination plan	Done																																									
	#1 Climate Change, Food Security & Bioenergy - Greg	Done																																									
	#2 Soils and Biomass Amendments - Simon Shackley	Under review																																									
	#3 Biogas / Bioslurry - Jason Yapp/Thoa																																										
	#4 Biochar (and biofertiliser) - Simon Shackley																																										
	#5 CFA value chains - Lindsay	Timing to be decided																																									
	#6 ICS - Ewan/Sam	Timing to be decided																																									
	#7 Certification / standards	Done																																									
	#8 Carbon Assessment & Finance - Sam	Timing to be decided																																									
	#9 Innovative Financing Mechanisms for Upscaling - Lindsay																																										
	#10 Sustainability Indicators - TBD - see 1.1 (iii)																																										

Input Schedule	2014/2015																																								
	Jul				Aug				Sep				Oct				Nov				Dec				Jan				Feb				Mar				Apr				May				June	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
Nationals																																										
Bounthavy (NPI Laos)																																										
Ratana (NPI Cambodia)																																										
Le Thoa (NPI Vietnam)																																										
Internationals																																										
Lindsay Saunders (Team Leader)																																										
Simon Shackley (Biochar Specialist)					Biochar Biobrief												Least Cost & Lifecycle Analysis												Compendium								Conf						
Greg Munford (Capacity Building Specialist)																																					Conf						
Stephen Joseph (Biofertiliser Specialist)					Timing of additional inputs to be decided																																						

KEY:

Full-time/INtensive inputs

Intermittent inputs

APPENDIX 3: PILOT PROJECT IMPLEMENTATION PROGRESS

1. CAMBODIA

1.1 PP#1: Improved Cook Stove Up-scaling (Mekong Think Tank Co. Ltd (MTT))

i) Introduction

The pilot will seek to increase ICS uptake and supply in two districts: S'Ang district in Kandal province and Sandan district in Kompong Thom province. The pilot will support existing ICS stove producers located close to the pilot sites to increase production through the use of a revolving grant. The pilot will work with 4 existing ICS producers to produce the stoves for the pilot project. Stoves to be distributed in each pilot location will be supplied by 2 ICS producers that are located near the pilot places and each will receive a revolving grant to expand their production of up to $5,000 per ICS producer. The grant will be revolved back to the ICS producer association to ensure production capacity is improved and it is available only if stove Quality Control systems of the stove producers association are applied – this would again be an output based payment but advancement is 50% up front and 50% based on increased production level.

The Pilot will also promote ICS use through increased awareness and education through demonstration of new ICS by the local women's union or other women's group. The women's group will form direct agreement with the stove producers and are expected to build demand for ICS and also provide additional competition within the supply chain to ensure lower prices to consumers. The unions will receive a grant to purchase their initial sales stock on which they will also receive commission. The combination of grant and commission will enable subsequent orders and continued activities.

The women saving group or female group of forest community members are both potential partners and will require training and education on ICS – with demonstration. It is proposed that the group receive commission as an output based incentive for each ICS sale amounting 7% – 10 % of retail price – effectively lowering local retail prices and adding competitive forces with existing resellers. To help for their investment, the group will receive advance cash flow of $5,000 per each to order ICS stoves. Through purchase direct of producers the groups will also make their commission on each stove.

Another distribution channel is the existing retailers in each pilot location. They can be found in village market or commune or district downtown. They use their own capital to order stoves and sell them for their income. They will receive benefit from the pilot project on support on the awareness and education in the market place on ICS advantages. The Womens group could choose to work through local retailers.

Two distribution models in each location will be arranged using (i) women's group and (ii) existing retailers. The performance from these two groups will be compared as part of the pilot monitoring.

