Asian Development Bank

Greater Mekong Subregion

Capacity Building for Efficient Utilization of Biomass for Bioenergy and Food Security in the Greater Mekong Subregion [TA7833-REG]

INCEPTION REPORT

February 2013

Landell Mills
DEVELOPMENT CONSULTANTS

nexus
Carbon for Development

PRACTICAL ACTION
Consulting

Capacity Building for Efficient Utilization of Biomass for Bioenergy and Food Security in the Greater Mekong Subregion [TA7833-REG]

CAMBODIA / LAO PDR / VIET NAM

INCEPTION REPORT

Report submitted by
LANDELL MILLS LTD

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KEY DATA

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADDA	Agriculture Development Denmark Asia
AIFS	ASEAN Integrated Food Security Framework
AIT	Asian Institute of Technology (Thailand)
APAEC	ASEAN Plan of Action for Energy Cooperation
APMB	Agricultural Project Management Board
AROS	Asian Regional Organic Standard
ASEAN	Association of Southeast Asian Nations
BDS	Business development services
BEFS	Bioenergy and Food Security
CASP	Core Agricultural Support Program
CCD	Climate Change Department
CCRD	Centre of Rural Community Research and Development
CDM	Clean Development Mechanism
CEDAC	Centre d'Etude et de Développement Agricole Cambodgien
CER	Certified emissions reduction
CFA	Climate-friendly agriculture
CIFOR	Center for International Forestry Research
CLV	Cambodia, Lao PDR and Viet Nam
IFOAM	International Federation of Organic Agriculture Movements
DARD	Department of Agriculture and Rural Development (MARD Viet Nam)
DCP	Department of Crop Production (MARD Viet Nam)
DIV	Development Innovation Ventures
DMF	Design and Monitoring Framework
EA	Executing Agency
EAC	Electricity Authority of Cambodia
EASE	Enabling Access to Sustainable Energy
EdC	Electricité du Cambodge
EIRR	Economic Internal Rate of Return
EOC	Environmental Operations Centre
EoI	Expression of interest
ERPA	Emission Reduction Purchase Agreement
EU	European Union
FAO	United Nations Food & Agriculture Organization
FIRR	Financial Internal Rate of Return
FSN	Food security and nutrition
GAP	Good Agricultural Practices
GBEP	Global Bioenergy Partnership
GBIT	Global Biofuel Information Tool
GEF	Global Environment Facility
GHG	Greenhouse gas
GMS	Great Mekong Subregion
GMO	Genetically Modified Organism
GOMA	Global Organic Market Access
GoV	Government of Viet Nam
IA	Implementing Agency
ICS	Improved cookstoves
ICT	Information and communication technologies
IFAD	International Fund for Agricultural Development
IFOAM	International Federation of Organic Agriculture Movements

ILO	International Labor Organization
IRENA	International Renewable Energy Agency
ISCC	International Sustainability and Carbon Certification
ISO	International Standards Organization
JICA	Japan International Cooperation Agency
LML	Landell Mills Limited
LSC	Legal, Standards and Certification (TA7833 Sub-Team)
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
NGPES	National Growth and Poverty Eradication Strategy
NOP	National Organic Program
NPI	National Project Implementation
NSDP	National Strategic Development Plan
OBA	Output-Based Aid
PDR	People's Democratic Republic
PoA	Programme of Activities
PGS	Participatory Guarantee Systems
PPP	Public-private partnerships
PPTA	Project Preparatory Technical Assistance
PRA	Participatory Rural Appraisal
PSD	Private sector development (TA7833 Sub-Team)
PV	Photovoltaic
REAP	Renewable Energy Action Plan
RECI	Rural Energy & Climate Initiative
RED	Directive of Renewable Energies
REEEP	Renewable Energy and Energy Efficiency Partnership
RETA	Regional Technical Assistance
RfP	Request for Proposals (RfP)
RSB	Roundtable on Sustainable Biofuels
SIA	Social impact assessment
SMART	Specific, Measureable, Accurate, Realistic and Timely
SME	Small and Medium Sized Enterprise
SNV	Netherlands Development Organisation
SOP	Standard operating procedures
SPA	Strategic Plan of Action
SRI	System of Rice Intensification
STEA	Science Technology and Environment Agency
TA	Technical Assistance

TFP	Technical Focal Point (of the Implementing Agency)
ToR	Terms of Reference
ToT	Training-of-trainers
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
USD	United States Dollar
VER	Voluntary emissions reduction
WB	World Bank
WGA	Working Group on Agriculture

1. INTRODUCTION

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 are provided in APPENDIX 1:.

The Consultant will provide 31 person-months of international consulting services and 93 person-months of national consulting services in order to: (i) strengthen institutional links and mechanisms for regional cooperation in bioenergy and food security; (ii) provide technical support for the design and implementation of pilot projects, conduct of studies and capacity building, and; (iii) monitor and report on the TA activities and output.

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.

This inception report collates relevant information and key perspectives to define an understanding of TA7833 among project proponents and stakeholders. The inception phase commenced on 12 December 2011 and includes the period for the nomination of the counterpart IA staff, inception / stakeholder meetings in each capital city, initial tri-country missions with all TA7833 experts and the 1st GMS Regional Forum in Nanning, China from 1 to 6 July 2012 (see Report on Proceedings).

This phase focused on mapping existing implementation structures in CLV for efficient utilization of biomass for bioenergy and food security. Three national stakeholder consultation 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.

1.1. PROJECT OVERVIEW

TA7833 is a regional capacity development technical assistance (R-CDTA) 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. The TA will support the adoption of common sets of sustainable indicators and criteria for land use, bioenergy standards, certification and accreditation systems, alongside a traceability and eco-labeling system. A common method of assessing greenhouse gas (GHG) emissions will also be explored. International and regional forums will facilitate progressively higher level dialogue within the region on bioenergy and food security policy issues and encourage the exchange of information and skills in the use of novel technologies. In addition, options for minimizing the cost of certification and traceability for both small-scale producers (households) and end users of products will be analyzed.

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; inclusive and certified sustainable value chains for smallholders. Pilot projects will use technologies already successfully tested on a smaller scale, in conjunction with pilot testing of appropriate business models and institutional arrangements. Where necessary, pilot projects will be supported with feasibility studies to deliver appropriate knowledge and experience to inform future up-scaling and investment.

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

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 and links with regional centers of excellence will be created to promote knowledge transfer and cooperation between more advanced GMS countries and CLV. An awareness campaign using mass media will be conducted. Baseline surveys will be carried out and a monitoring system established.

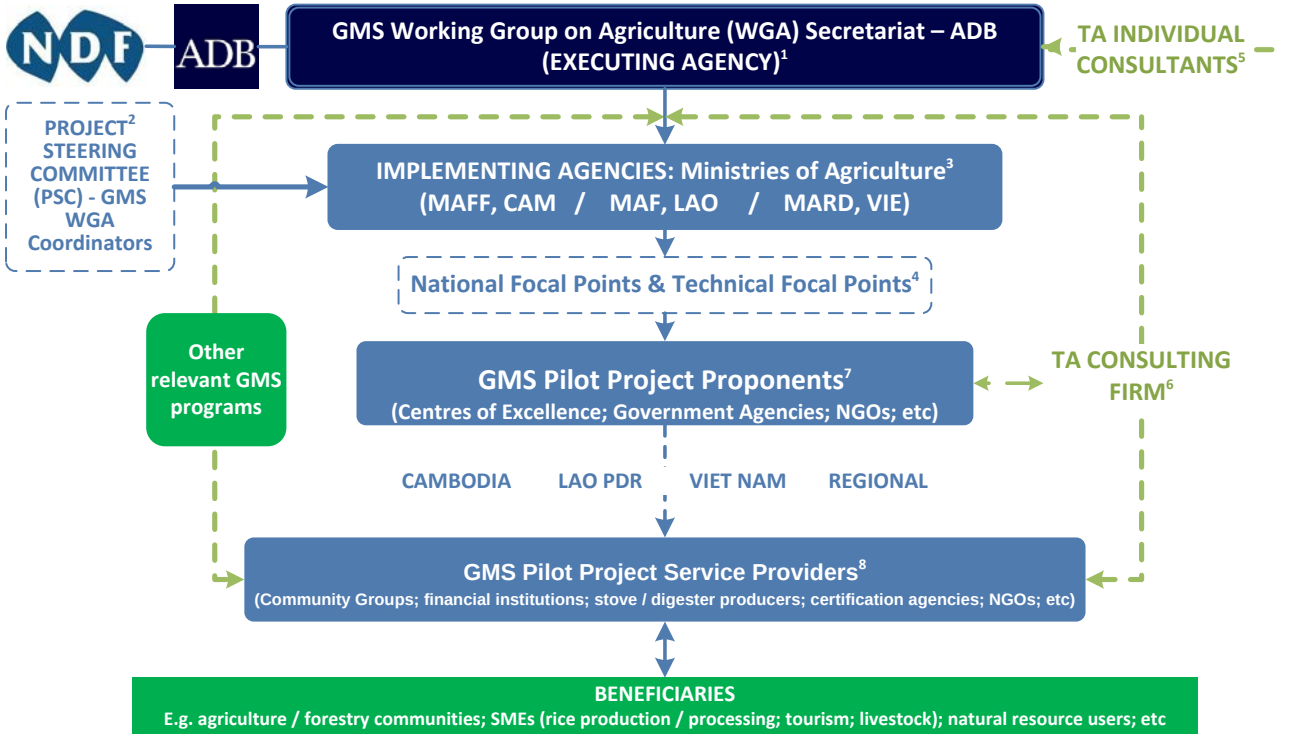
1.2. IMPLEMENTATION ARRANGEMENTS

As presented in Figure 1, 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[1]. 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.

1.3. 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.

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

The TA plays an important role in 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 currently cause environmental problems and pollute waterways when left to decay, to produce bioenergy, biochar and organic fertilizers[2]. 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 what remains 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) where these are not part of an agricultural mechanization strategy.

The scope of the 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[3].

The Global Bioenergy Partnership (GBEP) refers to all kind of biomass (wood, energy crops and organic wastes and residues), but does not offer a clear definition of 'agro-waste'.

The development of skills required for production of bioenergy carriers like biochar, briquetting and plant oil should target not only households but also 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.

[2] *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)*

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

1.4. COMMENTS ON THE TOR

As mentioned in the Consultant's original technical proposal, the ToR are mostly comprehensive and give the necessary guidance to the Consultant team regarding the required objectives, activities and deliverables specified under the project. However, the Consultant has experienced in discussion with the three IAs in CLV that the ToR were by no means explicit on a number of important foundational factors.

The nomination of specific focal points from each of the CLV Implementing Agencies under TA7833 and their full understanding of the topics under the given ToR is essential for the implementation and future success of the project. The Consultant thus strongly iterated their belief in the critical nature of clear nomination of counterpart staff and advanced preparation of counterpart support / facilities from each country during TA7833 contract negotiations at ADB in Manila in December 2011. However, the official counterpart staff nomination and IA 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 rightly 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 approach of TA7833 and all parties continue to work hard to recover the lost time.

Despite the difficulties, the Consultant very much supports the overall regional implementation structure as it promotes positive synergy effects for TA7833 and other regional initiatives. Based on demand of the three IAs, the Consultant has apportioned the amount of time of the TA Team Leader to be spent at the EOC in Bangkok versus time in CLV in a flexible way according to the specific needs arising during the inception phase. All three IAs provided in-kind contributions in the form of office space, data and necessary information, administrative support and regular coordination meetings with the National Project Implementation (NPI) Specialist from the Consultant team in each country. During the implementation phase the TA Team Leader will rotate as much as possible between the three country offices as requested by the NFPs. Due to the regional nature of TA7833 and the part time restricted inputs of the TA team, the Consultant recognizes the benefits of additional support for regional cooperation, trade facilitation and knowledge management provided by the two individual ADB contracted experts.

In discussion with the three countries and ADB it was agreed the scope of the TA would not initially include liquid biofuels such as jatropha-derived biodiesel 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;

Activities relating to the development of a computerized traceability system for cross border trade was dropped due to the lack of specific IT expertise, TA resources and available time frames. It is proposed that such systems are covered under other dedicated IT / regional trade elements of the CASPII program and other initiatives.

The limitation of technology focus for inclusion in the TA to small-scale household / cooperative level due to TA resource availability and direct linkages / impact on food security.

1.5. CONSULTANT MOBILIZATION

1.5.1. International

The first of the international consultants were mobilized in December 2011 and the others thereafter as shown in Table 1.

Table 1: International staff engaged on TA7833

NAME	SPECIALIST POSITION	TOTAL INPUT (MONTHS)	START DATE
MANG*	TL / Bioenergy & Biomass Specialist	19.0	Dec 2011
BARACOL-PINHÃO	Legal Standards & Certification Specialist	4.0	Jan 2012
HUBA*	Capacity Building & Distance Learning Specialist	3.0	Jan 2012
BLOOMFIELD	Improved Cookstove Specialist	1.0	Feb 2012
YAPP	Private Sector Development Specialist	2.0	Jan 2012
SHACKLEY	Biomass / Biochar Technology Specialist	2.0	Feb 2012

*Mr. Mang was replaced by Mr. Lindsay SAUNDERS in October 2012
*Mrs. Huba was replaced by Mr. Greg MUNFORD in January 2013

1.5.2. Cambodia

Cambodian national TA consultants were mobilized from December 2011. The TA7833 project office was set up at MAFF in Phnom Penh in a meeting room on the 3rd floor of the Inspection Department. The procurement of office equipment received ADB approval in March 2012 and was mostly delivered and installed by May 2012. Asset registers have been shared with ADB and the IAs. To allow the undisturbed parallel use of the meeting room for other office work, a room separator was also installed at the cost of the TA, along with minor renovations. This procurement procedure has been completed. Names and positions of the Consultant's Cambodian national staff are shown in Table 2. To support coordination TA7833 consultants plan to meet with the Implementation Agency every month.

Table 2: Cambodian national staff engaged on TA7833

NAME	SEX	SPECIALIST POSITION	TOTAL INPUT (MONTHS)	START DATE
Sovannarith HEM	M	National Project Implementation Specialist (NPI)	18	Dec 2011
Visal SOUN *	M	Legal, Standards and Certification Specialist	4	Dec 2011
Bona SAM	M	Private Sector Development Specialist	3	Dec 2011
Davuth DY	M	Capacity Building & Distance Learning Specialist	3	Jan 2012
Navy HAP	F	Social Development Consultant	3	Jan 2012
Sokheng KEO	M	Project Assistant	Full-Time	Feb 2012

*Mr. Visal withdrew from the project in March 2012 and was replaced by extending the tasks to the NPI

1.5.3. Lao PDR

The Lao PDR national TA team was mobilized from December 2011. The TA7833 project office was setup at MAF headquarters in Vientiane and has been in use since February 2012. The procurement of office equipment was completed as planned. Asset registers have been shared with ADB and the IAs. Names and positions of the Consultant's Lao national staff are shown in Table 3. To support coordination TA7833 consultants plan to meet with the Implementation Agency every month.

