



Asian Development Bank



Greater Mekong Subregion

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

TA7833-REG



PROGRESS REPORT (OCT 13 - MARCH 14)

Landell Mills
DEVELOPMENT CONSULTANTS

In association with



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
Eol	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 42 months (July 2011 to December 2014). 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 March 2014. The last six months have been the most productive of the programme to date which is a tribute to the efforts of the team leader and other supporting team, as well as the excellent co-operation from ADB. While much work still needs to be done, the project is now going in the right direction with most of the logframe outputs likely to be achieved or almost achieved if a no cost time extension is granted (currently under discussion with ADB).

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 and mechanisms for harmonizing regulations and ensuring their compatibility with international trade obligations. Rather than take an unflexible approach to delivering the work, we will adapt work plans based on country's priorities which will involve supporting the development of improved standards and certification (e.g. on biodigesters, organic fertilisers and organic rice) within each country, which could then lead to harmonisation, which will be facilitated through a regional forum. Identification of priorities will be achieved by setting up policy working groups (or consultative groups) in each country, supporting these through subject-specialist resource persons, and sharing knowledge and ideas between countries where possible. The outputs from these working groups will include new draft standards as well as roadmaps for taking the process forward in the future. These standards and roadmaps will then be presented by each country in a regional forum so opportunities for harmonisation can be identified.

This process thus seeks to build a regional policy sharing dialogue as a step towards supporting shared learning and to understand the potential benefits of moving towards common sets of bioenergy standards, certification and accreditation systems, alongside a traceability and eco-labeling system.

A common method of assessing greenhouse gas (GHG) emissions may also be explored.

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.

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. Distance learning methods will be implemented to reach more rural communities and capacity building support will be offered to project 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.

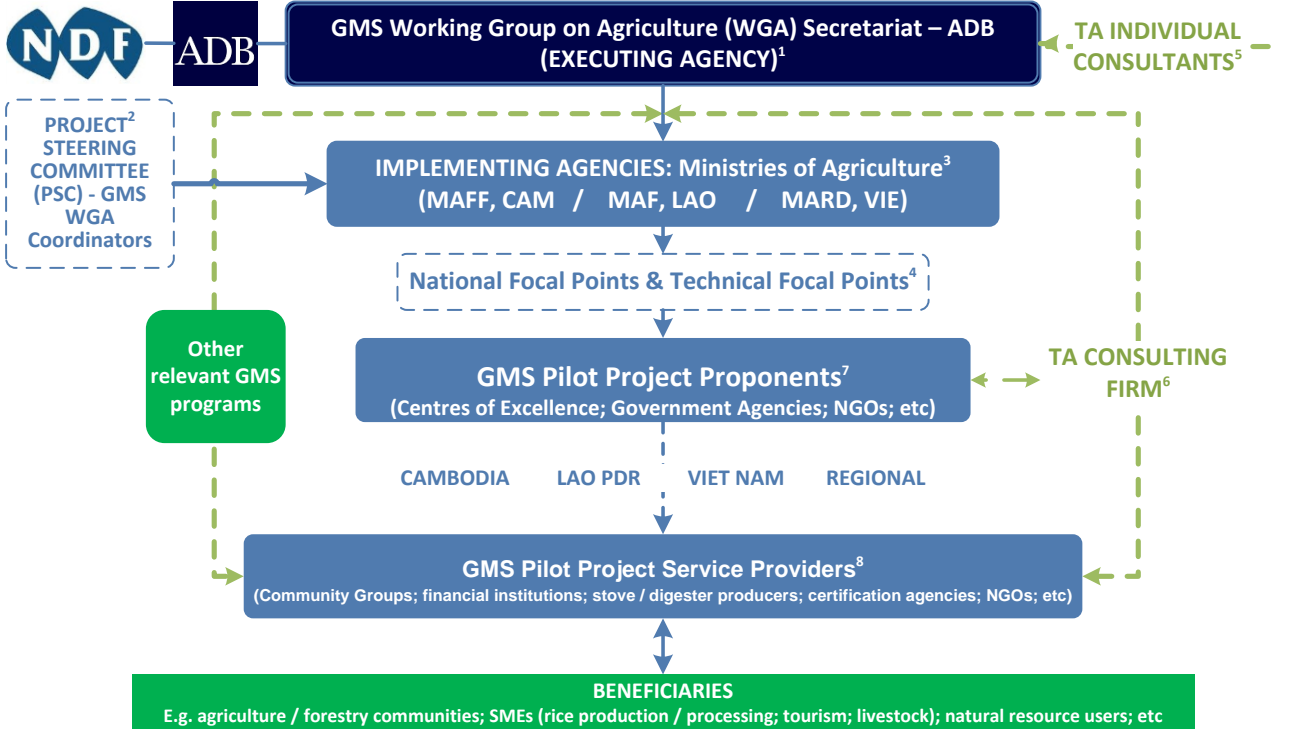
Using output from the Global Bioenergy Partnership (GBEP), the TA will develop a common methodology for assessing the supply of biomass and prioritizing its use for enhancing energy and food security. Knowledge products will be developed to promote knowledge transfer and cooperation between more advanced 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 Department². 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).