Outputs will be as follows:

- Output 1: Reliable ICS supply Chain Established – Output Indicators: ICS producer contracts and ICS availability in pilot districts
- Output 2: Increased Uptake of ICS in two districts – Output indicators: Two women's Groups contracted to ICS suppliers, a minimum of 500 ICS stoves purchased in each district with at least 70% of all capacity building and awareness raising participants are female
- Output 3: Pilot Assessment and Reporting - Output Indicator – Monthly reports, Project completion report

ii) Progress

See table below. Further information is available from the monthly pilot progress report.

Table 9: Cambodia PP#1 Progress

Output/Activity	Completed
Output 1: Reliable ICS supply Chain Established	
1. Identified existing ICS producers nearest to the pilot location	
Activity 1.1: Identify existing ICS producers nearest to the pilot location	Yes, completed in March with 3 ICS producers were selected
Activity 1.2: Select the existing producers for production capacity that meet demand in pilot project	Yes, completed in April with 6 ICS producers
Activity 1.3: Sign LOA for specific location in pilot location	Yes, completed
2: Enhanced quality of ICS with agreed price point	
Activity 2.1: Review the new specification desired by ICS users and provide ICS technical training for ICS enhancement	Yes, completed with GERES in April
Activity 2.2: Review on profitable production and producer price	Yes, completed with GERES and producers together in April
Activity 2.3: Sign LOA and Desired ICS production and revolving fund disbursement (50% by Jun and 50% by Sep)	Planned in late June- July
Output 2: Increased Uptake of ICS	
A: ICS Awareness in the Community	
Activity 2.1 Identify key ICS promoter groups in each pilot location	Yes, completed as 4 targeted communes
Activity 2.2 Design promotion message and materials	Planned in late June-July
Activity 2.3 Distribute the message and materials	Planned in late June-July
Activity 2.4 Set up demo ICS for different kinds of ICS and different biomass use and conduct ICS user training	Planned in late June- July

1.2 PP#2: Farm Demonstration of Biofertilizers for Upscaling Investment (CelAgrid)

i) Introduction

The pilot seeks to demonstrate the range of products formulated under the pilot: Biochar/bioslurry/other biomass/ and inorganic materials (clays, etc.) - value added product development and testing. The products formulated and produced will be demonstrated in farmer demonstration plots that have agronomic support in their design monitoring and measurement. Further the pilot will work closely with the Department of Agricultural Engineering (DAE) of General Directorate of Agriculture (GDA) of MAFF to introduce, train and monitor the production of biochar using mobile low cost TLUD kilns. The biochar produced will then be mixed with manure or NPK for application to vegetables or rice within the Farm Demo plots.

The outputs will be:

- A detailed design of farm demonstration programs within 1 month of contracting that completes all pilot activities within 10 months and is approved by TA 7833 for Inception milestone.
- Identify farmer groups and communes in Takeo for trialling of 10 pyrolysis drum kilns for biochar production from a range of available agri-residues, with supporting composting infrastructure for the incorporation of bioslurry with 10 farm demo plots established
- Ingredient supply chains confirmed within 10 weeks of contracting with supporting germination tests
- Farm Demonstration plots identified within 12 weeks of contracting
- Farm demonstration plot used for (i) collecting data on the impact of the differing products and existing farm practice (control plots) – including physical input – output levels, financial data for inputs and outputs, gender disaggregated labor inputs, and soil nutrient level changes
- Monitoring and Evaluation systems established and included in the work plan

ii) Progress

See table below. Further information is available from the monthly pilot progress report.