Table 3: Lao PDR national staff engaged on TA7833

NAME	SEX	SPECIALIST POSITION	INPUT (MONTHS)	START DATE
Phonexay KHAMMAVONG	M	National Project Implementation	18	Dec 2011
Singthilath THONGDENG*	M	Legal, Standards and Certification	4	Dec 2011
Bounthavy CHALEUNPHONH**	M	Private Sector Development	3	Dec

		Specialist		2011
Savengkith PHOMMAHACK**	M	Capacity Building & Distance Learning	3	Jan 2012
Duangchith VIRAVONGSA	F	Social Development Consultant	3	Oct 2012
Malaythong VONGNACHANH	F	Project Assistant	Full-Time	Jan 2012

*Mr. THONGDENG withdrew from the project in February 2012 and was replaced by Mr. Mr. Phouvong CHITTANAVANH

**Mr. PHOMMAHACK resigned in June 2012, Mr. CHALEUNPHONH is proposed to take over the tasks of Mr. PHOMMAHACK as his professional expertise and qualification covers Private Sector Development

1.5.4. Viet Nam

The Vietnamese national TA team was mobilized from December 2011 onwards. A TA7833 project office was set up on the 9th floor of the newly relocated APMB of MARD in Tay Ho, Hanoi and is in use since February 2012. The procurement of office equipment has now been completed. Asset registers have been shared with ADB and the IAs. Names and positions of the Consultant's Cambodian national staff are shown in Table 4. To support coordination TA7833 consultants plan to meet with the Implementation Agency every month.

Table 4: Vietnamese national staff engaged on TA7833

NAME	SEX	SPECIALIST POSITION	INPUT (MONTHS)	START DATE
NGUYEN Tu Siem*	M	National Project Implementation Specialist	18	Dec 2011
NGUYEN Minh Bao	M	Legal, Standards and Certification Specialist	4	Dec 2011
LINH Le Thi My	F	Private Sector Development Specialist	3	Dec 2011
HO Thi Lan Huong	F	Capacity Building & Distance Learning Specialist	3	Jan 2012
HA Huu Nga**	F	Social Development Consultant	3	Jan 2012
VU Trang	F	Project Assistant	Full-Time	Jan 2012

* Mr. Siem resigned from the project on 31 July 2012 and is replaced by Mrs. Li Thi THOA

**Ms. Ha withdrew from the project in Feb 2012 and was replaced by Ms. Hoang Hong HANH

2. BIOMASS UTILIZATION FOR BIOENERGY AND FOOD SECURITY

2.1. REVIEW OF RECENT BIOENERGY DEVELOPMENTS

Several relevant developments in the bioenergy and climate-friendly agriculture sector have taken place internationally, regionally and in the GMS between the time of submission of the Consultant's proposal in August 2011, the end of the TA7833 inception phase in June 2012 and the regional stakeholder meeting in July 2012. Key aspects are presented below and will be taken into account during the project's implementation phase.

2.1.1. International

The European Commission has approved the first EU bioenergy sustainability schemes, including: International Sustainability and Carbon Certification (ISCC); Bonsucro EU; Biomass & Biofuel Voluntary Scheme; Greenergy Brazilian Bioethanol Verification Program and a number of 'Directives of Renewable Energies' (RED) such as the: Round-Table on Responsible Soy; Roundtable of Sustainable Biofuels, and; Abengoa Bioenergy Sustainability Assurance. Under the sustainability schemes, bioenergy used in the EU, whether locally produced or imported, will have to comply with certain standards or criteria that aim to prevent conversion of areas of high biodiversity and high carbon stock for the production of bioenergy raw materials.

The Global Bioenergy Information Tool (GBIT), developed by the Center for International Forestry Research (CIFOR) was launched in September 2011, and recently published. GBIT provides an overview of the state of development of the bioenergy sector in the global south with an interactive map presenting national production and consumption data and an overview of key investments in the sector. The tool attempts to consolidate national data on bioenergy, alongside data on key commercial bioenergy investments and data on areas under development.

In January 2012, the UN launched the International Year of Sustainable Energy for All at the 5th World Future Energy Summit in United Arab Emirates. The speech underscored the need for universal energy access and innovation to scale-up clean energy and energy efficient technologies and stressed the importance of reducing GHG emissions and improving energy efficiency. Also during this summit, the GBEP announced the 'Global Bioenergy Partnership Sustainability Indicators for Bioenergy', which represents the first global, government-level consensus on sustainability indicators for bioenergy. The report introduces 24 economic, ecological and social indicators pertinent to the sustainability of bioenergy. GBEP is a forum where voluntary cooperation works towards consensus amongst its partners in the areas of sustainable development of bioenergy and its contribution to climate change mitigation. It also provides a platform for sharing information (GBEP, 2012).

On February 2012, the UN Secretary-General's High-level Group on Sustainable Energy for All issued a document called 'Sustainable Energy for All: A Framework for Action' which outlines a pathway for collaborative action on improving energy access and alleviating energy poverty globally using renewable and sustainable sources of energy. The Framework provides guidance on the Group's objectives in the lead up to the UN Conference on Sustainable Development or Rio+20 in June 2012 and beyond. The document identifies the potential for developing and realizing opportunities in: new renewable energy investment plans for developing countries; local and national leadership on improving energy efficiency; and financing for renewables to balance their initially higher costs as compared to conventional energy. The Framework aims, by 2030, to: i) achieve universal energy access; ii) double the rate of improvement on energy efficiency, and; iii) double the share of renewable energy in the global energy matrix.

As part of its bioenergy program, FAO developed within the Bioenergy and Food Security (BEFS) and BEFS Criteria and Indicators projects an online tool that supports decision makers to assess if and how bioenergy activities could be implemented without hindering food security.

Regarding carbon finance aspects, new methodologies of relevance to the TA7833 key technologies are emerging and issues such as the EU-initiative concerning CDM in Least Developed Countries need to be considered during pilot project selection and implementation.

2.1.2. South East Asia / GMS

Within GMS countries, considerable differences exist with respect to advances in biomass-based and renewable energy technologies, with Lao PDR, Viet Nam and increasingly Cambodia investing in large-scale hydropower; China and Viet Nam developing significant household farm biogas experience; whilst China and Thailand are more advanced in commercializing agro-waste bioenergy for electricity generation. Significant variations in technologies within the GMS highlight the potential benefit of enhanced cooperation to develop and share advances in bioenergy solutions. Along with differences in technology substantially different capacity and often widely differing regulations and approaches to technology development prevail. The traditional centralized approach towards energy supply has neglected reliable cost effective energy supply for rural areas. Within this context, governments are increasingly seeking more decentralized approaches with increasing roles for the private sector to explore the potential of biomass for energy generation and sustainable land use for food production.

In October 2011, a Green Growth Forum was held within the Asia-Europe Meeting (ASEM). It drew the participation of 180 delegates who shared their experiences on incorporating green growth models into national development strategies and cooperation mechanisms among ASEM members toward greener economies. Viet Nam is in the process of drafting its green growth strategy for the 2011-20 periods and vision towards 2050, which will be submitted to the Government by the end of 2012.

In 19 November 2011, the UN Secretariat and the Association of Southeast Asian Nations (ASEAN) committed to strengthen cooperation in natural resources management, including land, water and energy resources, and the growing nexus between food and energy prices and their volatility, climate change and bioenergy policy; as well as to explore ways to promote food and energy cooperation to ensure greater security and sustainability of food and energy.

In December 2011, leaders and senior officials attending the 4th GMS summit in Myanmar's capital endorsed a 10-year strategic framework guiding economic cooperation in the Subregion. GMS countries agreed to focus more attention on the linkages across different sectors, notably between energy, agriculture and food security and the environment. An agreement among GMS delegates had been reached on the need to develop a regional green economy vision to support implementation of the new framework and the critical role of involving the private sector. The regional master plan, which will be crafted to implement the framework, will address shared social and environmental concerns amongst the countries.

The EU and the USA signed an organic equivalence agreement on 15 February 2012. Under the arrangement, the two parties will work together to promote strong organic programs, protect organic standards, enhance cooperation and facilitate trade in organic products. The agreement will reduce duplicative requirements and certification costs while continuing to protect organic integrity, beginning on 1 June 2012. Under the agreement, the EU will recognize the US National Organic Program (NOP) as equivalent to the EU Organic Program and allow products produced and certified as meeting US NOP standards to be marketed as organic in the EU and vice-versa. The arrangement is limited to organic products of US or EU origin produced, processed or packaged within these jurisdictions.

The Asian Regional Organic Standard (AROS) was approved on 12 February 2012 by Global Organic Market Access (GOMA) Asia Working Group, supported by IFOAM, FAO and UNCTAD, and endorsed by ASEAN in May 2012. The standard covers organic crop production, processing and labeling. AROS is equivalent to the Common Objectives and Requirements for Organic Standards, an international tool established through GOMA to ease organic trade.

The Bioenergy and Food Security (BEFS) in ASEAN project will be launched in October 2012 in Bangkok, jointly implemented with the Food and Agriculture Organization of the United Nations (FAO) to support the ASEAN Secretariat and the ASEAN Member States to develop and implement the strategy on sustainable and integrated food and biofuels production. As part of the project, FAO will work with ASEAN to develop regional and national BEFS mainstreaming strategies in ASEAN to ensure that bioenergy provides more effective energy services in Member States with minimal or no impact on food security and the environment. In developing these strategies a range of supplementary activities will be implemented in CLV including capacity building with the FAO BEFS initiative, measures to promote sustainable, food secure and climate-friendly bioenergy technologies and the establishment / reinvigoration of national bioenergy policy bodies. The ultimate intended impact of the project is that sustainable, food secure, climate-friendly bioenergy contributes to economic development in ASEAN Member States.

2.1.3. Cambodia

In December 2011, the government issued the fourth draft of the Law on Associations and NGOs. The draft is causing serious concern within the NGO community in the country. According to them, the draft of the Law contains vague and unspecified terms that will enable the government to arbitrary close or deny registration to organizations. There are also provisions placing burdensome notification requirements on community-based organizations.

2.1.4. Lao PDR

A major government reorganization, which began in 2011, is still in process. The restructuring of the Executive branch included the creation of a new ministry, the Ministry of Natural Resources and Environment (MONRE). The reorganization of management positions in offices responsible for bioenergy initiatives, such as the Ministry of Energy and Mines, was still on-going at the time of the TA7833 first international field mission in February 2012 and is now concluded.

2.1.5. Viet Nam

The World Bank announced a US$2.37 million Global Environment Facility (GEF) grant for the Government of Viet Nam in July 2011 to implement its national energy efficiency program. During the same month, the Prime Minister under Decision No. 1208/QD-TTg approved the National Power Development Plan (2011-2020) and the Power Master Plan VII. The plans set targets for production and import of 330 billion KWh by 2020. Under the 2011-20 plan 3% of this total will be imported. The remaining 97% will comprise 19.6% hydropower, 46.8% thermal power, 24% gas-generated power, 4.5% renewable energy and 2.1% nuclear power. Priority will be given to developing renewable energy sources, including solar and wind power, as well as energy production from biomass. The plan envisages electricity production from renewable sources to increase from 3.5% in 2010 to 4.5% in 2020 and 6% in 2030 and to supply electricity to all rural families by 2020.

In January 2012, FAO and the EU launched a EUR 5.3 million, three-year project in Viet Nam (and in Malawi and Zambia) to identify challenges and opportunities for climate-smart agriculture and produce strategic plans for each country. Working in collaboration with the national ministries of agriculture, the project will identify opportunities for expansion of existing climate-smart practices or implementation of new ones; promote integration of climate change and agriculture strategies; identify climate finance mechanisms linked to agriculture investments; and build capacity for planning and implementing climate-smart projects.

In February 2012, the World Bank approved a US$70 million loan for the Viet Nam Climate Change Development Policy Operation project, the first of a series of three projects to support the development and adoption of policies, strategies and institutions needed to respond to climate change in Viet Nam. The loan will support Viet Nam in adopting policies for adaptation and to promote climate-resilient and lower-carbon intensity development. The Program will focus on climate-resilient development; resilience of water resources; exploiting energy efficiency potentials; strengthening the capacity and preparedness to formulate and implement climate change policies; and strengthening the financing framework.

3. SUMMARY OF LEGAL, INSTITUTIONAL AND REGULATORY FRAMEWORK

The following section summarizes a detailed assessment of the legal institutional and regulatory framework in the GMS and specifically the CLV countries.

The challenges and potential risks posed by bioenergy development on land use, biodiversity, forest conservation and socio-cultural characteristics of rural communities are well recognized. This recognition is driving a series of global multi-stakeholder initiatives to address the challenges and mitigate the risks. While international instruments cannot themselves currently create specific obligations for countries to consider the complex interrelationships between environmental, agricultural, trade and energy sectors in national bioenergy planning and legislation, dialogue and harmonization at the national level can promote adoption of effective sustainability principles and criteria. Over time, some key international initiatives are starting to influence national bioenergy strategies, for example the Global Bioenergy Partnership (GBEP).

Voluntary schemes such as the Roundtable on Sustainable Biofuels (RSB) and the International Sustainability & Carbon Certification (ISCC), schemes operate as meta-systems and endorse other certification systems, which comply with their standards. The International Standards Organization (ISO) is working on 'Standardization of Sustainability Criteria for Bioenergy Production, Supply Chain and Use' with 30 participating countries, including China[4] and Viet Nam[5], and 13 observer countries, including Thailand. The scope of work is standardization in the field of sustainability criteria for production, supply chain and application of bioenergy, including terminology and aspects relating to the sustainability (e.g. environmental, social and economic) of bioenergy.

Sector and crop-focused initiatives are emerging in establishing standards that ensure sustainable processes are being employed along the entire supply chain (e.g. Roundtable on Sustainable Palm Oil). While at an early stage, the number of voluntary schemes being developed is increasing. The EU has pushed the way forward by establishing mandatory sustainability criteria: the Renewable Energy Directive 2009/28/EC of the European Union (EU-RED), covering all domestic and imported bioenergy. Initiatives are also being developed and performed at the national level (e.g. Renewable Transport Fuels Obligation in the UK) with mixed degrees of success.

Sustainable production standards and certification schemes developed for agriculture and forestry have a high degree of relevance for bioenergy, including: International Federation of Organic Agriculture Movements (IFOAM) for organic labeling; Global Good Agricultural Practices (GlobalGAP); Forest Stewardship Council, and Rainforest Alliance for wildlife-friendly produce[6]. IFOAM which is the global umbrella organization for the organic movement, has developed basic standards which encompass organic ecosystems, general requirements for crop production and animal husbandry, through processing and handling, and labeling. It serves as a framework for national and international certification bodies and standard-setting organizations. In addition, FairTrade [7] standards include aspects on soil erosion and management, GMOs, waste management, biodiversity and GHGs.