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.

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

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)
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
	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	Deputy Director International Cooperation Division Department of Planning, MAF
National Focal Point (NFP)	Mr. Inthadom AKKHARATH	Deputy Director International Cooperation Division Department of Planning, 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 Agro-Forestry Training Centre (NAFES), MAF
	Biofuel - Mr. Khamphone MOUNLAMAÏ	Deputy Director of Research Management Division (NAFRI)
	ICS - Mr. Boualom XAYSANAVONG	Technical staff, Ministry of Energy & Mines (MEM)
	Standards - Ms. Nisith KHAMMOUNHEUANG	Head of Standards Division, Ministry of Science & Technology (MoST)

³ www.isc.gov.kh

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)
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
	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.

The GMS EOC in Bangkok serves as the facility for administering TA7833 and offers access to 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.

A recent development has been the recruitment of GMS-WGA National Secretariat Specialists in each country in order to help co-ordinate all activities under CASP II's TAs including TA7833.

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 fertilizers⁴. 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 national and international NGOs with mixed results and 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 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 problems⁵.

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.

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)

⁵ WGA meeting, 12 July 2012, Nanning, China

2. SUMMARY OF PROGRESS AGAINST OUTPUTS

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – SEPT 2013	PROGRESS THIS PERIOD (OCT 2013 – MARCH 2014)	PLANNED ACTIVITIES (APRIL-JUNE)
<p>OUTPUT 1: ENHANCED REGIONAL COOPERATION IN BIOENERGY DEVELOPMENT TO FOSTER AND SAFEGUARD FOOD SECURITY</p> <p>Mechanism tested for harmonizing at least three bioenergy standards⁶ and certification systems, and a common method of assessing greenhouse gases</p>	See below.	See below	See below
<p>1.0 Holding of regional forums to facilitate high-level dialogue within the region on bioenergy and food-security policy issues</p>	<p>1st GMS Forum for was successfully accomplished in Nanning in July 2012 and reported in the IR and the 'Report on Proceedings'</p> <p>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.</p>	<p>WGs formed. First 2 (of 3) WG meetings held in Laos and Cambodia. See 1.1.</p> <p>Vietnam WG on hold pending discussions on what can be achieved in the scope of the project.</p>	<p>Final WGs for Laos and Cambodia and roadmaps delivered. WGs to start in Vietnam.</p> <p>Roadmaps to be presented at 2nd GMS Regional Forum on Harmonization of Standards in Bioenergy in Q2 or Q3 (depending on whether an extension is given and on Vietnam progress)</p>
<p>1.1 Testing of mechanisms to facilitate adoption of common set of sustainable indicators, bioenergy and trade standards, certification systems an eco-labeling</p>	<p>Harmonization Roadmap devised and agreed at 1st GMS Forum as initial mechanism for facilitating dialogue and ultimate adoption of common standards. See p12 of 'Report on Proceedings'</p> <p>3 National policy forums (May 2013) - one in each country, which involved a more intensive mechanism for national-level dialogue for wider</p>	<p>Roadmaps in Laos and Cambodia under partial development</p> <p>Draft organic rice standard prepared in Cambodia and shared with Laos PDR</p>	<p>Report on National Legislation and Policy Review to be finalized</p> <p>Draft biodigester standard prepared in Cambodia</p> <p>Draft organic rice standard prepared in Laos</p> <p>Draft organic/biofertiliser standard prepared in Laos</p>