Table 10: Cambodia PP#2 Progress

Activity	Progress
Project development	Done
Staff recruitment and contract	Done
Products development	Done
Preparation of demo inputs	Done
Project staff orientation and training	Done
Selection of demo sites, and initial soil sampling	Done
Farmer groups formation and used TLUD kilns for producing biochar	On-going
Conduct training for operation and maintenance of TLUD kilns to farmer group members	On-going
Conduct 35 farmer field school trainings	
Conduct vegetable demos	
Organize 3 Field Days on vegetable demos at the end of the FFS training	
Farmer field school training on rice (early monsoon crop) to demonstration farmer and interested farmer.	
Conduct rice demos	
Organize at least 2 Field Days on rice at the end of the FFS trainings	
Monitoring demo progress	
Final soil and plant sampling, and sample preparation	
Soil and plant analysis	
Data entry, processing, analysis, and presentation	
Complete 1st draft report	

1.3 PP#3: Production and Testing of Biofertilizers (Mekong Carbon Co., Ltd (MECAR))

i) Introduction

The pilot seeks to supply finance as a product development grant to create added value to compost based products through the inclusion of rice husk biochar, manures, bioslurry and possible NPK to reduce environmental pollution and increase the value of compost derived fertilizer products.

The scope of the project is limited to biochar and bioslurry related fertilizer and soil amendment products and their testing in Battambang and Kampong Chhnang provinces. Compost and bio-slurry products will be sourced from COMPED and NBP, respectively, and rice husk char from rice mill stockpiles. The fertilizer products will be demonstrated in vegetable and rice production field trials and will include an agreed set of product formulations based on crop nutrient demands and international experience in biochar, bioslurry and product pelletising.

The outputs will be:

- A detailed design of product formulations and field tests within 1 month of contracting that completes all pilot activities within 10 months.
- Compost supply chains agreed within 6 weeks of contracting
- Establish an agreement for accessing pelleting machine at Green Mountain Ltd formed with NPI (TA7833) within 4 weeks of contracting
- Formulations produced and germination tests completed within 12 weeks of contracting
- Conduct trial production runs for pelletized and non-pelletized products and evaluate product quality – adjust formulation as required to meet nutrient targets
- Establish, manage and monitor a Product Field Trial site (using 4 replicates of 4 or more treatments in a block design) identified within 12 weeks of contracting

- Monitoring and Evaluation systems established and included in the work plan

ii) Progress

See table below. Further information is available from the monthly pilot progress report.

Table 11: Cambodia PP#3 Progress

Activity	Progress
Project development	Done
Submit Draft work plan	Done
Approved work plan	Done
Products development - Associate with MGM for biofertilizer production - Associate with COMPED for biofertilizer production	Done
Preparation of trial inputs	On-going
Selection of trial sites, and initial soil sampling	On-going
Conduct vegetable trials	
Conduct rice trials	
Monitoring trial progress	
Conduct field monitoring	
Submit draft mid-term report	
Approved Mid-Term report	
Final soil and plant sampling, and sample preparation	
Soil and plant analysis	
Data entry, processing, analysis, and presentation	
Overall management and coordination	
Complete 1st draft report	
Submit draft final report	
Comments on draft report	
Submit final report	

2. VIETNAM

2.1 PP#1: Improved Cook Stove Use (EPRO)

i) Introduction

The pilot seeks to test a business model for increasing the use of ICS in two districts through supporting marketing and promotion of selected stoves and by developing a local sales network using existing farmer and women's unions as commissioned sales agents effectively extending the ICS supply chain into two districts. For the business model to replicate an upscaling program the pilot would be managed and implemented through a single service provider that is to be contracted by TA7833.

The pilot investment will achieve the following outcome: A business model tested for future upscaling of ICS using market based incentives. The outcome will be supported by the following pilot outputs:

- Output 1: Market based stove supply chain from producers to consumers established using local farmer and women unions
- Output 2: Stove producers operating a sustainable business
- Output 3: Number of households using ICS increased by 15% per commune by Pilot completion

ii) Progress

A summary of progress, as outlined in the pilot mid-term report, is as follows:

Table 12: Overview of Vietnam PP#1 progress

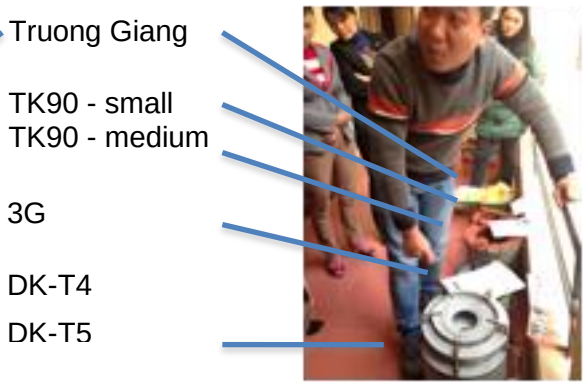
	No	ACTIVITIES	Status by 30 June 2014
1	ESTABLISHMENT OF STOVE SUPPLY CHAIN FRAMEWORK		
	1	Kick-off introductory meetings in Ung Hoa, Hanoi	Completed
	2	Kick-of Introductory meetings in Ha Hoa, Phu Tho	Completed
	3	Development of three party commercial contracts between producers, union and TA 8377	Completed
2	STOVE PRODUCER SUPPORTS		
	1	Laboratory test	Completed
	2	Show-room set up in Ung Hoa	Completed
	3	Show-room set up in Ha Hoa	Completed
	4	Development of simple ICS user manual	Completed
	5	Peer-to-peer support in business and marketing plan	On-going
	6	Per-to-peer support in quality control	Completed
3	COMMUNICATION AWARENESS & DEMAND AGREGATION		
	1	Monthly awareness/demonstration event	On-going
	2	Training in marketing, communication skills and efficient biomass use	Completed
	3	Developing communication strategy for 10 communes	Completed
	4	Follow-up with implementation of marketing and awareness strategy	On-going
	5	Development of voucher and warrantee scheme for unions	Completed
	6	Providing support in voucher and warrantee scheme of unions	On-going
4	PILOT MANAGEMENT		
	1	Quarterly monitoring and reporting	On-going
	2	Efficiency comparison between traditional and ICS	On-going
	3	Logistic (administrative support, translation)	On-going

Table 13: Vietnam PP#1 Achievements vs. performance indicator

	Indicator	Performance to date	%	Note
1	The stove supply chain from producers to unions is set up and tested on market based mechanism			
1.1	6 commercial contracts for pilot period are signed between producers, district unions and TA7833 within first quarter of pilot	5/6 contracts signed	100%	• Ung Hoa: 2 (Truong Giang, DK-T5) • Ha Hoa: 3 (Truong Giang, TK90, DK-T5) • Contracts for TK90 small and medium are merged in one contract (same producer) • Some models were not selected after seeing at kick-off meeting
1.2	There is continuation of at least one commercial contract between producer and union at the end of pilot phase	N/A	N/A	• Can only be collected at the end of pilot
2	The stove producers are supported in sustainable business			
2.1	All stove producers are able to identify and provide warrantee	3/3	100%	• All 3 producers provided warrantee

	Indicator	Performance to date	%	Note
	scheme to users within first quarter of pilot			scheme in 3 party contracts • All 3 producers approved warrantee schemes in user manual, which are distributed by unions and as a part of warrantee system • Late completion of warrantee system (May 2014 instead of March as expected)
2.2.	All stove producers have developed ICS user manual within first quarter of pilot	3/3	67%	• Simple user manuals are finalised in ready-to-print form
2.3.	At lease one producer is successful with marketing and business plan	N/A	N/A	• Targets and actions for producers of Truong Giang and TK-90 are identified in business and marketing plan • Targets of Truong Giang may be too ambitious, but as the wish of producer
3	Increasing demand on efficient biomass use			
3.1	Number of approved ICS in pilot districts increased by 15%, ie. 300 approved ICS in pilot district	900	300%	• Positive sales every month in both pilot district • No more sales of DK-T5 • Sales of Truong Giang in Ha Hoa is reducing, in which no sales in June was observed. TK-90 was more preferred due to wood savings advantages after using for a while
3.2	Number of households with traditional cook stoves reduced by the end of pilot	N/A	N/A	• Can only be collected at the end of pilot

ICS introduction to Ung Hoa Farmer Union



ICS introduction to Ha Hoa Woman Union

Showrooms in Ha Hoa

Showrooms in Ung Hoa

Practice by participant in Ung Hoa at demonstration event

Discussion on ICSs and sufficient biomass use in Ha Hoa

The progress to date is in line with plan. The implementation of this assignment successfully set up the supply chain between unions (as sales agency) and producers under market mechanism.