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[4] Standardization Administration of the People's Republic of China (SAC), www.sac.gov.cn under the General Administration of Quality Supervision, Inspection & Quarantine (AQSIQ)

[5] Directorate for Standards, Metrology and Quality (STAMEQ), www.tcvn.gov.vn., Ministry of Science and Technology (MOST)

[6] Sustainable agriculture practices in particular, organic farming, combine benefits for bioenergy as well as food security. Bioenergy production helps promote food security as the application of its by-products on degraded arable lands can improve productivity through restoring and enriching organic matter in soil thus improving soil fertility, water quality, and lessening soil erosion.

[7] http://www.fairtrade.net/

3.1. SUSTAINABLE AGRICULTURAL PRODUCTION, STANDARDS & SYSTEMS

Standards referring to food quality and safety are also of relevance to the discussion on climate-friendly and sustainable agriculture practices. Currently, the use of sustainable practices may not all lead to certification, such as in the case of Participatory Guarantee Systems or System of Rice Intensification (SRI), but the possibility of creating a community and participatory-type of assurance system for improving markets for associated products, including their cross-border trade, should be explored.

Safe food: Ecological agriculture initiatives gave rise to another category of sustainably produced food and agriculture products. In Viet Nam, where food safety alarms caused consumers to look for alternative sources of fresh produce, the government is working hard to ensure and promote safe food with support from donors. In the late 1990s, following the large number of food poisoning cases in addition to increasing public awareness about the quality and safety of their food, the national government introduced regulations on safe vegetable production. Integrated Pest Management (IPM) and safe vegetable growing programs were then introduced by the district agriculture offices to farmers. While the requirements for safe vegetable production are not as stringent as for organic agriculture (as some chemical fertilizers and pesticides of low toxicity may be allowed), a study by Simmons and Scott (n.d.)[8] showed that farmers often exceeded the requirements of safe vegetable production and have eliminated the use of agrochemicals in some production systems. Farmers who have adopted this type of production system may have safe vegetable or VietGAP certification. Safe fresh fruits and vegetables are sold in special shops, or supermarkets, in big cities such as Hanoi and Ho Chi Minh City. According to stakeholders interviewed, the issue of labeling continues to be recognized as a problem as there have been known cases of mislabeling where produce sold elsewhere are marked 'safe' when in fact it's origin was not proven.

GAP Standards: Good Agricultural Practices are: *"practices that address environmental, economic, and social sustainability for on-farm processes, and result in safe and quality food and non-food agricultural products."* The four pillars of GAP: economic viability, environmental sustainability, social acceptability and food safety, are included in most private and public sector standards, although their scope may vary. The application of GAP minimizes the risks of non-compliance with national and international regulations, standards and guidelines in particular of the Codex Alimentarius Commission, the World Organization for Animal Health and International Plant Protection Convention regarding permitted pesticides, maximum level of contaminants and other chemical, microbiological and physical contamination hazards. Among ASEAN countries, GAP began to be introduced in the early 2000s, where governments promote the participation of small producers in GAP certification through free public extension and inspection services for fresh fruits and vegetables. These GAP schemes applied not only to export markets but to domestic markets as well, and in doing so, have the potential to contribute to sustainable agriculture in the local fruit and vegetable sector (Amekawa, 2010).

Participatory Guarantee Systems (PGS): PGS are procedures and systems that operate at the community level. Farmers and producers are organized into groups and monitor each-others' farm practices according to an agreed set of principles, standards and criteria. According to the ADB CASP Phase II 2011-2015 document, this monitoring prevents the use of bad agriculture practices:

> *"Such systems are essential for integrated pest management, organic agriculture, fair trade and other ethics-based production systems to work. Participatory guarantee systems are also referred to as community guarantee systems. Subsequent certification merely certifies that the products being marketed are in fact as they are labeled."*

[8] *Simmons, Luke and Stafanie Scott (n.d.), "Organic agriculture and "safe" vegetables in Vietnam: Implications for agro-food system sustainability", Department of Geography, University of Waterloo. http://oacc.info/Docs/Guelph2008SocialSciences/ Simmons%20and%20Scott%20(2008).pdf*

3.2. REGIONAL INITIATIVES

The regional strategy to promote bioenergy is contained in the ASEAN Plan of Action for Energy Cooperation (APAEC) 2010-2015, which outlines the strategic goals and actions to enhance energy security and sustainability for the region. Under the Renewable Energy Program area, ASEAN aims to:

- achieve a collective target of 15% share of renewable energy in the total power installed capacity by 2015;
- facilitate intra-ASEAN trade in the sector;
- promote bioenergy as a substitute fuel for the transport sector; promote research and development;
- strengthen regional cooperation on the development of renewable energy, including hydropower and bioenergy, and;
- encourage infrastructure investment.

To accelerate the commercial development and utilization of bioenergy, ASEAN plans to:

- establish a network of key players in the bioenergy and related industries to pursue cooperative partnerships in R&D and to promote sharing of information;
- enhance commercialization of bioenergy;
- develop 'an ASEAN RE Policy Paper' on long-term sustainability of bioenergy, and;
- develop harmonized specifications for bioenergy.

The Economic Research Institute for ASEAN and East Asia (ERIA) is undertaking significant work on biomass utilization since 2008 in terms of region-wide policy studies and organization of forums and exchanges for policymakers across the region. Focus of research has been on developing guidelines and methodology for sustainability assessment, including development of indicators for environmental, economic, and social pillars relevant for biomass systems. Indicators were identified for each of the pillars based on their relevance and importance in the East Asian context: life cycle GHG emissions, total value added (TVA) and UNDP's Human Development Index (HDI) for each respective pillar. Moreover, a regional benchmark standard has been published and harmonization of regional biodiesel fuel (BDF) standards is being advocated by East Asian Summit (EAS) policymakers, supported by research being undertaken by ERIA[9].

On food security, the ASEAN Charter as part of its guiding reference and principles; "…aims to ensure sustainable development for the benefit of present and future generations and to place the well-being, livelihood and welfare of the peoples at the center of the ASEAN Community building process." Cooperation on food security is guided by the 1979 Agreement on the ASEAN Food Security Reserve, the Vientiane Action Program (2004-2010), ASEAN Economic Community Blueprint, and the ASEAN Socio-Cultural Community Blueprint.

The ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action (SPA) on Food Security in the ASEAN region for 2009-2013, was adopted on the 14th ASEAN Summit in 2009 in which leaders pledged to embrace food security as a matter of permanent and high priority policy. ASEAN Ministers of Agriculture and Forestry in coordination with other relevant ASEAN sectorial bodies are accountable for the overall implementation of the AIFS Framework and the SPA on Food Security and monitoring of commitments. Relevant ASEAN Sectorial Working Groups are tasked to elaborate details of the implementation of the SPA, the ASEAN Secretariat reviews and monitors compliances.
The SPA on Food Security has as its strategic aims:

- the strengthening of the food security arrangement;
- promotion of agricultural trade;

[9] *http://www.eria.org/etc/jenesys.html*

- strengthening of food security information systems;
- promotion of sustainable food production, and; encouraging greater investment in food and agro-based industry.

For sustainable food production, public and private sector partnerships are encouraged to promote efficient and sustainable food production, food consumption, post-harvest practices and loss reduction, marketing and trade, as well as the adoption of GAP in the region and alternative approaches and practices for sustainable food security. Capacity building for adoption of international standards for food safety and quality assurance and certification systems is also identified as a strategy to be adopted. The emerging and related issue of bioenergy is a specific area that ASEAN also plans to address through a review of status and trends in bioenergy development in the region and its impacts on food security, and collaboration with relevant sectorial bodies.

The trade-offs posed by the rapid growth of bioenergy in recent years in Southeast Asia that include rising commodity and food prices as well competition for land and water resources are increasingly being recognized by leaders in the region. Cooperation has been established in the ASEAN+3 (China, Japan and the Republic of Korea) on bioenergy and food security through a framework called ASEAN+3 Cooperation Strategy Food Security and Bioenergy Development.

The Global Organic Market Access (GOMA) project is a joint initiative by the FAO, IFOAM and United Nations Conference on Trade and Development (UNCTAD) which aims to simplify the process for trade flow of organic products among various regulatory and/or private organic guarantee systems. GOMA focuses on harmonization and equivalence of organic standards and certification performance requirements as mechanisms for clearing trade pathways. Aiming to create a framework for cooperation on organic labeling and trade, the GOMA-Asia Working Group, was created in 2010. The working group consists of public and/or private sector representatives from Bhutan, Lao PDR, Thailand, Viet Nam, Malaysia, India, Indonesia, China, Republic of Korea, Japan, Philippines, Cambodia, Nepal and Sri Lanka.

On 12 February 2012, GOMA´s Asia Working Group approved the Asian Regional Organic Standard (AROS). The standard, developed over a period of two years, covers organic crop production, processing and labeling. The next step is for the AROS to be recognized formally by governments in the region. The working group issued a declaration recommending that AROS be adopted as the common standard for the region. It called for the ASEAN and the South Asian Association for Regional Cooperation to accept AROS as a regionally harmonized organic standard. Working group members have already initiated the ASEAN adoption process. AROS was also on the agenda of the Task Force on ASEAN Standards on Horticulture Produce meeting, set for 24 to 26 April 2012 in Hanoi. From there, it will go to the ASEAN Working Group on Crops and then to the ASEAN Senior Officers Meeting later in 2012.

There are also several notable innovations on supply chain management in GMS. One of these initiatives is the regional collaboration platform of private organic certifiers, known as the Certification Alliance. Established in 2008, Certification Alliance is a South and Southeast Asian regional certification service network, offering one stop service for organic producers seeking international certification for organic products in the region.

3.3. SUB-REGIONAL & NATIONAL

Table 8 summarizes the current situation concerning policy targets, regulations and standards in bioenergy and organic production in Cambodia, Lao PDR and Viet Nam:

Table 5: Relevant regulatory and institutional profile of CLV countries

	Cambodia	Lao PDR	Viet Nam
BIOENERGY	Renewable Energy Strategy (up to 2030) in place No bioenergy policy Bioenergy mapping available Good collaboration between agencies (MAFF, MIME, MoC)	Renewable Energy Strategy in place (approved in 2011) with targets for ethanol and biodiesel (2020) Bioenergy Guidelines being drafted (2012) Agency collaboration can be improved (MAF, MEM, MoST)	Policy for ethanol and biodiesel in place: Targets up to 2020 Institutional mechanisms in place Funding mechanism provided for Scheme for Bioenergy Development up to 2015 with vision up to 2025 (2007) Complex and highly formal interagency relationship
ORGANIC SECTOR	No strategy or policy for sector No national organic standards Network of active private and NGO stakeholders (COrAA) Foreign certifiers for export products (e.g. organic rice) No participation in GOMA AROS development	National organic standards in place Lao Certification Body under the Dept. of Agriculture (MAF) Internal Control Systems (ICS) from PROFIL project continue to have support from provincial Departments of Agriculture No network of relevant stakeholders Government participation in AROS development	No strategy or definite policy for organic sector Policy focus on safe food Organic standards (sectoral) developed in 2006 Government participation in AROS development NGO initiatives (ADDA) on smallholder Participatory Guarantee Systems (PGS)

An overview on bioenergy targets in the GMS countries and the current organic regulatory systems are displayed in Table 9 and Table 10.

Table 6: Bioenergy policy targets in the GMS countries

Country	2015	2020	2025
Cambodia	N/A	N/A	N/A
Lao PDR	Bioethanol (E10): 10 million liters Biodiesel: 15 million liters	Bioethanol (E20): 106 million liters Biodiesel: 115 million liters	Bioethanol: 150 million liters; Biodiesel: 300 million liters Substitution of 10% of transportation fuel demand
Viet Nam	Bioethanol & Biodiesel:: 1.8 million tons Substitution of 1% of transportation fuel demand by 250,000 tons of Bioethanol and Biodiesel		Bioethanol: 1.6 million liters Substitution of 5% of transportation fuel demand
Myanmar	N/A	N/A	N/A
Thailand	Bioethanol: 3.0 million liters/day (2008-2011) Biodiesel (B100): 1.35 million liters/day (2008-2010)	Bioethanol: 6.2 million liters/day (2012-2016) Biodiesel (B100): 3.64 million liters/day (2016)	Bioethanol: 9.0 million liters/ day (2017-2022) Biodiesel (B100): 4.5 million liters/day (2022)
China	Government mandates (E10) for 10 provinces: 12th Five Year Plan (2011-2015) has no specific production target for fuel ethanol or biodiesel production		

Sources: Renewable Energy Development in Lao PDR, Ministry of Energy and Mines (October 2011), Bioenergy Master Plan, Viet Nam (2007), Alternative Energy Plan of Thailand 2008-2022, USDA Global Agricultural Information Network Report for Biofuels (China) 2011

Table 7: Organic Regulatory Systems in the GMS

Issue	Cambodia	Lao PDR	Viet Nam	Myanmar	Thailand	China
Regulations / Guidelines					X	X
National standards		X	X (sectoral)*		X	X
Scope of certification		X			X	X
Regulatory authority		X			X	X
Implementation body		X			X	X
Certification system		X			X	X
Certification fee		X			X	X
Accreditation		X			X	X
Organic inspectors		X			X	X
Surveillance		X			X	X
Labeling and marketing		X				X
Certification marks						X
Penalty provisions					X	X
Appeals					X	X
Regulation application	Private standards	National standards	Sectoral standards		National & private standards	Domestic & imports
Additional scope			Livestock & Aquaculture		Livestock & Aquaculture	Livestock & Aquaculture
Organic labeling regulations						X
Accreditation system					Voluntary	Mandatory (NAB)
Certification bodies	1 local	1 govt. program	1 foreign		3 govt. programs; 2 local	26 local 6 foreign
Mandatory certification						Foreign & domestic markets
Inspectors						National registration
External recognition						

Source: GOMA Asia Scoping Study, 2011

** Have to be upgraded to become national standards*

Table 11 summarizes the key features of the GMS eco-agriculture sector.

Table 8: Key features of the GMS eco-agriculture sector

Aspects	Key features
Production and organization	632BConversion to eco-production begins to link to eco-trade opportunities 633BFew organized grower groups, large commercial farms and plantations for export products Policy of restricted government recognition or approval of organized groups

Aspects	Key features
	(Cambodia and Lao PDR) may hinder promotion of sector Small farmer land sizes may hinder supply No value-added processing Lack of storage, handling and distribution facilities
Organic guarantee systems	Group certification and participatory guarantee systems introduced and running but need strengthening and close external monitoring
Certification	Presence of foreign certifiers (only Lao PDR has local certifier)
Support mechanism	Presence of some NGOs or social enterprises working to promote sustainable agriculture whose extension focus is on small family producers as a tool to reduce expenditure and health impacts from use of chemical inputs, but not linking to eco-trade Largely driven by NGOs and private sector Agriculture extension services minimally supported by government
Market-related	Low level of awareness among local consumers and/or confusion between organic and safe produce Few certified products in the local market mainly geared for tourists Few large producers aimed at export markets No market information systems linking producers and buyers No active promotion on the part of government Level of entrepreneurship low to moderate Low supply chain management capacity
Trade facilitation	Minor to significant logistical constraints in transport Export procedures need to be streamlined (e.g. Lao PDR)
Government involvement	Minor
Regulatory and institutional frameworks	Minimal and/or early stages of development
Food safety capacity	Very limited to moderate Weak border control risks entry of unsafe agricultural inputs and food Mislabeling of products as organic is a growing threat

Sources: Various including TA 7833 interviews, country inception workshops, and information from GMS Agricultural Trade and Facilitation Strategy Study by Florian Alburo, ADB (n.d.)