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 – SEPT 2013	PROGRESS THIS PERIOD (OCT 2013 – MARCH 2014)	PLANNED ACTIVITIES (APRIL-JUNE)
	<p>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.</p> <p>Reports on the 3 national policy forums submitted</p> <p>Report on 'Introduction to Standards, Certification and Labelling Systems for Sustainability' finalized (Oct 2013)</p>		
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	None	Regional Conference held in Hanoi in Dec 2013. Included training on FAO-BEFS.	None
<p>OUTPUT 2: PILOT TESTED CLIMATE FRIENDLY BIOMASS INVESTMENT PROJECTS FOR WIDER IMPLEMENTATION</p> <p>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</p>	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	None	None

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – SEPT 2013	PROGRESS THIS PERIOD (OCT 2013 – MARCH 2014)	PLANNED ACTIVITIES (APRIL-JUNE)
	<p>and are being reviewed. It is proposed to use these as an integral part of the compendium on biomass under Output 4</p> <p>Feasibility studies underway.</p>		
<p>2.1 Implementation of pilot projects in lower cost biogas technologies as investment options involving use bioslurry for high vale crop production</p>	<ul style="list-style-type: none"> - 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 Nameese 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 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 	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Monitoring of implementation of pilot projects - Baselines finalized from pilot and FS data

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – SEPT 2013	PROGRESS THIS PERIOD (OCT 2013 – MARCH 2014)	PLANNED ACTIVITIES (APRIL-JUNE)
	<p>and RFP modality approved by ADB</p> <ul style="list-style-type: none"> - TORs approved for proposed pilots - 1 TOR awaiting Govt approval 		
<p>2.2 Conduct of reviews to identify appropriate biochar, ICS and biofuel investment modalities by 2012 and implementation of pilot project by 2014</p>	<p>Summary reviews of ICS, Biochar and carbon emissions, the private sector, financing modalities, and the institutional frameworks in CLV completed.</p> <p>Technology commercialization status assessment based on NASA's Technology Readiness Levels (TRL) completed and included in inception report – highlighting the immature nature of biochar and bioslurry technologies for widespread up-scaling.</p> <p>Biofuel technology has been dropped based on TA team findings and CLV Government skepticism.</p> <p>ICS review drafted and distributed for review</p> <p>Biochar Technologies review drafted – awaiting final editing</p> <p>Financing modalities for biomass technology – drafted awaiting final editing</p>	<ul style="list-style-type: none"> - ISC review finalised - Biochar testing undertaken - Biochar technology report finalized - 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 	<p>Further biochar testing</p>
<p>OUTPUT 3: ENHANCED CAPACITY FOR EFFICIENT USE OF BIOMASS Increased capacity for gender-sensitive investment among at least</p>	<p>See below</p>	<p>See below</p>	<p>See below</p>

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – SEPT 2013	PROGRESS THIS PERIOD (OCT 2013 – MARCH 2014)	PLANNED ACTIVITIES (APRIL-JUNE)
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)			
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)	<ul style="list-style-type: none"> - 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 <i>Regional Workshop & Study Tour on Efficient Utilization of Biomass for Biochar Production & Application Biochar</i> in Siem Reap, Cambodia. The event was attended by 33 government and non-government CLV stakeholders (19% women). See <i>Report on Proceedings</i>. - Awareness program developed - FS will develop a capacity building proposal for each pilot that will be developed and delivered during the pilot implementation - 1st BioBrief (Spotlight) developed giving a project overview - 	<ul style="list-style-type: none"> - 3 biobriefs disseminated (based on knowledge products (KPs) – see output 4 - Distance-learning proposal finalized - Video proposal finalized 	<ul style="list-style-type: none"> - Continue dissemination of biobriefs - Start distance learning activities - Start video preparation