To date, the market in pilot districts rejected DK-T5 model. It was explained that the quality was not worth the payment. Sales of TK-90 in Ha Hoa and of Truong Giang in Ung Hoa seems to be stable. However, sales of Truong Giang in Ha Hoa were significantly reduced. It was recognized by the users that after sometime of using TK-90, the wood consumption of TK-90 is much less than that of Truong Giang. Wood savings advantage seems to be the only decision factor of this market selection. This indicates some awareness on efficient use of biomass.

Business and marketing plans of both Truong Giang and TK-90 producers were completed and under implementation. Without significant effort of Truong Giang producers, the target of 300 cook stoves on sales in pilot area in the period of June-August will be hardly achieved. The target and plan of TK-90 producer is more reasonable and achievable. Consultants need to work more with Truong Giang producers.

Voucher and warrantee scheme system as well as communication strategy were completed and being implementing by unions. No issue came up thus far.

Consultants found the woman union more active and punctual than the farmer union in meeting deadlines of sales events and reporting. Woman union in Ha Hoa empowered the implementation to their commune while Farmer union centralizes activities at the district level.

2.2 PP#2: Bioslurry Management (CARES)

i) Introduction

The pilot will demonstrate means of using bioslurry that are environmentally sound. The bio-slurry, when treated as an additional nutrient input to compost and properly managed, can be transformed into a valuable fertilizer – either liquid or solid - instead of a potentially hazardous pollutant. The large volume of liquid bioslurry and solid bioslurry (scum) that is currently discharged to the environment will be the feedstock of the Pilot. This practice not only saves organic resources but contributes to the environmental improvement through the improvement of soil, ground water and air.

The expense of the household for inorganic fertilizer and organic compost accounts for 60 percent of investment for crop establishment. The pilot aims to reduce this expense to 40 percent by replacing inorganic fertilizer with bioslurry integrated with composted biomass.

For the pilot it is expected that awareness improvement for environment, community is strengthened. Through capacity building and training stakeholders will be provided information and knowledge on biogas technology, its benefits and impacts as well as knowledge on composting and properly fertilizer utilization.

The implementation of pilot fits the current Vietnamese Good Agricultural Practices (VietGAP) program. According to VietGAP, soil should be managed, e.g. soil is analyzed to control and evaluate the quality and potential risks. Fertilizers and organic fertilizers that are used for crops should be documented in order to avoid contamination on agricultural products. Organic fertilizer has to be treated and managed to ensure the quality of the fertilizer.

The pilot impact will be reduced agricultural pollution and investment while increased revenue of households, knowledge on cultivation, biogas technology and composting process; improved the community relation; be a good example for duplication.

The outcome of the pilot will be an assessment of the model for the use of bioslurry for up-scaling.

The outputs will be:

- Knowledge products on biogas technology, bioslurry and composting bioslurry fertilizer
- Production and use of bioslurry-enhanced compost;
- Demonstration of compost-bioslurry on vegetable crops;
- Capacity building and training for enhanced knowledge and technology development and transfer systems

ii) Progress

See table below.