3.4. REGULATORY CAPACITY DEVELOPMENT STRATEGY OPTIONS

The recommendations outlined below present regulatory options to the governments of Cambodia, Lao PDR and Viet Nam aiming to develop or strengthen their regulatory capacity in the areas of bioenergy and climate-friendly agriculture. It must be emphasized that these options are recommendations from the part of the Consultant, which served as a starting point for the discussions in June and July 2012 with the Implementing Agencies and the focal persons, and as input to the exercise of drafting together country work plans for the legal, standards and certification sub-component of TA7833, and in parallel, the harmonization roadmap.

TA7833's interventions will focus on specific strategies that were identified, validated by, and agreed among the respective Implementing Agencies and the TA team in field missions in July 2012. These strategies are outlined in the project's work program (see ***Section 8***).

As regulatory processes are complex, take time and differ from country to country, it is realistic to expect some of them to go beyond the timeframe of TA7833, but the fundamental and initial steps should at least have been completed within the project timetable. It is also necessary to mention that regulatory capacity development interventions in themselves will not assure success of the

project. Depending on how they are designed, their outputs could be vital instruments in attracting investment to the sectors along with the policy stability and confidence they convey.

As a guiding and systematic framework for implementing the proposed strategies for bioenergy and food security, the Bioenergy and Food Security Decision Support tool developed by FAO and the UN Environment Program (FAO/UNEP, 2010) could assist Cambodia and Lao PDR, and to a lesser extent, Viet Nam in developing the relevant legal, regulatory and institutional frameworks in their respective countries. This package of tools will help create national planning and decision-making processes that are comprehensive, needs responsive, and enable the management of attendant risks and challenges in a more effective and transparent way. Typical steps in the process can be adapted to specific country contexts. TA7833 will coordinate with FAO/UNEP to provide regional and where necessary, national trainings to government officials and technical staff on the Bioenergy Decision Support Tool (BEFS Criteria and Indicators).

During stakeholder meetings, Inception Workshops and the *1*st *GMS Forum on Harmonization of Standards for Bioenergy and Food Security* in Nanning (02 to 06 July 2012), steps and topics for the development of a harmonized Bioenergy and Food Security Strategy in CLV have been proposed and screened. While conducting this participatory exercise it became obvious that each CLV country still needs to do country specific developments before a regional – even CLV harmonized strategy for biomass utilization that enhances both food security and bioenergy could be in place. The following sub-chapters provide proposals – formulated in the country-based meetings during the Inception Phase (December to March 2012) - of what could be done in each country to achieve the common goal.

3.4.1. Regional

Detailed strategies have been developed as proposed actions that can be undertaken by those beyond the project-term which could support development and strengthening of bioenergy and food security frameworks in the GMS. These proposals formulated by the Consultant served as inputs to the exercise of drafting the harmonization roadmap undertaken by the CLV implementing partners and the entire TA team during the workshops in Nanning in July 2012. The outputs of those workshops were presented to the GMS WGA9 and subjected to a roundtable discussion. Comments from WGA representatives were noted and taken into account, and details fleshed out during validation meetings in subsequent TA team country missions in July. The outputs are presented in the Report on Proceedings[10], including a *Roadmap for Harmonization of Standards for Bioenergy and Food Security in Cambodia, Lao PDR and Viet Nam*. This roadmap now provides the basis and the reference document for planning and executing the harmonization and related activities within the implementation period.

3.4.2. Mechanisms and Institutional Arrangements for Harmonization of Standards

The following outlines what has been undertaken so far in the project in regard to institutional arrangements and mechanisms and incorporates suggestions put forward by the WGA representatives during the roundtable discussion of the harmonization work plan in the GMS Forum in July 2012. This list is preliminary and constitutes only partial measures, as once baseline surveys and studies relevant to standards have been completed, new and appropriate institutional mechanisms, region-wide, across CLV, or nationally, will be proposed, if deemed necessary, to further carry out standards harmonization objectives:

i) Relevant international standards, or regional standards, if available, shall provide the reference for drafting of national standards. National procedures and protocols for standardization will be observed in the adoption of or harmonization of national standards to international standards. Each CLV country has its own legislation setting out the standard-setting process, including cases where an internationally accepted standard is already in place and it is a question of aligning national standards to this. As

[10] *https://docs.google.com/file/d/0B1wKP1C0cX-jb1gxbm1zVks3c0U/edit?pli=1*

of July 2012, the clearly identified standard that is of relevance to the project is the Asian Regional Organic Standards (AROS). Other criteria and international standards will be identified along the project implementation phase. Based on studies to be undertaken until mid-2013, they will be assessed for relevance and applicability to the key technologies being promoted under this TA, for possible adoption and harmonization by CLV at a later stage.

ii) Identification of Technical Focal Point for Standards (TFP-S). The national standards authority in each of the CLV countries was invited to participate in the harmonization workshops and work plan development in Nanning in July 2012. The representatives who were sent by their respective agencies, the Institute of Standards (Ministry of Industry, Mines and Energy) of Cambodia and the Department of Standardization and Metrology (Ministry of Science and Technology) of Lao PDR, and APMB (MARD) representative for Viet Nam, were designated as the TFP-S. It is expected that at a later stage in the implementation, the involvement of the Directorate for Standards, Metrology, and Quality (STAMEQ), Viet Nam's standards authority will be facilitated. The role of the TFP-S is to coordinate, from the government partners' side, all matters in TA7833 that deal with standards, including their development or updating, and harmonization to internationally accepted standards, of technologies and processes relevant to bioenergy and food security. The TFP-S will be involved in CLV-wide as well as GMS-wide activities on capacity-building, information and skills exchange such as the standards Forums.

iii) Under the GMS WGA, the creation of an ad-hoc sub-working group (CLV) for periodic capacity building meetings on bioenergy and food security standards may be considered. The nature of such groups under GMS WGA should be informal as GMS WGA is not an official organization, and high-level decision and endorsement on behalf of member countries can only be done within the ASEAN structure.

iv) Establishment of a CLV-wide pool of inspectors through a database of accredited inspectors and inspection bodies for eco-products, organic products, sustainable agro-forestry, technical standards, among others. Other national capacity building activities will be undertaken related to certification, depending on the results of a training needs assessment that will be undertaken during the project implementation.

v) Inter-regional cooperation with standards representatives/agencies of other GMS countries (China, Thailand, Myanmar) through their participation in CLV-initiated activities (e.g. Standards Forum), and harmonization workshops or discussions in WGA meetings.

vi) Exchange of experience and knowledge through study visits within GMS countries on climate-friendly agriculture practices and certification systems, as well as information sharing on other experiences on harmonized regional standards (e.g. East Africa, Central America), among others.

vii) Coordination with IFOAM GOMA on AROS capacity building trainings, as well as building of private sector-led alliances and networking with interest groups.

viii) A Standards Forum, to be organized 2-3 times a year with participation of international agencies working on standards (FAO, IFOAM, etc.) aimed at capacity building for CLV decision makers and to promote dialogue and cooperation on sub-regional harmonization. Other GMS countries (China, Thailand, Myanmar) will also be invited to these forums.

ix) Institutional cooperation with international organizations and regional partners such as FAO, IFOAM GOMA, ASEAN for common activities and expertise sharing in the area of standardization.

x) Awareness-raising on the issue of standards harmonization among decision makers at the national level, through policy briefs and knowledge products (report summaries, etc.) disseminated by the project that could serve as inputs for policymaking supportive of harmonizing standards on bioenergy and food security.

4. PRIVATE SECTOR ASSESSMENT

A review of the private sector and innovative financing mechanisms is being developed in the form of a separate TA7833 knowledge product.

The Inception Phase of TA7833 was used to identify the barriers and challenges that can hinder the private sector in CLV to make use of a public loan or a grant loan. The framework developed by Enabling Access to Sustainable Energy (EASE, 2010) was adapted as potential approaches and methodologies for enabling the public and private sectors to work as strategic partners in the promotion of clean bioenergy and climate friendly agriculture for sustainable food security.

EASE is a network of 19 partners (10 key members and 9 project partners) functioning in developing countries to scale up energy access for the poor. The EASE partners work towards the provision of the energy services on a commercial basis from a local supplier. Following this vision, the partners focus their activities on facilitating the growth of rural energy sectors and on improving business-enabling environments, including the availability of business development services. EASE has developed over 70 pilot projects in 9 countries (including CLV) to demonstrate how the poor can access to clean energy through sustainable local business models.

In the EASE vision, development of cooperation organizations overcomes the obstacles in local markets through short-term interventions, but without becoming part of these markets. Thus, interventions should be based on a clear understanding of local energy markets.

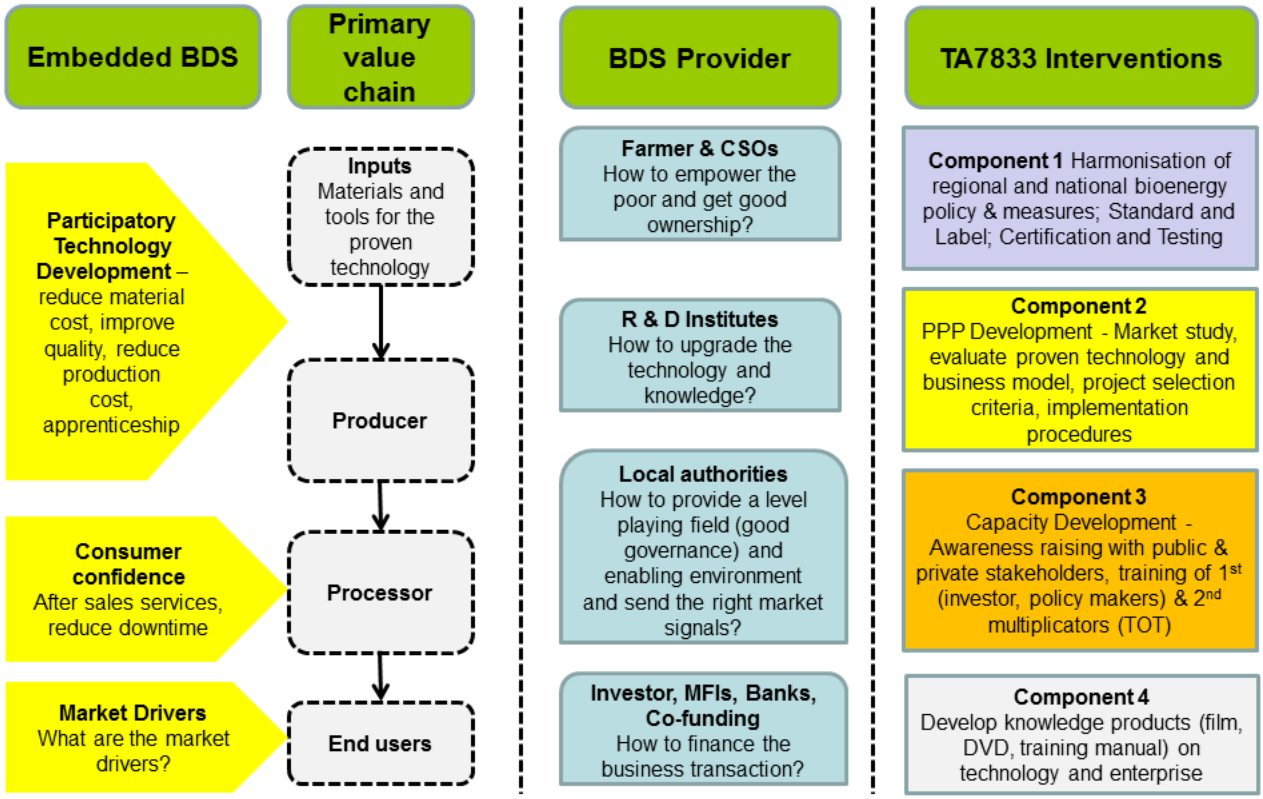
In any well-functioning business environment, a variety of formal, informal, government and non-profit sector providers offer Business Development Services (BDS) to entrepreneurs. These include accounting bureaus, legal offices and printing companies. Many BDS providers exist in the informal sector. Although these providers are less visible than the formal ones, their products are very important for the development of small enterprises. Their services range from equipment repairs to financial start-up assistance, and from promoting products to potential customers to providing small enterprises with ideas on new products they can sell.

In both the formal and informal sectors, embedded service operators also exist. These operate in the same value chain as the receiver and offer services in addition to their normal products. Examples of embedded services are design advice offered by a retailer to a producer and training received as part of equipment purchase. Figure 2 shows the role of BDS in a typical rural energy and food value chain and how the four components of TA7833 could intervene to enhance and strengthen the value chain.

Market bottlenecks exist for the implementation of technology through local entrepreneurs or SMEs at the local rural level. These barriers have been discussed in the previous sections that prominently include lack of knowledge, quality management, standardization of technology, current consumer base, etc. EASE analyzed these barriers for each of the undertaken projects and the following interventions were taken to enhance the PPP and build better trust among the local people:

- Dissemination of materials: Promotional materials such as leaflets, brochures, poster, flyers were disseminated through various sources such as local shops, end users, etc., depending upon the type of consumers of a specific technology.
- Training: Technical knowledge was provided to the local distributors, workers, builders etc. depending upon the type of project to improve the overall operation and maintenance of technologies such as ICS, gasifiers, etc. Also, marketing training was given to improve the sales and adopt an efficient marketing strategy for the local people.
- Monitoring and evaluation: Projects were constantly monitored through end user survey, technology performance, etc. For example: For a pico hydro project in Lao PDR, electronic load controller was tested at household level to assess the advantages of the system and the scope for the further improvements.

Figure 2: Value chain framework for analysis public and private partnership



Apart from the interventions taken up by EASE, there still exists various challenges such as availability of raw materials, willingness of villagers to trust and pay for the given services, etc.

The potential interventions that could be taken up by ADB in the context could be:

- Development of efficient entrepreneurs to promote and sell the technologies. The enabling environment could be possible from the development of effective marketing and distribution networks.
- Analyzing if the groups such as biogas associations could act as 'one stop shop' to provide marketing support and training
- Instilling project ownership for all the stakeholders of a project by developing a model that could generate trust, ownership and buy in of a technology.