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – SEPT 2013	PROGRESS THIS PERIOD (OCT 2013 – MARCH 2014)	PLANNED ACTIVITIES (APRIL-JUNE)
	completed but not yet disseminated		
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: <ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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 	Undertake specific gender-based training in Cambodia linking biochar to home garden systems
OUTPUT 4: DEVELOPMENT AND DISSEMINATION OF KNOWLEDGE PRODUCTS Methodology for assessing and prioritizing the use of biomass for	See below	See below	See below

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – SEPT 2013	PROGRESS THIS PERIOD (OCT 2013 – MARCH 2014)	PLANNED ACTIVITIES (APRIL-JUNE)
<p>bioenergy and food security</p> <p>Compendium of good practices in biomass use</p> <p>Booklets on different models of improved cookstove, biochar kiln, and biodigesters</p>			
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	<p>Existing resource assessments for CLV have been compiled. international assessment methods identified and a proposed assessment framework is being reviewed</p> <p>Draft high level assessment completed and submitted</p>	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	<ul style="list-style-type: none"> - Baseline and on-going monitoring requirements specified in pilot project TORs - Baseline data being collected 	<ul style="list-style-type: none"> - Monitoring of implementation of pilot projects - Baselines finalized from pilot and FS data
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	Start preparation of as life cycle assessments and least cost options
4.3 Publication of compendium of good practices in biomass use and booklets containing information on different models of ICS biochar kilns and biodigesters by 2014	List of KPs to be produced developed	<p>A number of KPs produced:</p> <ul style="list-style-type: none"> - Standards and Certification – submitted (See output 1) - Climate Change, Food Security & Bioenergy – submitted - Biochar and Climate-Friendly Soil Amendments – draft submitted for review - Biogas / Bioslurry - draft submitted for review - Improved Cookstoves KP – 	<p>Finalise:</p> <ul style="list-style-type: none"> - Biochar and Climate-Friendly Soil Amendments KPs - Biogas / Bioslurry KP - Improved Cookstoves KP <p>Prepare:</p> <ul style="list-style-type: none"> - Climate-Friendly Agricultural Value-Chains KP - GHG Assessment & Carbon Finance KP

OUTPUTS & ACTIVITIES	PROGRESS DEC 2011 – SEPT 2013	PROGRESS THIS PERIOD (OCT 2013 – MARCH 2014)	PLANNED ACTIVITIES (APRIL-JUNE)
		partly drafted	
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 (OCTOBER 2013 – MARCH 2014) AND PLANNED ACTIVITIES (APRIL – JUNE 2014)

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

3.1.1. Project Progress (October 2013 – March 2014)

Meetings have been held with NFPs and stakeholders in each country in order to form policy working (or consultative) groups which can determine standard and certification priorities in each country, based on discussion held in national forums in May 2013. Members of working groups have been agreed as follows (although these could be subject to change).

Table 2: Policy Working (Consultative) Group Members

NAME	POSITION
Vietnam	
NGUYEN Van Chung	TFP-standard
VU Tien Dzung	TFP-Biochar
PHAM Thi Tra Vinh	TA 7833 local staff
TBD	Department of Crop Production
TBD	Department of Plant Production
DAO The Anh	CASDAS
TU Thi Tuyet Nhung	PGS
TRAN Van Duc	Ecomart
TBD	ICD
TBD	Department of Science, Technology and Department
CAO Ky Son	Soil and Fertilizer Research Institute (Fertilizer Research Centre)
LE Hong Van	National Extension Centre
Cambodia	
Dr. CHAN Saruth	TFP-Biochar
Mr. KHORN Saret	TFP-ICS
Mr. CHHENG Uddara	TFP-Standards
Mr. IV Phirun	TFP-Biofuel
Mr. CHEA Sokhom	Office Chief (DAHP/MAFF)
Mr. CHEA Chan Veasna	Deputy Director (DAL/MAFF)
Dr. KEAN Sophea	Director (GDA/MAFF)
Mrs. LAM Saoleng	NBP
Laos	
Ms. Phonethip Sommany	Deputy Director Standard Division, DOA MAF
Mr. Thavisith Bounyasouk	Head of Lao Certification Body, DOA MAF
Mr. Lattana Phaxaysombath	TFP-Biochar
Mr. Bounhome Phanouvong	Deputy Head Quality Center, SD MOST
Mr. Nivath Phanapheth	Deputy Director Division Livestock Mgt, DOLF MAF
Mr. Khonpany Dounphady	Deputy Head, Agri. Land Conservation and Development Center, MAF
Mr. Bounpheng Sihomchanh	Head of Post Harvest Plant Protection Section Plant, NAFRI MAF
Mr. Kingpheth DE APHAY,	Deputy Head Plant Production Techniques Section, MAF
Dr. Viengsakoun Napaseuth	Livestock Associate Professor, Faculty of Agric (Nabong), NUoL MOE
Mr. Xaysavanh Latthachak,	Tech. Staff of Energy Conservation and Efficiency Division, MEM