Table 14: Vietnam PP#2 Progress

Activity	Progress
Kick off activities	
Kick off introductory with Tam Xa commune	Done
Set up questionaire to collect information from biogas households	Done
Development working method with commune	Done
Select 25 biogas households	Done
Organize meeting with selected households and representative of Tam Xa commune	Done
Development contract with selected households and union	Done
Component 1: knowledge products on biogas technology, bioslurry and composting bioslurry fertilizer	
Collect relevant documents	Done
Overview relevant documents	Done
Prepare summary report	Done
Component 2: Support for a compost/bioslurry production enterprise	
Construction 25 bioslurry pits	Done
Construction 80m3 for storing bioslurry at field	Done
Construction of a 10 m2 of house for composting	Done
Monitoring during construction bioslurry pits and composting house	On-going
Support farmer set up business plan	On-going
Take bioslurry sample (before and after correctly operation)	On-going
Support farmer union doing composting	On-going
Promote composting organic fertilizer in public media	On-going
Component 3: Demonstrate the use of bioslurry compost for crops	
Develop guideline for using bioslurry for crops	Done
Sep up plot trial's design for vegetable and maize	On-going
Monitoring selected household using bioslurry	On-going
Component 4: Capacity building and training for enhanced knowledge and technology development and transfer systems	
Develop training documents	Done
Organization training courses on biogas technology and its benefit	Done
Organization training courses on O&M biogas plants	Done
Organization training courses on bioslurry utilization	On-going
Organization training courses on marketing and sale for farmer union	On-going
Project management	
Prepare work plan	Done
Monthly monitoring	On-going
Prepare mid-term report	On-going
Prepare final report	

2.3 PP#3: Demonstration of Biofertiliser and Biochar Soil Amendments (COTDEP)

i) Introduction

The pilot seeks to test if biochar biofertilizer product development is able to create viable fertilizer products to substitute (in full or at least in part) for inorganic fertilizer and to support a future supply chain that is able to reduce environmental pollution and increase the value of biofertilizer products,

including NPK – biochar fertilizer pellets where c. 25% of the NPK is replaced, with the aim of yields remaining the same and even increasing.

The scope of the project is limited to Hanoi and An Giang Provinces.

The pilot will:

- Implement at 2 communes, one in each province – a static biochar production kiln from rice straw to assess viability
- In Hanoi implement a biochar, biofertiliser and pelleting demonstration program
- In each Province implement a farmer group TLUD biochar production capability

Outputs include:

- A final work plan agreed within 1 month of contracting that completes all pilot activities within 10 months.
- Modify existing TLUD kilns
- Fabricate a replicate rice straw kiln
- Produce sufficient biochar to demonstrate production technology and to produce sufficient biochar for the demonstrations and trial areas plus for training and capacity building purposes
- Incorporate biochar filters into 10 biogas plants in Dong An District Hanoi and conduct NPK testing to ascertain the effectiveness of the filters to extract NPK from bioslurry
- Provide agronomic input to defining biochar related products for inclusion in the demonstrations
- Ingredient supply chains confirmed within 10 weeks of contracting
- Formulations defined, produced and tested within 12 weeks of contracting
- Establish, manage and monitor a Product Field Trial site (using 2 replicates of selected treatments in a block design) identified within 10 weeks of contracting
- Farm Demonstration plots identified within 12 weeks of contracting
- Monitoring and Evaluation systems established and included in the work plan

ii) Progress

See table below.

Table 15: Vietnam PP#3 Progress

Activity	Progress
Kick off introductory meetings in Hanoi and An Giang	Done
Conduct survey and select site in Hanoi and An Giang	Done
Activity 1: Modify TLUD and brick kilns to product biochar	
Design and TLUD drums in Hanoi	Done
Testing the TLUD and modify	Done
Design and construct fixed biochar kiln in An Giang	Done
Testing fixed biochar kiln in An Giang	Done
Activity 2: Pilot production of fertilized, non - fertilized product, biochar and compost	
Purchase pellet machine	Done
Prepare material for product biochar, compost	Done
Product biochar for pellet	Done
Prepare material for product NPK- biochar pelleted fertilizer	Done
Analyzing biochar samples	Done
Product NPK-biochar pelleted fertilizer	Done
Activity 3: Pilot production of biogas filter and quality monitoring	