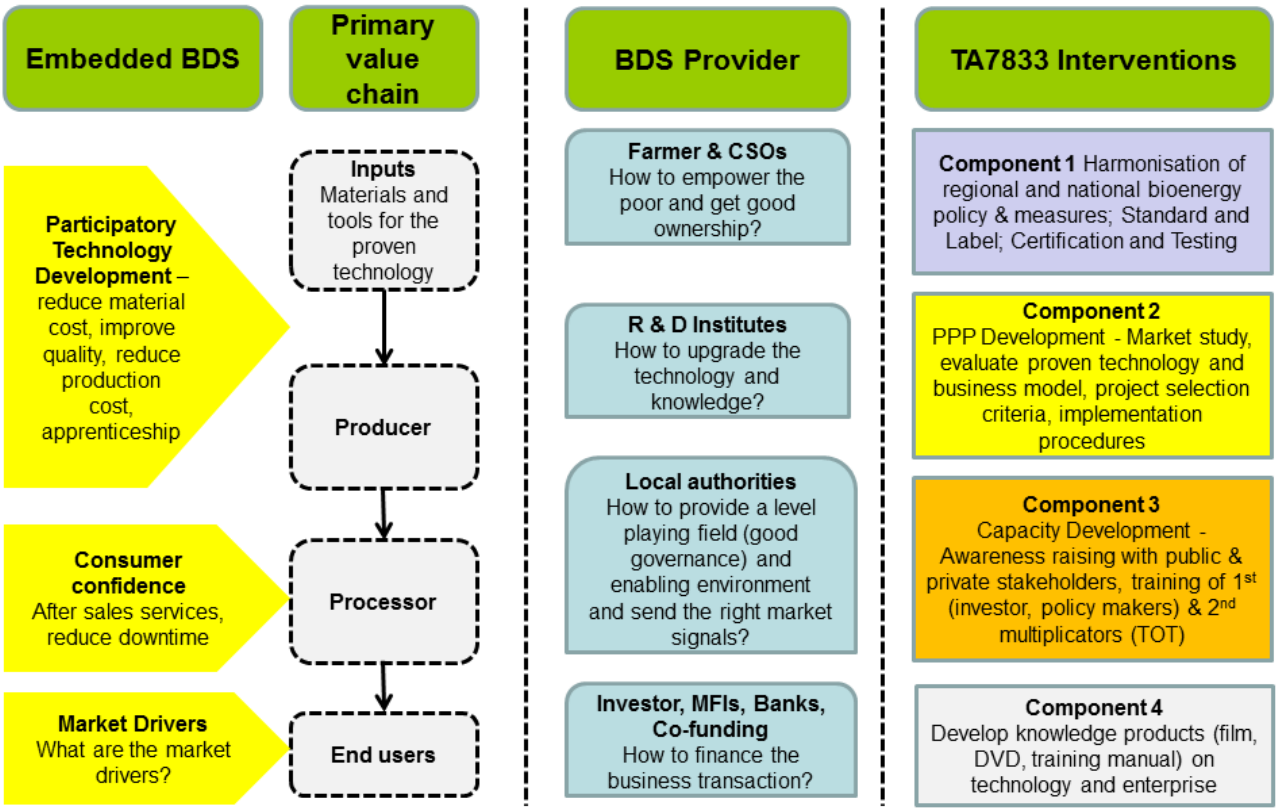
4.1.1. Energy access - agriculture development nexus for PPP

The EASE approach to the energy access - agriculture development nexus does more than merely view energy as an enabler of agricultural development and then focus on technological innovations. The program explored the particular conditions of local agricultural markets and local energy markets and piloted solutions in which energy access and agricultural development could be mutually reinforcing. From a review of the program cases, four main themes emerge which make useful contributions to the debate surrounding the energy access - agricultural development:

Focus group for networking and peer to peer training: Farmer-based and farmers' support organizations can be drivers for energy access. The key characteristics are:

- Well established farmer-based and farmers' support organizations play a key role for commercial expansion of energy access.
- By spending their trust, they mobilized a critical customer base, which was sufficient to become attractive to suppliers.
- Knowledge gap between suppliers and consumers can be bridged to develop suitable products (NBP, Vacvina) and sales conditions (organic vegetables).

Figure 3: Value chain framework for public and private partnership



Energy for domestic and productive use: Access to modern energy solutions improves agro-food processing provided certain conditions are met. The key characteristics are:

- The energy-led intervention focus on delivering energy access solve agricultural energy needs (e.g. post-harvest drying)
- Bottom up participatory approach generate greater acceptability and ownership of the innovation.

Agriculture led energy system: Promoting agricultural use can be an incentive for the expansion of energy production. The key characteristics are:

- This agriculture and agro-processing led development can create a critical mass of customer base that would attract energy entrepreneurs to engage in energy production for both productive and domestic uses.
- The emphasis is on agricultural development driving energy access rather than vice versa
- A sustainable model that generates livelihood and income and so that affordability is not an issue.

Participatory energy planning at local authority development planningLocal development planning processes are key institutional mechanisms in negotiating virtuous synergies among local energy access and agricultural development actors. Key characteristics are:

- Structured periodical processes of local economic development planning at the district or sub-district level.
- Developing local energy markets in relation to local economic development.

Linking to a local development planning process poses several challenges. It could be a very lengthy process in which different interests and themes compete for dominance in the final plan. This entails a process of negotiation among competing priorities for which local authorities are often poorly equipped. Furthermore, once plans are finalized, funding from central government is

often slow to follow for their implementation. Evidence from the pilots suggests that where receptive local authorities lead an open process, it is worth engaging as it can be a unique opportunity for actors who usually work in isolation (local authorities, entrepreneurs, energy providers, energy users, agricultural groups and support organizations) to negotiate shared priorities and workable solutions.

Increased demand from productive agricultural uses contributes significantly to making energy provision more viable to local operators and can stimulate community groups to become energy providers themselves. In this process, more people gain access to energy while agricultural and economic development advance. Institutional mechanisms can be used to negotiate virtuous synergies among local energy access and agricultural development actors.

The potential interventions that could be developed in CLV under TA7833 are summarized in Table 12.

Table 9: Food and energy security through private sector participation[11]

Intervention model	Examples	Potential interventions
1. Focus group for networking and peer to peer training e.g. farmers group, cooperatives, Women Union	- National Biogas Programs of Cambodia, Lao PDR and Viet Nam (Vacvina and NBP/SNV) - Women Unions - Organic Vegetable in Lao PDR (ex Helvetas) and Viet Nam (ADDA program) - Organic cashew in Cambodia (Mekong Rain)	- Women Union - Biogas association - Farmers schools - Organic group
2. Energy for domestic and productive use (e.g. agro-food processing, palm sugar cooking, tea drying, cottage industry, sundry shops, sewing)	- GERES introduced the large-scale improved Vattanak stoves to 20,000 palm sugar farmers (saved fuel wood usage by up to 30%).	- Green charcoal - Expand the cookstove program to new territories and other agro-processing (tea drying, bean curd making, rice wine making)
3. Agriculture led energy system	- Bioslurry from biogas could form an important link as a source of organic fertilizer.	- Development of an Eco-Village to provide food security, agricultural productivity and sustainable livelihood and income
4. Participatory energy planning at local authority development planning	- No such models were found in CLV from the research	

[11] *Framework adapted from Serena, 2010*

5. CAPACITY BUILDING ASSESSMENT

The institutional mapping exercise carried out during the inception phase resulted in a list of organizations that already provide services relating to capacity building on biomass-to-energy technologies and improved food production in the GMS. The challenge during TA7833 implementation is to identify organizations with proven training experience and capabilities to engage in distance-learning programs. In general, organizations offering capacity building services in CLV countries are relating their training programs to their own professional experience, whereas the TA7833 capacity building component, with a focus on the interrelation between biomass, bioenergy and food security, is relatively new. Capacity building activities will be updated as part of the feasibility studies for the Pilot Projects.

The TA7833 capacity building program will apply a blended approach to activities such as public awareness campaigns, distance-learning methodologies, in-situ and field actions during project implementation. The focus of capacity development will generally fall on the pilot project topics as agreed with the IAs and listed in APPENDIX 3:. Capacity development interventions in themselves will not assure the success of the pilot projects but will certainly foster enhanced knowledge, awareness and appetite for subsequent bioenergy and food security initiatives and investments. Through this mechanism, TA7833 will promote an enabling environment for efficient biomass utilization to enhance bioenergy and food security alongside a guiding framework for implementing country- and region-based strategies.

The Consultant, following the recommendation of ADB to cooperate and coordinate with the regional FAO office in Bangkok, analyzed the appropriateness of the BEFS Decision Support tool (FAO/UNEP, 2010) in close cooperation with the GBEP. This support tool provides criteria and indicators for balancing bioenergy and food security in any specific context. Capacity building in BEFS Criteria and Indicators will be useful for governmental officials in CLV in creating the enabling environment in their respective countries (relevant legal, regulatory, and institutional frameworks). This online and offline tool package could also inform national planning and decision-making processes to ensure they are comprehensive, transparent, needs responsive and enabling in the management of attendant risks and challenges.

At the request of the NFPs, the Consultant has initiated dialogue with FAO/UNEP to provide regional, and if required, national trainings to government officials and technical staff on the BEFS Decision Support Tool. An introduction of the NFPs to BEFS Criteria and Indicators and the GBEP criteria is a critical step to regional standard harmonization and will enable NFPs and TFPs to monitor and support the approved pilot projects and to assure that the ensuing loan projects will apply these internationally and regionally agreed criteria and indicators.

5.1. SUMMARY OF CAPACITY DEVELOPMENT INSTITUTIONS

A summary of capacity building institutions identified by TA7833 is presented in Table 13

Table 10: Relevant capacity development institutions

Name	Capacity Building Topics	Target Groups	Capacity Building Tools & Methods
Cambodia			
General Agriculture Department – MAFF	Integrated Crops Farming System Rice production Home gardening for Food Security Cooperative organization	Staff from provinces, districts, communities; NGOs; Farmers; agriculture input suppliers, traders and dealers	Courses as Training of Trainers (ToT); Practical training and demonstrations Farmer Field Schools (FFS) Improved agricultural

Name	Capacity Building Topics	Target Groups	Capacity Building Tools & Methods
	Rice & vegetables Pesticide use Soil improvement, soil nutrients Biochar and cook stove research and development and leveling Bio-charcoal use		techniques and technologies
National Biogas Program – MAFF	Biogas digester construction, operation and maintenance (O&M); Research & Development, marketing, institutional support	Staff from provinces, districts, communities; NGOs; Farmers; private sector companies; local craftsmen	Training of Trainer courses (top down)
CEDAC Centre d'Etude et de Développement Agricole Cambodgien	Biogas digester construction and productive slurry use Food security Organic Farming Gender Health & environment	Rural population	Campaigning, Model Farmers & exposure visits (Farmer-to Farmer training) Video Clips (DVD) (success depends on equipment and classroom mentoring, as most farmers do not own DVD player) Workshops, meetings, case studies TV spots Newsletters, magazine Website (but rural people can hardly access internet)
Build Bright University	Engineering program including power generation and biomass Law and social development	private university with twenty thousand students; campuses in eight provinces and city with	Lessons & lesson books Newsletter and publications Flyers, advertisements Distance learning program together with international universities (Europe and Asia) Cascade learning and web based learning
SME Renewable Small and Medium Sized Enterprise for Renewable Energies	Gasifiers technology Business training for rice millers	Clients (about 40 up to now)	Book about biomass gasification technology in Khmer language training material and manual from India

Name	Capacity Building Topics	Target Groups	Capacity Building Tools & Methods
			newsletter and flyers with product information for clients and advertising; website (not for training), TV and Radio spots workshop for clients
GERES Groupe Energies Renouvelables, Environnement et Solidarités Group for the Environment, Renewable Energy and Solidarity	Improved cook stove technologies Reforestation	Clients: 75 stove centers and 200 communities	Workshops and website (not for training)
SRER KHMER NGO: 'Field of Cambodia'	Program 2011 to 2015: Sustainable Agriculture and Land Resources Rights (SALR), Natural Resources Management and Livelihoods (NRML), Climate Changes Adaptation and Disaster Risk Reduction (CCA & DRR), Agri-Business and Value Chains (ABVC) Socio-economic analysis, integrated homestead production, farmer association management, business planning, participatory marketing studies	Status 2010: 610 Farmer Associations in 562 villages, 130 communes of 60 districts in 12 provinces Trainees: 35,787 farmers, 48% of whom were women	participatory discovery learning approaches; farmer-led activities; farmers networking Farmer Field Schools (originally FAO project) farmer trainers and Government District Trainers Farmer Field Schools (FFS) and extension; Farmer Life School
Royal University of Agriculture and Institute Technology of Cambodia	Governmental Higher Education Institutes providing training on Biomass or Agriculture	Students in Phnom Penh only	Lectures
Laos PDR			
ADB Northern Region Sustainable Livelihoods Through Livestock Development Project	Community driven development	communities	
ATF (Asia Trust Fund)/ IFAD/Asian Development Fund) in 5 southern provinces	Sustainable Natural Resource Management and Productivity Enhancement	communities	
Poverty Reduction and Development Association (PORDEA)	(1) Organic and sustainable agriculture related to biogas production	(1) ethnic minority community in Luang Namtha and	(1) Training of Trainers (2) Outreach

Name	Capacity Building Topics	Target Groups	Capacity Building Tools & Methods
	from waste of animals (2) Food and nutrition security (3) Pico-hydro power installation and capacity building (4) Sustainable natural resources management and used for food (5) Gender and marketing of local produce	Sekong province (2) villages in Xieng Khoung province (4 rural poor women Bat UXO area in Xieng Khoung province (5) marginalized women in Vientiane (6) high school students (7) local civil society sociopolitical organizations	campaigning activity (3) Rural community leadership and Self-help group organizing (4) Research and study (5) IEC tools design and development (7) VDO documentary production, TV and Radio program (8) Discussions; Group work; Farmer-to-Farmer Training; Classroom lectures; Outdoor training and exposure visits; Practical work and workshops
Agro-Forestry Training Center (National Agriculture and Forestry Extension Service) NAFES http://www.laoex.org/LEAP.htm	Sustainable technologies for agriculture and forestry: Tree nursery Forest in watershed areas Improved cook stoves Forest Management Participatory forest conservation	local government staff and farmers in 15 villages	Demonstration and dissemination of tested agriculture and forest practices; Technical training (Training of Trainers): Presentations & discussions, Group work & Practical Field work
UNU-IIST project ICT-Enabled Education for Poverty Reduction: United Nations University – International Institute for Software Technology & MAFF & University of Bremen (Germany) http://iist.unu.edu/news/capacity-building-workshop-laos	PRAM Knowledge Sharing Network (KSN) the platform enables district officers to share information about local level poverty reduction projects in a peer-to-peer learning environment, to ask questions of experts in the various departments of the Ministry of Agriculture and Forestry, and it supports the Ministry in disseminating information to the district level	participants from twelve districts of six provinces: Information Working Group from each department within the MAFF; extension staff from District Agriculture and Forestry Offices, Technical Service Centers and Village Development Centers	introduction workshop (Feb 07, 2012): PRAM Knowledge Sharing Network (KSN) software is an online environment that supports horizontal and vertical communication among officials in district, provincial, and national offices to support ongoing poverty reduction initiatives. (Deployment of the PRAM-KSN in Jan-12)
Rural Training and Development Center (RRDTC) under the umbrella of the Lao Union of Science and Engineering	Project Cycle Management; Financial management	Rural population from 'rice roots' villagers to senior officials in 15	participatory curriculum design, training, research and resources for