In order to support these groups in their work national (and if needed international) resource persons have been invited to meetings. In Laos and Cambodia two working groups meetings have so far taken place. Proceedings of these meetings are available on request. In Vietnam the first meeting is pending agreement with the NFP on the priorities to be targeted (nominally SRI standards) as there is some concern these cannot be achieved within the scope of the project.

In Cambodia and Laos progress has been very good and each county has determined priorities which the project can help achieve.

In Cambodia the priorities are on the development of an organic rice standard and a biodigester standard (plus the associated certification systems which will accompany these). With the help of resource persons a draft organic standard has now been developed. The development of a biodigester standard is underway.

In Laos the priorities are on the development of an organic rice standard and an organic/biofertiliser standard (plus the associated certification systems which will accompany these). For the organic rice standard the Cambodia draft will be used as a model. This will help to harmonise standards across countries which could help increase cross-border trade. The organic/biofertiliser standard is being looked at and it will be determined as to whether a new standard is needed or whether support is required for the implementation of existing standards. Relevant Laos stakeholders attended training on biofertiliser in Cambodia in early March which should provide ideas.

The study into participatory guarantee schemes (PGS) has been cancelled as another ADB TA is concentrating on this specific subject.

3.1.2. Planned Activities (April - June 2014)

- Finalise draft organic rice and biodigester standard in Cambodia
- 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.
- Finalise draft organic rice (and possibly organic fertilizer) standard in Laos
- Finalise a roadmap in Laos for the necessary elements for advancing the implementation of the organic rice (and possibly biofertiliser standards) including certification, inspection and labelling systems and necessary institutional support. Provide training/awareness-raising as appropriate.
- Agree on the scope of work in Vietnam
- Finalise Report on National Legislation and Policy Review

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 (October 2013 – March 2014)

A great deal of activity has been undertaken in the last six months in order to prepare terms of reference (Oct-Dec 2013), launch tenders and evaluate proposals (November – January), and to contract implementing partners (December – March) to the implementation of pilot projects. While challenges were faced in being able to meet ADB procurement guidelines without letting the timelines slip too much, we are grateful for the help of the ADB procurement department in this regard. All pilot projects have now been contracted. Summary details are shown in the table below. Terms of reference for each pilot project are available upon request.

Progress is now being made in each of these pilots and a number of milestones have been met.

Table 3: Summary of Pilot Projects

Pilot Project	Contractor	Budget (US\$)	Milestones
Cambodia			
PP#1: Improved Cook Stove Up-scaling	Mekong Think Tank	\$54,500	<ul style="list-style-type: none"> • Contract signing • 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) • Approval of Mid-Term Report – by end of Month 3, plus <ul style="list-style-type: none"> - 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 and Capacity strengthening and awareness raising undertaken • Submission of Draft Final Report including training summary and pilot evaluation report • Approval of Final Report
PP#2: Farm Demonstration of Biofertilizers for Upscaling Investment	CelAgrid	\$71,696	<ul style="list-style-type: none"> • Contract signing • Approval of work plan (5 weeks after contracting) • Approval of Mid-Term Report including: <ul style="list-style-type: none"> - TULD Kilns operating - Farm Demonstrations established and Training program tested and being implemented - Farm demo monitoring framework agreed and operating • Submission of Draft Final Report including product testing findings, and training evaluation report • Approval of Final Report
PP#3: Production and Testing of Biofertilizers	Mekong Carbon	\$68,921	<ul style="list-style-type: none"> • Contract signing • Approval of work plan (5 weeks after