Selected households	Done
Design filter systems to treat the waste water of biogas in the laboratory	Done
Design 2-3 filter systems to treat the waste water from biogas on the field	On-going
Setting up, operating and monitoring the filters	On-going
Sampling and analyzing waste water before and after filteration	On-going
Activity 4: Field experiments for evaluation of biochar and formulated fertilizers	
Design experiment on rice and vegetable	On-going
Analyzing rice and vegetable sample before experiment	On-going
Setting up the field trail, crop management and observation in the field on rice and vegetable	On-going
Activity 5: Farm demonstration	
Design experiment on rice and vegetable	On-going
Analyzing rice and vegetable sample before experiment	On-going
Setting up the field trail, crop management and observation in the field on rice and vegetable	On-going
Activity 6: Training, workshop and public awareness	
Training on biochar production and kilns use	On-going
Workshop on biochar application on rice and vegetable	On-going
Workshop on application of biochar as water filter for biogas digester	On-going
Exhibition for biochar and safe vegetable	On-going
Video clip for local television broadcasting	On-going
Subsidiary for Television broadcasting	On-going
Preparing report	
Mid term report	On-going
Final report	

Testing TLUD stoves

3. LAOS PDR

3.1 PP#1: Cluster Biomass Technology and Biofertilisers (NCG)

i) Introduction

The pilot will support 2 outputs including: (i) to increase the number of households using ICS stoves within the two clusters of 6 villages by offering an output based incentive to the Lao Women's Union, and (ii) the production of enhanced soil fertilizers and soil amendments from rice husk, bioslurry and compost formulations and their demonstration through farm demonstrations in two development clusters. The location of the villages and clusters are as follows: Nalao – Lak 52 Clusters: Ban Nalao, Ban PhonNgarm Tai and Ban Lak 52, and Saka – Napho Clusters: Ban Saka Tai, Ban Noi and Ban Nabone, Phone Hong District, Vientiane Province.

The ICS program will be offered in both clusters within the 3 villages within each cluster and within the cluster development centers. The purpose of the pilot is to test the use of a supply chain output based incentive program to stimulate the adoption of improved ICS. In doing so, the pilot does not seek to create technology; it seeks to increase the use of best available technologies currently available.

The pilot will conduct testing of selected ICS stoves, train and resource village women's unions to conduct awareness, demonstration and education programs that lead to sale of approved ICS products, and oversee feedback and evaluation by the user. The village level Women's Unions will be linked to stove producers who will be eligible for a production support grant.

Outputs will include:

- 4 ICS stoves tested within 6 weeks of contracting
- Women union engagement confirmed within 5 weeks of contracting
- Output incentive payment agreed with each women's union within 5 weeks of contracting
- Awareness and Education Program developed within 8 weeks of contracting
- Undertake Women's Union training and evaluate effectiveness within 10 weeks of contracting
- Complete a stove producer business planning program for the producers with supply agreements to the Women's Unions within 12 weeks
- Define the Inventory stocking requirements for each Union
- Village demonstration programs starting from week 12 after contracting
- Monitoring and reporting confirming that 40% of households have adopted ICS within 10 months.
- A final work plan agreed within 1 month of contracting
- Enterprise participation agreement completed within 6 weeks of contracting:
- Biochar kilns procured within 5 weeks of contracting and rice husk produced within 8 weeks of contracting
- Compost and dung supply chains formed within 6 weeks of contracting
- New composite digester procured, installed and user training, slurry tested for nutrient content within 8 week of contracting
- Pelletisers procured and training provided within 10 weeks of contracting
- Formulations defined, produced and tested within 12 weeks of contracting
- Demonstration sites identified within 10 weeks of contracting
- Farm Demonstration plots identified within 12 weeks of contracting
- Monitoring and Evaluation systems established and included in the work plan

ii) Progress

See table below. We are awaiting a formal progress report from the service provider so that this table can be updated.