Name	Capacity Building Topics	Target Groups	Capacity Building Tools & Methods
Associations (LUSEA) http://www.rrdtc.org/	Action & decision oriented research for rural communities to half poverty by 2015; to promote gender equality and empowerment of women, to reduce child mortality and improve maternal health, and to ensure environmental sustainability	provinces; 45% trainees are women; Training to more than 10 different ethnic groups	community development; training center in Vientiane; courses designed to upgrade and strengthen social and technical capacity at all levels of society
ACIAR Australian Centre for International Agricultural Research http://aciar.gov.au/country/laos	Safeguarding food security in rice-based farming systems: technical and agribusiness research collaboration to develop domestic and export market opportunities for rice, cattle and other agricultural products; Agroforestry systems	Researchers and governmental staff	R&D; dissemination of crop-specific technology information packages; Implementation of soil fertility management practices farming systems analysis and farm financial modeling
LIRE Lao Institute for Renewable Energy http://www.lao-ire.org/	Sustainable development of a self-sufficient renewable energy sector	Governmental and non-governmental staff interested in RE	agronomical, technological and socio-economic research services, and works to provide free public resources
National University of Laos - Faculty of Environmental Education	Environmental technologies for sustainable development; feasibility studies, need / baseline / impact assessments, research; development planning	Students (bachelor & master program); rural communities	academic lectures; practical training and projects / internships in rural communities
Viet Nam			
MARD - Viet Nam Agricultural Extension Center	All areas of agriculture, forestry & aquaculture development, biogas	rural communities	Extension work, information delivery, knowledge dissemination, training materials
NUSA Viet Nam JSC http://nusa.vn	Bioslurry post treatment and organic soil amendment	rural communities and local authorities	Applied research in village environment; information dissemination, on-site

Name	Capacity Building Topics	Target Groups	Capacity Building Tools & Methods
	technologies		demonstration
CASRAD Center for Agrarian Systems Research and Development www.casrad.org.vn	Marketing, labeling, SRI	farmers, agricultural extension services, local authorities	manuals, ToT, research
Viet Nam Biogas Association	Biogas & bioslurry	farmers, local authorities, agricultural extension services (MARD)	brochures for awareness raising, manuals, models, ToT, DVDs, Posters
Agricultural Science Institute for South Central Viet Nam (ASISOV)	Crop management, organic farming, biochar	Researchers & rural communities	On-site test and demonstration
Northern Mountain Agricultural and Forestry Science & Technology Institute (NOMAFSI)	Organic farming, land use & soil fertility management, cassava conservative farming	rural communities	On-site test and demonstration
Hanoi Agricultural University (HAU)	Crop residue handling, mushroom production, organic farming,	Researchers & rural communities	On-site test and demonstration
Research Center for Energy & Environment (RCEE)	Technologies for biogas for electricity generation	Researchers & rural communities	On-site test and demonstration
Center for Rural Communities Research and Development (CCRD) under Viet Nam Gardening Association (VACVINA)	Biogas technologies, gardening, organic recycling	rural communities, farmers and constructors	On-site demonstration
Da Nang Research & Development Center for New Energy	Research, design & construction of renewable energy models	Researchers	Lab and On-site test
Da Nang University – Faculty of Science & Training Post Higher Education	Biogas for electricity generation	Researchers, students	Lab and On-site test
Population, Environment and Development center (PED)	Cook stoves & biochar	Clients, rural communities	On-site demonstration, product use training
NGONLUAXANH import-export trading Co. Ltd	Biomass pellet production and trading	Clients, rural communities	On-site demonstration, product use training - potential site to visit during study tour
Thanh Tam	Production and trading of rice husk briquettes	Clients, rural communities	On-site demonstration, product use training - potential site to visit during study tour or exposure visits
Viet Nam Women Union	Biogas and improved cook stoves	Clients, rural communities	On-site demonstration, product use training

Name	Capacity Building Topics	Target Groups	Capacity Building Tools & Methods
Farmer association	Biogas and biomass utilization	Farmers and rural communities	On-site demonstration, product use training
Luong Son Cooperative of Organic products	Organic products	Clients, rural communities	Awareness raising, On-site training and supervision
Actions for the City Development (ACCD) sponsored by AusAID	Organic vegetable production and marketing	poor farmers	project - potential sites to visit during study tour or exposure visits
Ecolink Co. Ltd	Consulting for organic certification of agricultural produce Export organic tea	Clients, rural communities	Awareness raising, On-site training and supervision - potential sites to visit during study tour or exposure visits
Organik Dalat JVC.	Organic agriculture	Clients, rural communities	Awareness raising, On-site training and supervision
Vinagap Ltd. 'Viet Nam Good Agricultural Practices'	Agriculture value chain; Marketing of organic, safe vegetable	Clients, rural communities	Awareness raising, On-site training and supervision

5.2. EXPECTED TOPICS FOR CAPACITY DEVELOPMENT

The overall need for capacity development in the cross-cutting themes of TA7833 is clear from consultation with the multiple stakeholder groups approached by the TA team. Whilst there are distinct differences in the status of knowledge, practice and research in the CLV countries, there is commonly a lack of linkage between bioenergy and food security governments' policies and practice. The Consultant therefore recommends – before any detailed technical training – to develop analytical capacity, especially in government stakeholders in CLV countries, applying the FAO's Bioenergy and Food Security (BEFS) Analytical Framework and Tool Box[12]. Relevant Ministries have already successfully utilized this framework in Thailand.

5.2.1. Cambodia

In Cambodia, the IA and sector stakeholders identified the following potential topics for capacity building:

a) Technical training on ICS, including scaling up dissemination of rice husk fuelled cook stoves and improve other cook stove models currently in use;
b) Technical training for scaling up knowhow on production and application of biochar;
c) Fine-tuning biogas technologies for small farms to facilitate scaling-up & dissemination;
d) Analysis of lessons learned from gasifier projects, which are already implemented at rice mills, brick mills and rural electricity enterprises in order to widely disseminate the technology;
e) Training on how to access capital for investment in biomass-to-energy technologies – either in projects or in business;
f) Training to financial institutions to improve their understanding of biomass-to-energy technologies, and other renewable energy technology business aiming to increase

[12] *www.fao.org/bioenergy/foodsecurity/befs*

appraisal and supervision ability of the financial institutions; the training should provide capacity in assessing creditworthiness of renewable energy loan applicants.

5.2.2. Lao PDR

In Lao PDR, the NFP and sector stakeholders listed the following potential needs for capacity development:

a) National Land Use Planning System;
b) BEFS criteria to prioritize bioenergy project promotion;
c) Impact assessment on existing and on appropriate contract farming system;
d) Addressing gaps in the policy and regulatory framework;
e) Improve capacity on law enforcement among government agencies;
f) Coordination of bioenergy policies through Lao PDR Government;
g) Financial packages for investors that take into account the unique opportunities and needs of the bioenergy sector and favor projects that support development objectives;
h) Management and administration of public funds in combination with private finance, to overcome investment barriers;
i) Public-private partnerships (PPP): how to enable market access for private sectors, whilst achieving challenging development goals for public entities;
j) Integration of bioenergy sector into long-term planning documents such as NSEDP and NGPES aiming at secure markets for investment including long-term soft loans, with securities linked to moveable assets and built-in requirements for operation and maintenance by qualified technicians;
k) Series of farm-site technology demonstration projects;
l) Improved data and information sharing system amongst key public and private stakeholders;
m) Improved management of the Renewable Energy Activity Database by Government;
n) Public education initiatives to promote bioenergy at all levels;
o) Local management capabilities of appropriate technologies.

5.2.3. Viet Nam

In Viet Nam, the NFP and sector stakeholders have not identified capacity development needs but these may include:

a) PPPs in bioenergy and food security projects for establishment of sustainable enterprises;
b) Enhancing climate-friendly rice production within SRI;
c) Financial management of investment loans;
d) Market analysis and sustainable value chain development.

The capacity development activities will all be related to the pilot project topics although it is important to frame the specific topics within their wider context in relation to climate change mitigation, adaptation and climate-friendly agriculture. The long list of topics identified herein will be further refined through the course of project implementation.

5.3. PLANNED APPROACHES FOR CAPACITY DEVELOPMENT

TA7833 aims to incorporate lessons learnt from complimentary projects and research activities in the GMS and elsewhere to ensure that the activities of the project are relevant and appropriate.

Cambodia, Lao PDR and Viet Nam have expressed considerable interest in developing their bioenergy potential. Capacity building on efficient biomass utilization is therefore necessary in light of the current situation:

- Cambodia and Lao PDR especially suffer from food insecurity. Up to one third of all rural households suffer from some form of food insecurity each year.
- Significant technological variations within GMS countries highlight the need for enhanced regional cooperation to develop and share contextually appropriate bioenergy solutions.

- There are substantial differences in the levels of technical education, different regulations and development approaches by the governments.

The real potential of biomass for energy generation and sustainable land and biomass use to ensure food security has not yet been recognized in the CLV countries. Despite the fact that there are appropriate options and technological solutions available, there are barriers to mass dissemination of such technologies including:

- Weakness in understanding of the multi-layer linkages between bioenergy and food security;
- Lack of effective mapping techniques / assessment methodologies of available biomass resources;
- Lack of technical capacity for both improved agriculture and renewable energy;
- Lack of knowledge on how to access financing sources;
- Lack of managerial capacity for sustainable market development for biomass-related technologies and techniques for enhanced food security and secure bioenergy supply in both governmental and non-governmental stakeholders;

5.3.1. Approaches and methodologies

Training of governmental officials from CLV ministries of agriculture and ministries of energy in the application of the FAO's BEFS Analytical Framework will be a centerpiece of the capacity development process to enable them to overcome low institutional capacity to identify and promote quality projects. There is also a lack of expertise on climate change issues outside the core environment ministries.

Biomass resource mapping as well as social baseline and impact assessment techniques will be introduced and knowledge on relevant methodologies will be updated. These capacity development activities will be carried out as classroom lectures combined with practical training and accompaniment in the field. In addition, lectures and guidelines will be made available online and as CD/DVD for self-training and as on-going reference materials.

Publicity will be used to ensure outputs are widely known and can be accessed easily in different formats depending on the accessible media of target audiences, for example through audio, stakeholder meetings, reports, factsheets, TV and radio. During inception phase trials, the Consultant already experienced significant difficulties in CLV and China to access certain web-based training programs like http://www.vidyo.com/, proposed by ADB, and http://www.eventbrite.com/features/, used and recommended by USAID. Either the national Internet restrictions have prohibited access or the providers used the web only for advertising a 'conventional' capacity building activity.

In addition, each country has its own restrictions on information and communication technologies. For example, whilst common in urban areas, third generation or '3G' mobile data technology in Cambodia does not support video calls following a Prime Minister's Anti-Pornography Decree in 2006. For this and other reasons, standard distance-learning methodologies are mostly considered as inappropriate for the rural context and the project will try to operate through other channels in this respect. Lao PDR is still well behind many of its neighbors in terms of speed and price of mobile data connections, although 3G networks are available in some areas. Most internet communication outside the country via links to Thailand, Viet Nam, China and Cambodia now passes through the Lao National Information Centre[13] Gateway. However, there are very few website restrictions imposed by the government[14]. 3G cell network coverage has become widespread nationwide in Viet Nam, especially in the major cities[15].

[13] *http://www.tein3.net/upload/pdf/Phonpasit_Phissamay.pdf*

[14] *http://www.retire-asia.com/lao-communications.shtml (last retrieved March 14th, 2012)*

[15] *http://imagineasiatravel.com/reference/Viet Nam-guide.html (last retrieved March 14th, 2012).*

During implementation, the Consultant will further intensify investigation on how to enable at least government officials, NGOs and training centers to easily access web-based training materials. These will include streaming or downloadable web seminars; a dedicated GMS Bioenergy YouTube 'channel' (perhaps linked to the ADB's own - see Coral Triangle Initiative[16]); and PodCasts (this list is not exhaustive). This includes investigating synergies with the ADB-funded Tonle Sap Technology Demonstration Project in Cambodia to assess possibilities to utilize the planned network of e-kiosks, community-based e-centers and/or village-based information centers. Such ICT networks are intended for improving access to agricultural market information but such information is also of interest for bioenergy stakeholders (e.g. for biomass commodity prices and availabilities). Rural ICT infrastructure may be equally effective as e-learning portals for distance capacity building and mentoring, although currently in the rural areas of Cambodia, Lao PDR and Viet Nam the internet infrastructure is minimal and depends heavily on rural electrification programs. In addition, the coverage of mobile phone systems in the countries varies significantly, thus not allowing for a 'one approach fits all' conclusion. In addition, in China and partly also in Viet Nam international social networks like YouTube, Facebook and Flicker are not accessible; this applies also to any open e-learning courses and platforms, which are not located on a national server and censored by the communist party government. This policy is slightly different for 'download-only' platforms where no interactive communication is required.

5.4. KNOWLEDGE PRODUCTS

There is a host of experience from a number of international NGOs including Helvetas (organic agriculture and RE technologies), SNV (biogas) and GERES (ICS), national NGOs, research institutions and companies that are willing to join and support the cross-sectorial capacity building tasks of TA7833. Their experiences from current projects represent a wealth of knowledge, which is documented but only known by a small group in the respective countries. Key knowledge products will be contracted for:

- Biochar
- Biogas and bioslurry
- ICS
- Carbon assessments

Together with contractors, the Consultant's will develop the knowledge products and fine-tune the capacity building methods and tools according to the needs of the participants in the pilot projects. Appropriate knowledge products, such as manuals, technical briefs, policy briefs and information packs, although available about a number of technologies and issues, are currently accessible only to a limited target group. These materials need to be revised and further disseminated through public awareness and advertising campaigns.

Since there are not yet agreed methodologies for monitoring biomass and bioenergy use in any of the CLV countries, knowledge products on how to standardize this assessment process, relating to the BEFS Analytical Framework and Toolbox, will be elaborated and disseminated.

During the Inception Phase, especially in the national workshops, the Consultant identified potential members of a national and regional body of knowledge on the efficient utilization of biomass for bioenergy and food security. The next steps in implementation of the capacity building component will collate output of knowledge products from Pilot Projects and Strategic Studies and publish:

- Compendium of good practices in biomass utilization, highlighting elements necessary for gender mainstreaming;

[16] *http://www.youtube.com/watch?v=DrHIIaxk1-M*

- Booklets evaluating different models of ICS, biochar kilns, biodigesters and further relevant technologies and components for bioenergy and food security;
- Biomass resource assessment and social assessment methodologies and tools appropriate for CLV countries;
- DVDs, containing a catalogue of knowledge products, links to regional centers of excellence and regional and international knowledge networks for bioenergy and food security.