			<ul style="list-style-type: none"> contracting) Approval of Mid-Term Report – App product formulations and supporting lab tests Submission of Draft Final Report including product testing findings, and training evaluation report Approval of Final Report
Viet Nam			
PP#1: Improved Cook Stove Use	EPRO Consulting JSC (EPRO) and Centre for Social Initiatives Promotion (CSIP)	\$60,468	<ul style="list-style-type: none"> Contract signing Approval of work plan Approval of mid-term report (month 6) Submission of Draft Final Report Approval of Final Report
PP#2: Bioslurry Management	Associate of Center for Agricultural and Ecological Studies (“CARES”) and Sustainable Energy Development Consultancy Joint Stock Company (“SEDCC”)	\$76,045	<ul style="list-style-type: none"> Contract signing Approval of work plan (5 weeks after contracting) Approval of mid-term report and delivery of knowledge product, production of bioslurry compost products, and the design of crop demonstration program Submission of Draft Final Report including crop demonstration findings and training evaluation report Approval of Final Report
PP#3: Biochar based soil amendments	Centre for Technology Development and Environmental Protection (“COTDEP”)	\$85,985	<ul style="list-style-type: none"> Contract signing Approval of work plan (5 weeks after contracting) Approval of Mid-Term Report – App product formulations and supporting lab tests Submission of Draft Final Report including product testing findings, and training evaluation report Approval of Final Report
Laos PDR			
PP#1: Biomass Utilization Cluster Pilot Upscaling	National Consulting Group (NCG)	\$232,365	<ul style="list-style-type: none"> Contract signing Approval of work plan (5 weeks after contracting) Approval of Mid-Term Report – App product formulations and supporting lab tests

			<ul style="list-style-type: none"> • Submission of Draft Final Report including product testing findings, and training evaluation report • Approval of Final Report
Total		\$649,980	

3.2.2. Planned Activities (April - June 2014)

- Finalise collection of baseline data for each pilot project
- Monitor implementation
- Undertake additional biochar analysis – as due diligence to identify 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 (October 2013 – March 2014)

In late October six CLV government officials went to China for specialized training and awareness raising on biochar production and application.

From 16th-18th December the first regional conference on Efficient Utilization of Biomass for Bioenergy & Food Security in the Greater Mekong Subregion was organized in Hanoi attended by over 100 participants from government, academia and civil society. Copies of presentations are available at:

<https://drive.google.com/folderview?id=0B1wKP1C0cX-jLWJTNU54SXFkUk&usp=sharing>

The final day of the conference included a training session on the application of the FAO's Bioenergy and Food Security (BEFS) Analytical Framework and Tool Box⁷.

Using knowledge products as a basis (see output 4) biobriefs have been prepared on a number of topics including a project overview, climate change, and climate change and agriculture, and disseminated to a wide range of stakeholders (in the local language). Copies, as well as a library of other documents prepared under the TA, can be found at:

<https://drive.google.com/folderview?id=0B1wKP1C0cX-jdUhvMDNvcmEyZHc&usp=sharing>

A field trip was organized in January for NDF and ADB staff in Cambodia.

A four day-workshop on biofertiliser was organised in March in Cambodia for 11 government officials from CLV. The purpose was 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.

Proposal for a distance learning programme and video production (using the pilots as a basis) have been finalized, together with a gender-based training exercise in Cambodia. The distance-learning program will build course materials using a web based platform and distributed through DVD – the program will be developed by the TA and piloted in each of the Pilot Provinces. The pilot distance learning will be evaluated and then transferred to each Government for their future use. The option of an institute hosting the distance learning courses into the future will be reviewed and the TA will share these with the WGA in 2014. It is proposed to certificate graduates and those graduates excelling from the first programs will participate in a WGA graduation ceremony attached to a regional WGA meeting in 2014. Knowledge management products will be tailored as resource materials and guidebooks for the courses.