Table 16: Laos PP#1 Progress

Activity	Progress
ICS Program	
1 ICS awareness program	Done

1.1 Prepare promotion material (leaflets, label, plate for ICS shop, Video making)	Done
1.2 Meet with LWU in cluster brain storming on promotion materials	Done
1.3 Submit draft materials to NPI for review	Done
1.4 Produce materials for each LWU	Done
2 Training of LWU business planning	Done
2.1 ICS awareness and use training	Done
2.2 ICS product promotion training	Done
2.3 Agreement of ICS supply agreement	Done
3 Complete a stove producer business planning program for the producers with supply agreement to LWUs	Done
3.1 Conduct a business planning	Done
3.2 Identify existing production capacity and sales and marketing strategies	Done
3.3 Identify the need for stove producer capacity development and prepare a proposed plan for this strengthening	Done
3.4 Submit to TA7833 for review and comment	Done
3.5 stove producer agreement between the service provider, TA7833 and the stove producer	Done
4 Define the Inventory stocking requirements for each Union	
Develop a work plan with each union	
Define inventory stocking needs	
women union – producer agreement	
Stove purchase for LWU	Done
5 Village demonstration programs	
Thermometer purchase	
Village meeting with the use and alternative stove test to demonstrate to audience	
6 Monitoring and reporting	
Monthly group discussion	On-going
Monthly report	On-going
Conduct a quarterly check ICS use	
Quarterly evaluation report	
BIO FERTILIZER PROGRAM	
1 Agreement with enterprises including their roles and responsibility	
1.1 Prepare enterprise roles and responsibility	
1.2 Meet with enterprises and agreement sign off	
2 Bio char procurement	Done
2.1 Identify bio char kiln owners and agreement	Done
2.2 Biochar distribution	Done
2.3 Biochar use training	Done
2.4 Biochar production	Done
2.5 biochar transportation	Done
3 Identify compost suppliers and agreement	
3.1 Meet with Participants and interested persons in 6 villages	
3.2 Materials purchase for compost production	
3.3 Hut for compost production	
3.4 Construct compost lots	
3.5 Training of compost making	

3.6 Raw materials lab test for COF	
3.7 Different formula Compost production	
3.8 Compost quality lab test	
4 Biomass digester(BD) procurement	
4.1 Identify Bio slurry suppliers	
4.2 BD distribution and installation	
4.3 Training of BD use and maintenance	
4.4 Bio slurry production	
4.5 Bio slurry quality lab test	
5 Materials and equipment procurement for Bio fertilizer	Done
6 Pellet kiln procurement	Done
6.1 Pellet kiln installation	
6.2 Training of Pellet kiln use and maintenance	
6.3 Pellet bio fertilizer production	
6.4 Pellet bio fertilizer lab test	
6.5 Adjust the production components to standard quality	
6.6 Prepare operation guideline	
6.7 Production protocol	
7 Conduct to product Demonstration plot	
7.1 Soil lab test	
7.2 Participants Identification	
7.3 Procurement materials for demo plot (demo plot hut, water system, sign plates.)	
7.4 Provide Materials	
7.5 Water system and Hut installation	
7.6 Technical training for staff and farmers	
7.7 Land preparation	
7.8 Chinese cabbage germination	
7.9 Chinese cabbage transplantation	
7.10 Following up with recording data	
7.11 harvest and evaluate	
8 Conduct to farm Demonstration plot	
8.1 Soil lab test	
8.2 Farmer technical training	
8.3 Agreement with farmers including their roles and responsibility	
8.4 Material provision (plastic sheet, seeds, bio-fertilizer, botanic pesticide)	
8.5 Demo plot hut installation	
8.6 Land preparation	
8.7 Seeds germination	
8.8 Sampling transplantation	
8.9 Following up and on job training	
9 Monitoring and Evaluation	On-going
9.1 Monthly report	On-going
Key Report Deliverables	
Inception report	Done

Interim Report	
Draft final report	
Final Report	