Practical Answers[17], the knowledge sharing service of TA7833 Consultant partner 'Practical Action', consists of a technical enquiries service and technical information online. The online service offers materials in 12 languages and has over 44,000 registered users who are actively seeking information on appropriate technologies for development. The online service handles over 90,000 downloads every month and in South Asia, agriculture accounts for over 90% of the technical enquiries handled. Over 90% of all enquiries in South Asia originate from farmers, demonstrating Practical Action's ability to reach end-users. This platform will play a major role in the Consultant's knowledge sharing with relevant stakeholders.

5.5. IN SUMMARY

TA7833 Capacity Development component will apply a blended approach in order to reach out to the highest possible number of trainees. Learning materials (hard and soft copies, visual and audio) will be prepared based on the different subjects related to the pilot projects and the requirements expressed by the multi-level stakeholders involved in TA7833. Simple in language, with interactive teaching style and integrating best practices in CLV countries, the material will be made available to capacity building organizations, acting as multiplicators and mentors in distance learning. These institutions or organizations, in addition to possessing proven training capabilities, are involved either in bioenergy technologies or food security programs, organic agriculture, certification and/or marketing. They should have available knowledge products and material such as videos, DVD, movies and elaborated training material, manuals, books, newsletter, magazine, periodical publications brochures, posters, advertisements web sites, or e-learning program. They should also focus on gender-related training events and training manuals, as well as social-related training events, manuals and social-related policies.

Experienced organizations should have carried out awareness campaigns during the past five years on biomass utilization, food security and/or organic / sustainable / climate-friendly farming and marketing. In the best case scenario, organizations should have distant learning experiences in their respective country such as e-learning, e-mentoring, multimedia based learning (VCD, DVD, CD, TV, Radio) or print learning, all in conjunction with targeted classroom mentoring. Due to the need for periodical classroom mentoring, capacity-building measures related to the pilot projects will preferably be carried out by organizations with easy access to the pilot provinces.

In general, any design of capacity development activities will correspond to the practical experience and needs of the trainees. For example, the model for financial projection will include information from real businesses and compile them as a template for training and practice in the sector. At the same time, different methodologies for identifying financial sources will be included in the curriculum, as well as best business management practices and administration of public loans.

Targeted capacity building measures will be embedded in regular projects:

i) Activities at the community-level through a learning-by-doing approach;
ii) National and/or regional workshops, seminars, study visits on relevant and priority themes, and knowledge and skills transfer through deputation of government officials to

[17] *http://practicalaction.org/practicalanswers/?url=practicalanswers*

enhance learning of technical and mid-to high-level government officers through stand-alone projects and activities;

iii) Action-research based capacity building by encouraging academicians (researchers, university lecturers and students);

iv) Technical support to decision-makers and project and business implementers through state of the art tools and approaches like assessment techniques and technology knowhow transfer using web-based information and networking.

5.5.1. Criteria for institutions as capacity building and distant learning partners:

- Outreach potential (nr. of provinces or communities or clusters covered - depends on specific Pilot Project)
- Experience in ‘pyramidal training approaches’: From 'Training of Trainers' to 'Farmer to Farmer Training'
- Training of decision makers
- Training of local opinion leaders
- Own institutional expertise in implementation of rural projects and programs with technical, agricultural, social innovations or experience in dissemination of and training in technical, agricultural, social innovations:
- Production & use of ICS, biochar, biogas, bioslurry, biofuel
- Organic / climate-friendly / sustainable agriculture & food security issues
- Gender
- New marketing channels
- Innovative financial modalities
- Experience in developing and applying multimedia training and learning products (website as indicator for capability to host web-based training of 1st level trainers /multiplicators).

6. PROJECT MANAGEMENT & COORDINATION

6.1. PRINCIPLES OF PROJECT APPROACH

Our approach is based upon an in-depth understanding of the context, rationale and expected outcomes of the project. Key aspects of this approach include:

i) Fostering the leadership of the TA7833 Implementing Agencies for all project activities and initiatives to ensure that outcomes are fully reflective and responsive to CLV government policies and development priorities. Only through close government engagement and direction during this 'test-run and piloting' phase can the TA hope to achieve ambitious goals for capacity building and preparation of the same agencies for leading the subsequent scale-up investment project.

ii) Building upon recent or current CLV government and donor initiatives to foster value-added impacts throughout the sector and Subregion.

iii) A dual focus on provision of quality TA for the immediate R-CDTA, whilst laying sound foundations to facilitate successful subsequent PPTA / investment project implementation.

iv) Ensuring clear communication with the EA, IAs and other stakeholders. This approach is a crucial pillar in: building consensus on Project directions; developing synergies with related GMS and government initiatives; identifying lessons learned / best practice, and; avoiding duplication.

v) Adopting a phased approach to pilot project implementation, with service providers engaged on phase one advanced feasibility studies to finalize the design of proposed pilot projects, followed by full, implementation of pilot projects (phase two).

vi) Incorporating capacity building throughout all Project activities, via formal training, on-the-job learning and field demonstration linked to practical project initiatives.

vii) Providing a strong national focus to build ownership within a system for sharing technology, information, lessons learned.

6.2. INSTITUTIONAL ROLES & RESPONSIBILITIES

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 Figure 1. In further discussions with each IA and based on initial lessons learned from TA7833 coordination under project implementation, additional *technical focal point (TFP)* personnel have been identified and recommended to take the lead in technical coordination of country-level activities (Table 14). See APPENDIX 2: for further details on the terms of reference (ToR) for each project partner / actor.

Table 11: Government counterpart agencies and personnel for TA7833

ROLE	NAME	POSITION
Cambodia		
Project Steering Committee (GMS-WGA Coordinator)	H.E. SAN Vanty	Under-Secretary of State, Ministry of Agriculture, Forestry & Fisheries (MAFF)
National Focal Point	Dr. Sar Chetra	Department of Animal Health & Production, MAFF

ROLE	NAME	POSITION
(NFP)		
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)[18]
Lao PDR		
Project Steering Committee (GMS-WGA Coordinator)	H.E. Phouang Parisak Pravongviengkham	Vice Minister, Ministry of Agriculture and Forestry (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 MOUNLAMAI	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)
Viet Nam		
Project Steering Committee (GMS-WGA Coordinator)	Mdm. NGUYEN Thi Tuyet Hoa	Deputy Director General, International Cooperation Department (ICD), MARD
National Focal Point (NFP)	Mrs. Ho Thi Minh Chau	Acting Director, Multilateral Cooperation Division, ICD, MARD
NFP Coordinator	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	To be determined / nominated by MARD

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

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. See APPENDIX 2: for specific ToR.

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.

6.3. PARTNER COUNTRY PROTOCOLS & PRIORITIES

6.3.1. Communication & Coordination

Following discussions with each IA, the following mechanisms are agreed to facilitate smooth communication and coordination between the ADB, IAs and TA Team management:

a) *MAFF, Cambodia:* All official communications should be directed via the National Focal Point, Dr. Sar Chetra, copy to Mr. Chan Saruth (TFP Biochar) and to the TA Team National Project Implementation Specialist. The NFP will liaise directly with MAFF colleagues and PSC members (H.E. San Vanty) for national high-level coordination and approval.

b) *MAF, Lao LDR:* All official communications should be directed via the National Focal Point, Mr. Inthadom Akkharath, copy to his assistant Mr. Vongsavanh Vongkaison and to the TA Team National Project Implementation Specialist. The NFP will liaise directly with MAF colleagues and PSC members (H.E. Phouang Parisak Pravongviengkham) for national high-level coordination and approval.

c) *MARD, Viet Nam*[19]*:* All official communications should be directed via the National Focal Point, Mrs. Ho Thi Minh Chau, copy to NFP Coordinator Mr. NGUYEN The Hinh and to the TA Team National Project Implementation Specialist. The NFP and NFP Coordinator will also liaise directly with MARD colleagues and PSC members for national high-level coordination and approval.

Furthermore, the TA7833 Team have established the following mechanisms to ensure close cooperation and communication:

a) *Face-to-face Meetings:* The National Project Implementation Specialists (NPIs) in each country should discuss and agree with their NFPs, TFPs and Team Leader on a regular schedule and format for progress & performance meetings. The aim of these meetings is to (i) ensure that each party is fully informed on TA progress, (ii) ensure clear communication and common understanding, (iii) agree adjustments to the approach and methodologies, (iv) address any performance issues or misunderstandings - International TA Team members will join these meetings as and when possible.

[19] *On 31st May 2011, the Viet Nam Government issued official letter No. 3537/VPCP-QHQT on: Joining R-CDTA in the Greater Mekong Sub-region Project funded by ADB, announcing the approval of the Prime Minister on Viet Nam joining the project and assigning the Ministry of Agriculture and Rural Development (MARD) to be the focal agency. On 13th July 2011, Ministry of Planning and Investment sent a letter of agreement to ADB on joining the TA7833 project. On 16th December 2011, MARD signed the letter on joining the TA7833 project. MARD issued an official letter No. 4685/BNN-HTQT dated 15th September 2011 on assigning the Agriculture Projects Management Board (APMB) to be the focal agency. APMB issued Decision No. 2411/QĐ-DANN-TCH dated 16th November 2011 on the appointment of a Project (Preparation) Team.*

b) *A file and document repository on Basecamp.com:* project file storage (admin and technical), up-to-date project calendar, project personnel contact details, templates, etc. (http://tinyurl.com/ajda6h8).

c) *Skype:* For one-to-one and small group updates.

d) *GoToMeeting.com:* For larger web-conferences, faster / more secure internet connection and screen-sharing options.

The Consultant proposes that all key TA7833 parties (ADB, NFPs, TA Team Leader and NPIs, LML, etc.) establish a written record of any relevant telephone / Skype / web-conferences in order to ensure a common understanding of what has been discussed and agreed. This should be in the form of an email summary to be sent within two working days after the discussion.

The NFPs and TA Team Leader (and ideally, the ADB Project Officer / Individual Consultants) will share progress report prior to submission to discuss TA7833 progress, performance and finalize the next quarterly work plan.

As TA7833 is a regional project, all written and verbal communication and reporting between the various project parties will be in *English* only. English has been chosen as the most widely spoken second language among GMS country government officials and as the official language of the ADB. Each IA will thus be directly responsible for any necessary translation / interpretation for national dissemination and coordination (with the exception of certain national workshops and training events).

6.3.2. Reporting & Work Planning

The TA is required to prepare and submit milestone reports with hardcopies to ADB Manila (x1); EOC in Bangkok (x1); each CLV country IA (x5). All other reports and deliverables will be circulated in electronic format for comments.

In addition, TA7833 will prepare quarterly progress reports summarizing: project progress and performance from the previous three months of implementation; strategic issues and recommendations; updating on assets, procurement and resource utilization; and; work plan, schedule and DMF updates for the following quarter.

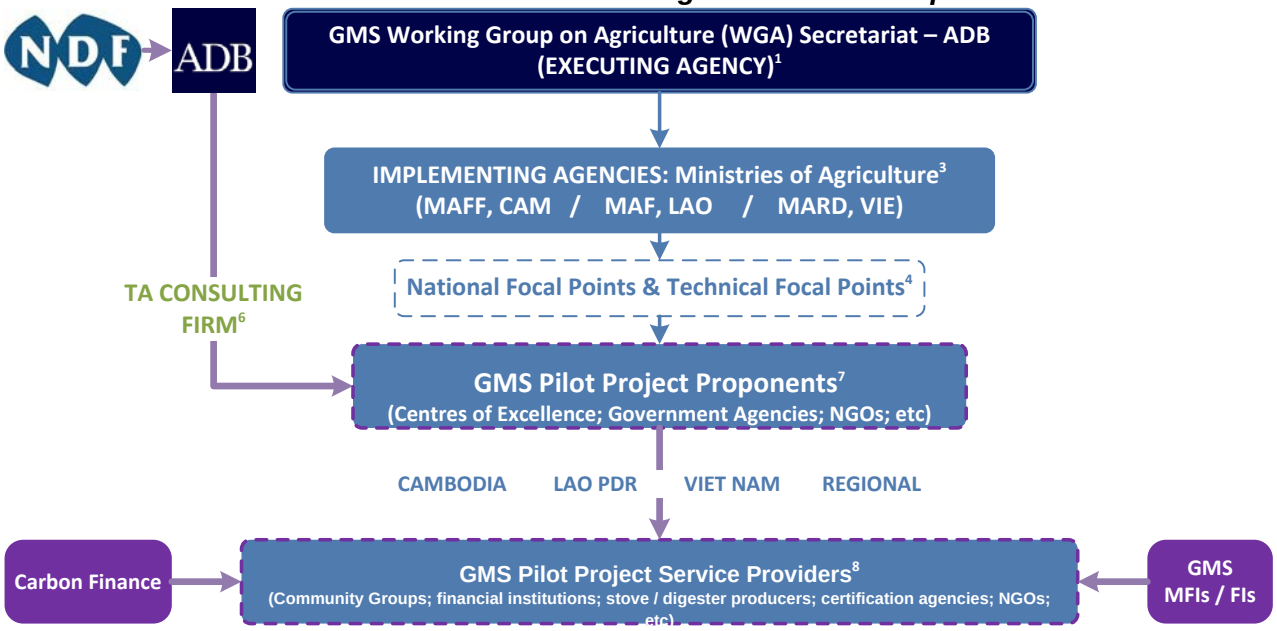
Any and all comments, clarifications, approvals and requests for revisions amongst all parties should be sent within 30 calendar days of receipt of the electronic version of the file (except for the milestone TA reports as per ii) below which must be in hardcopy). Following that period, default approval may be considered granted or related activities will be suspended.

6.3.3. Asset Management

i) Funds

As per standard ADB protocol for this type of R-CDTA project, all TA7833 funds will be disbursed directly by the contracted TA Consulting Firm, Landell Mills Ltd (LML) via their UK and national project bank accounts in each partner country. Following approval by the EA, IAs and PSC, LML will either enact payments directly or enter into written agreements with various GMS service providers (e.g. centers of excellence, government agencies, NGOs, etc.) to disburse and account for all TA fund expenditure accordingly via LML's 'Navision' financial management utility. See Figure 5 for a diagram of fund flows for TA7833.

Figure 4: TA7833 implementation funds flows



ii) Office space

A project office has been officially assigned and established by the IA in each TA7833 partner country, located within the ministries of agricultures' compounds. All NFPs have requested that all national consultants are present to work in the TA project offices whenever possible, especially regards the NPIs from each country. It has also been requested that international experts are present within the countries for as much of their allocated inputs as possible. The TA Team will try to meet these requests as much as possible, although severe limitations exist due to the intermittent nature of the allocated consultant inputs.

iii) Equipment

Following EA and IA approval, appropriate office furniture and information communications technology equipment has been purchased and installed (in accordance with ADB's procurement protocols) for each partner country project office. Asset registers are available on request.