3.3.2. Planned Activities (April - June 2014)

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

⁷ www.fao.org/bioenergy/foodsecurity/befs

3.4. OUTPUT 4: KNOWLEDGE PRODUCTS DEVELOPED AND DISSEMINATED

3.4.1. Project Progress (October 2013 – March 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
- Biochar and Climate-Friendly Soil Amendments – draft submitted for review
- Biogas / Bioslurry - draft submitted for review
- Improved Cookstoves KP – partly drafted

3.4.2. Planned Activities (April - June 2014)

Finalise the following KPs:

- Biochar and Climate-Friendly Soil Amendments KPs
- Biogas / Bioslurry KP
- Improved Cookstoves KP

Start preparation of the following KPs:

- Climate-Friendly Agricultural Value-Chains KP
- GHG Assessment & Carbon Finance KP

4. PROJECT MANAGEMENT

4.1. SUMMARY OF CONSULTANT TA TEAM

Following a streamlining of the team in contract variation 2, the core team now consists of the following. An no-cost time extension is now being prepared to extend the services of core team members, in particular the team leader, Biomass / Biochar Technology Specialist, Capacity Building & Distance Learning Specialist and National Project Implementation Specialists.

Table 4: International staff engaged on TA7833 (contract variation#2)

NAME	SPECIALIST POSITION	INPUTS UTILIZED* (MONTHS)	INPUTS REMAINING (MONTHS)
INTERNATIONAL			
Lindsay SAUNDERS	Team Leader	5.87	4.33
Donah BARACOL-PINHÃO	Legal Standards & Certification Specialist	5.90	0
Greg MUNFORD	Capacity Building & Distance Learning Specialist	1.43	1.57
Ewan BLOOMFIELD	Improved Cookstove Specialist	0.77	0.23
Jason YAPP	Private Sector Development Specialist	6.00	0
Simon SHACKLEY	Biomass / Biochar Technology Specialist	4.20	0
Replaced Consultants (MANG AND HUBA)	Previous Team Leader and Capacity Building & Distance Learning Specialist	5.5	0
NATIONAL			
Mao Moni RATANA	Cambodia National Project Implementation Specialist (NPI)	10	1.5
Bounthavy CHALEUNPHONH	Laos National Project Implementation Specialist (NPI)	9	2.5
Li Thi THOA	Vietnam National Project Implementation Specialist (NPI)	14.52	2.0
Phouvong CHITTANAVANH	Legal, Standards and Certification (Laos)	1.6	0.4
NGUYEN Minh Bao	Legal, Standards and Certification Specialist (Vietnam)	1.15	2.33
Replaced or finished Consultants	Various	36.64	5.59

4.2. PROJECT SUPPORT

In order to provide increased support to the team, as of May 2013 a senior Director from Landell Mills (Simon Foxwell, Director, Asia/Pacific Division) has been appointed to provide day-to-day oversight, in conjunction with the team leader, and to act as the liaison person with ADB. This has continued and relationships with ADB and stakeholders remain good. The Landell Mills' Finance Manager's time to the project has increased in order to provide support to the verification and payment of pilot contractor milestones.

4.3. PROJECT REIMBIRSABLE EXPENDITURE

Table 5: Summary of TA7833-REG Project Reimbursable Expenditure (US\$)

Category	Budget	Disbursed	Balance
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	(VO#2)		
1200 Equipment	90,000	20,951.58	69,048.42
1300 Seminars, Workshops & Training	560,000	147,282.17	412,717.83
1400 Studies, Surveys & Reports	925,000	171,728.32	753,271.68
TOTAL	1,575,000	339,962.07	1,235,037.93

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

5. LESSONS LEARNT, STRATEGIC ISSUES & RECOMMENDATIONS

ISSUES ENCOUNTERED	RECOMMENDATIONS & REMEDIAL ACTIONS
<p>Regional cooperation Lack of operational procedures for ADB implementation and procurement in Regional Technical Assistance Projects</p>	<p>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.</p> <p>SOPs have been under preparation by the ADB TA7833 Regional Cooperation Specialist, but despite repeated requests the TA team has not yet received these.</p> <p>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</p>
<p>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.</p>	<p>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.</p> <p>Enhancing opportunities for communication and collaboration are considered prime approaches for enhancing engagement.</p>
<p>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.</p>	<p>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.</p>
<p>Immature technologies The ToR specify up-scaling of a wide range of technologies, however many of these are not sufficiently mature for up-scaling.</p>	<p>Liquid biofuels such as jatropha-derived biodiesel 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.</p> <p>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.</p> <p>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.</p>

	<p>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.</p>
<p>Scale of technology</p>	<p>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.</p> <p>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.</p> <p>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.</p>
<p>Donor crowding within the ICS sector</p>	<p>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.</p> <p>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.</p>
<p>Innovative financing mechanisms</p> <p>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</p>	<p>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.</p> <p>The financing modality for biogas and biochar will continue to emerge throughout the pilot projects and their implementation.</p> <p>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.</p> <p>One option of output based funding is for new product formulation for biochar supply chain development.</p>

<p>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.</p>	
<p><i>Focus on standards and certification</i></p>	<p>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.</p>

APPENDIX 1: DESIGN & MONITORING FRAMEWORK

Design Summary	Performance Targets & Indicators with Baselines	Data Sources & Reporting Mechanisms	Assumptions and Risks
<p>Impact</p> <p>Improved use of biomass in Cambodia, the Lao PDR, and Viet Nam</p>	<p>By 2020:</p> <p>5% increase in production of clean bioenergy from biomass (2011 baseline: 0.1%)</p> <p>5% increase in use of by-products of bioenergy systems (bio-slurry and biochar) (2011 baseline: 0%)</p>	<p>Project baseline and benchmark surveys</p> <p>Periodic surveys and annual reports of agriculture and energy ministries of Cambodia, the Lao PDR, and Viet Nam⁸</p>	<p>Assumptions</p> <p>The governments of Cambodia, the Lao PDR, and Viet Nam remain committed to regional cooperation in clean bioenergy and food security.</p> <p>Risk</p> <p>Private sector investment is constrained by over-regulation.</p>
<p>Outcome</p> <p>Efficiently operating pilot projects in biomass use</p>	<p>By 2014:</p> <p>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)</p>	<p>Project completion report</p> <p>Annual reports from agriculture ministries of Cambodia, the Lao PDR, and Viet Nam</p>	<p>Assumptions</p> <p>The central and provincial governments remain committed to working with the poor in remote areas.</p> <p>Risk</p> <p>Pilot projects are not successfully implemented.</p>

⁸ a Ministry of Agriculture, Forestry and Fisheries (Cambodia); Ministry of Agriculture and Forestry (Lao PDR); and Ministry of Agriculture and Rural Development (Viet Nam)

<p>Outputs</p> <p><i>1. Enhanced regional cooperation in bioenergy development to foster and safeguard food security</i></p> <p><i>2. Pilot-tested climate-friendly biomass investment projects for wider implementation</i></p> <p><i>3. Enhanced capacity for efficient use of biomass</i></p> <p><i>4. Development and dissemination of knowledge products</i></p>	<p>By 2014:</p> <p>Mechanism tested for harmonizing at least three bioenergy standards⁹ and certification systems, and a common method of assessing greenhouse gases</p> <p>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</p> <p>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)</p> <p>Methodology for assessing and prioritizing the use of biomass for bioenergy and food security</p> <p>Compendium of good practices in biomass use</p> <p>Booklets on different models of improved cookstove, biochar kiln, and biodigesters</p>	<p>Consultants' reports and document records of agriculture ministries of Cambodia, the Lao PDR, and Viet Nam</p> <p>Agricultural household survey reports of Cambodia, the Lao PDR, and Viet Nam</p> <p>Benefit and impact monitoring reports</p> <p>Project review missions</p>	<p>Assumptions</p> <p>The consulting team is given timely access to records, information, personnel, and relevant geographic sites.</p> <p>Local officials, technicians, and lead farmers are available to participate in training</p> <p>Development partners and the private sector are keen to participate in the TA activities.</p> <p>Risks</p> <p>Cambodia, the Lao PDR, and Viet Nam cannot agree on harmonized standards and certification systems</p>
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⁹ 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	Total cost: \$4.6 million equivalent
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	