6.3.4. Procurement

The following procurement methods have been identified in conjunction with ADB Manila.

Table 12: Procurement methods to be used in TA7833

Procurement Need	Proposed Modality	Required Actions
Feasibility Studies for Pilot investment projects. The feasibility studies are small scale (less than $25,000) and will be completed over a two-month window. A total of 10 such FS are estimated although this may reduce to 8 or 9.	CQS procurement national evaluation committee including representative of TA7833 contract prepared and reviewed by counterpart and ADB contract signed by LML	Terms of reference – completed and approved nationally and ADB RFP prepared and submitted to ADB for uploading on CMS (week 1 February for VIE and CAM and Week 2 for LAO) EOI received after 15 days EOI evaluation committee meeting minuted and results shared with National Focal Points and ADB Draft contract submitted to ADB for review prior to award
Follow on Pilot Investment programs It is envisaged that	Service providers (non-government) will be recruited through CQS – as per above	No action until Feasibility studies are completed and needs fully defined

Procurement Need	Proposed Modality	Required Actions
these pilots will have a total budget of somewhere between US$50k and US$100k,	Goods and supplies – through shopping but with prior ADB approval Service providers (government) addressed below	
The TA will contract special knowledge products/studies to support the movement of technology into an investment phase Currently 3 or 4 such products are envisaged and it is planned to contract these from centres of excellence that have detailed knowledge of a specific technology, or the use of technology safely.	Single source contracting	Biochar Knowledge Product The Proposed center of excellence is the International Biochar Initiative (IBI) – a network alliance based in the USA as a not for profit entity. The involvement of the ADB project officer in the Board of Governors as a Director needs to be clarified. Actions: The ADB Project Officer will seek clearance through the Office of Integrity and OGC Once obtained the team leader will finalize a draft term of reference and supporting documentation for single source selection for ADB concurrence LML will draft a contract and submit for ADB approval prior to signing. ICS Knowledge Product The proposed service provider is GERES a not for profit entity based on Cambodia but with a regional ICS stove program including scientific laboratory and social testing service, promotion of stove innovation and capacity support for stove producers, certifiers etc. Actions: TL to prepare terms of reference and agree pricing LML to prepare and submit a draft contract for ADB approval Carbon emissions and carbon footprinting for due diligence and safeguarding The Not for Profit organization NEXUS (Cambodia) which is structured around partner organizations and enterprises that buy services and in some cases benefit from verified carbon based transactions. NEXUS is linked to the LML consortia contracted by ADB for implementing TA7833 but have no experts on the international team.. Actions – contract variation to add the carbon emissions expertise into the team and use the NEXUS expertise to complete the work as a team member and then also have access to the expert at the end of the TA for ensuring the climate resilience carbon emission aspect of the subprojects fits the

Procurement Need	Proposed Modality	Required Actions
		requirements of the follow on loan.
Government involvement in Pilot projects The pilot investments are testing implementation arrangements for future loan subprojects. In some cases this will involve Govt agencies in differing roles	It is proposed that a service contract be developed detailing the following: What the services to be provided entail, including a timeline; What incremental direct costs will be covered by the service agreement – specified both in terms of items, quantity, and cost; Specifically state what is not covered including: (i) salary costs, (ii) recurrent government expenses, (iii) items that are not directly incurred in the implementation of the pilot investments; Goods to be procured shall be procured directly by the TA using shopping procedures with three quotes and prior ADB approval; State the total cost of the agreement, the basis for payment and the required documentation.	Actions: LML to prepare a draft contract with an outline of the specifications in an attached schedule that is submitted to COSO and controllers for review and comment. Once finalized, TL and NPI to prepare detailed specifications on the services to be provided for each pilot – where necessary, the associated budgets and timelines. LML to submit the draft contract and service specification to ADB project officer, ADB controllers, and COSO for approval. Once cleared LML enter into contract.

6.3.5. TA team and its organization

Please see 8.2 PERSONNEL SCHEDULE for more information.

6.3.6. Monitoring and Evaluation

Monitoring of TA activities will be incorporated into the design of activities. Policy forums and activities will be evaluated by participants and the findings reported as part of quarterly reports and the final reports.

The Pilot investment program - output 2 will be monitored through the establishment of a baseline during the pilot feasibility studies that will be used for the pilot and for the development of social safeguard documentation for follow loan processing. The Actual pilot implementation will have a utilization based evaluation framework built into the implementation terms of reference that will require the service providers and NPIs to jointly undertake a completion survey of key stakeholders that will be reported as part of the overall findings during the proposed multi-stakeholder forums for sharing experience and for defining the proposed implementation modalities.

Output 3 and 4 capacity building and knowledge management activities will be evaluated by (i) participating trainers and trainees, peer experts for knowledge products and distance learning materials.

Implementation progress evaluation will be built around the monthly activity report s form each PPTA team member based on a reporting framework for the workplan - reporting will require activity planning and implementation reports and a summary of achievements.

7. STRATEGY, APPROACH & METHODOLOGY

Our approach to the work plan has been defined by the pilot projects proposed for Output 2. During consultation with each IA it was decided that each country would have its own pilots that will define the future subprojects. The regional dimension of the TA will be provided by sharing technology, knowledge and lessons learned.

The pilot projects are developed from the technical reviews and consultations completed during the initial inception period and will be designed through small feasibility studies contracted to local consultants who will design implementation arrangements, safeguards, social assessments required for the pilot and for the wider TA. Based on the findings of the feasibility studies a pilot program will be contracted and implemented.

Capacity building will be integrated within the pilot studies and delivered on cross-cutting themes by our team experts or through contracted suppliers. To the extent possible we seek to integrate capacity building with regional forums on topics such as biochar, ICS, etc.

Knowledge products will be contracted on major themes and also developed by team members on lessons learned from the TA activities.

The following sections present the work plan, grouped under each output.

7.1. OUTPUT 1: ENHANCED REGIONAL COOPERATION IN BIOENERGY DEVELOPMENT TO FOSTER AND SAFEGUARD FOOD SECURITY

The output indicator is “Mechanism tested for harmonizing at least three bioenergy standards and certification systems, and a common method of assessing greenhouse gases. Standards will include those of organizations such as Global Alliance on Clean Cook Stoves (GACC), Global Bioenergy Partnership (GBEP) and the Roundtable on Sustainable Biofuels. Quality assurance for technologies such as biogas, improved cook stoves, biochar, etc. will be supported via the partnership of regional centers of excellence.

The output DMF indicator will be supported by the TA producing the following tasks:

1. Identify and harmonize standards for sustainability criteria, bioenergy technologies and climate friendly agriculture;
2. Establish systems to support eco-product development and cross border trade;
3. Inform & enhance biomass, bioenergy and food security policy dialogues relating to standards operationalization and quality control;
4. Raise awareness of policy makers regarding standards system structure, roles, benefits and risks.

7.1.1. Task 1.1: Identify and harmonize standards for sustainability criteria, bioenergy technologies and climate-friendly agriculture

i) Facilitation of national forums on standards for bioenergy technology and climate-friendly agriculture

The six proposed national forums will each include support for government officials and key stakeholders to participate in 0.5-day sessions, with TA7833 providing resource materials, logistical support and key resource persons for facilitating dialogue. Each forum will be fully recorded with the material outputs, findings and recommendations from each forum used to support the agenda for the follow-on GMS Regional Forums (see 1.1c) and subsequent national forum.

For Cambodia, the first national forum will focus on biochar and ICS standards. The second national forum will focus on topics as agreed with the NFP and TFPs (e.g. biogas, climate-friendly rice production / processing and AROS) and is tentatively scheduled for March 2014.

Lao PDR's first forum will focus on organic vegetables, AROS and ICS and will be held in Vientiane in March 2013, directly ahead of the 2nd GMS Regional Forum. The second national forum will focus on topics as agreed with the NFP and TFPs (e.g. biogas, climate-friendly rice production / processing and AROS) and is tentatively scheduled for March 2014 in Pakse.

The focus of Viet Nam's first national forum will be on MARD's existing stated priorities of climate-friendly rice standards relating to ongoing SRI production programs and ICS standards and will be held in Hanoi in March 2013. The second national forum will focus on topics as agreed with the NFP and TFPs at that time (e.g. biochar, bioslurry and AROS) and is tentatively scheduled for March 2014 in Hue.

The National LSC Specialist and NPIs in partnership with the NFPs will prepare draft agendas and participant lists for review by the TL and ADB. Each country will develop a national roadmap for elaborating and agreeing national standards, linking this to the wider roadmap for regional harmonization of standards (see 1.1c).

ii) Development of national guidelines for interpreting sustainability indicators

The interpretation of sustainability indicators will focus on assessing and building on national guidelines that will be shared amongst and harmonized between the three countries at the GMS Regional Forums. These guidelines will be benchmarked to the Global Bioenergy Partnership (GBEP) sustainability indicators. The interpretation of the indicators will involve the following activities:

- Development and delivery of an awareness-raising program via distance-learning for senior government officials. The program will initially seek to introduce and outline the GBEP indicators and their general relevance and application based on existing resources adapted from GBEP (March 2013). A total of 30 people from all three countries will be engaged via a web-based platform to be selected [iLSC / iCB]. Towards the end of TA7833 activities (June 2014) the awareness raising program will be repeated on an expanded basis to include remote awareness-raising for a target pool of 30 government officials in each country and using consolidated resources based on the knowledge and experience of TA7833[20].

- Development and delivery of training modules for officials, their staff and key stakeholders to understand sustainability indicators, including: their role and application within national programs; their reporting and linkages back to regulations and policy targets, and; how indicators can support sustainability-based marketing. A total of 30 people from all three countries will be trained in conjunction with the national forums (1.1a). Training resources will be provided by the TA in collaboration with GBEP who will provide access to the resource materials [iLSC / iCB].

- Piloting of GBEP indicators in one area linked to the TA technology pilots (see Output 2). The pilot will be planned following the training and awareness programs and will be integrated within government programs prioritized by the NFPs and the TA team wherever possible. The pilot will involve assessing the baseline status of the relevant indicators and then using these with program managers to identify how programs can be adapted to achieve indicator targets [NPI / LSC].

[20] *Perhaps also using participants from early trainings as resource persons (e.g. TFP-Standards from CLV)*

- Delivery of a final roadmap for harmonizing the national guidelines and incorporating the indicators into national planning and policy frameworks. This detailed roadmap will be presented to the final GMS Regional Forum (1.1c) and distributed for use as awareness-raising and distance -learning material in the ensuing investment project [LSC / TFP-St].

- The experience of the pilot will be written up as a knowledge product case study to accompany the roadmap [NPI / LSC / iCB].

iii) Regional harmonization of standards for climate-friendly agriculture, bioenergy and food security

The TA will support three GMS Forums[21] for the Harmonization of Standards Climate-Friendly Agriculture, Bioenergy and Food Security alongside development of a harmonization roadmap. Each two-day forum will include presentation of progress with CLV national-level standards dialogue (task 1.1a.) and elaboration / update of the roadmap towards regional harmonization. For each forum, the NPIs will work closely with the NFPs to identify appropriate policy, standards and technical officials for participation in planned training events.

At each forum, the TA will also support the incorporation of harmonized AROS standards, as developed through ASEAN, alongside the emergence of the national level standards. The final forum (2014) will invite the TFP-Standards from each country to link with regional industry and sector associations to facilitate training in the application of AROS standards, linked to IFOAM [LSC / TFP-St / iCB].

CLV-harmonized AROS standards will be drafted based on the above program of work through meetings and mentored collaboration within each country under the leadership of the NFP/TFP during the final quarter 2013 [LSC].

Each forum will also include presentation of presentation of roadmap progress with CLV national-level guidelines for GBEP interpretation (task 1.1b) [TFP-St / NPI].

Based on the existing resource materials and the findings of the above activities the TA will develop knowledge products for wider dissemination via awareness and distance -learning platforms [iCB / RegKM].

7.1.2. Task 1.2: Establish systems to support eco-product development and cross border trade

i) Establish a CLV-wide pool of capable standards quality control inspectors

The TA will prepare a proposal for the establishment of a regional pool of bioenergy- / eco-product standards quality control inspectors trained with capability in the application of agreed and emerging standards at the national and regional level. Our view is that during the life of the TA, the most effective contribution will be to build 'informal' consensus rather than formal obligations. As such, harmonization is limited to each participating governments' ability to select and endorse existing subsets of standards felt relevant and supportable. This will involve the following activities:

- Prepare a policy rationale / briefing paper to reflect each government's priorities and their respective IAs recommendations for the application of standards for priority bioenergy subsectors and associated eco-product trade. The policy concept paper shall:

[21] *The 1st GMS Forum was held in Nanning in July 2012 (see Report on Proceedings)*

  - draw on the findings of the review of International Standards and Certification Systems as well as relevant parts of other TA -linked studies, resources and pilot projects [iLSC];
  - be internally and externally peer reviewed [iLSC];
  - be presented to NFPs, officials and stakeholders in each country as part of the 2013 and 2014 GMS Regional Forums to review, comment, adapt and, if possible, agree on the standards which will apply [iLSC / NFPs];
- Collate a database of potential inspectors for the whole of CLV that is mapped geographically and categorized by standards and techniques [NPIs / NFPs];
- Develop agreed criteria for the selection of the most suitable inspectors from the wider database for inclusion in the proposed training program [iLSC / NFPs];
- Conduct training needs assessment [NPIs];
- Request service provider proposals for development and delivery of a training program, including overall approach & methodology, agenda, materials, resource materials and personnel. Submit for ADB / IA review and approval [iCB / nCB];
- Contract implementation of training [nCB / TL];
- Evaluate training and provide structured feedback for strengthening the ongoing training program and resources [nCB / iCB];
- Develop knowledge products linked to: inspector database; inspection services, and; access to inspection results [iCB; iLSC; RegKM].

Outputs from this activity will also support TA forums across the range of dialogues for the TA as part of task 1.1.

ii) Develop bioenergy and food security eco-mark / eco-label

The development of marks and labels includes a series of tasks built around a review of similar marks and labeling initiatives both regionally and internationally and then using the findings to inform a CLV design competition. Within this task we have moved from a GMS -wide to a CLV - wide approach to reflect the necessity of using an informal approach - incompatible with the highly-specified and mandatory PRC approach - due to the available resources and inherent difficulties.

The implementation of a common eco-label will occur in tandem with the standards harmonization process, including an agreement from the IAs to adopt a label based on their criteria. As such the label adoption is targeting the WGA meeting in 2014.

The following activities will be undertaken:

- Study on the feasibility of CLV wide eco-labeling. We shall use the proposed BEFS labeling systems as a case study to assess the feasibility (task 1.3b). The policy rationale / briefing paper (task 1.2a) will also be used in the development a feasibility assessment. These documents will be used as part of the national and regional forums to establish the type of eco-label that is considered appropriate for the CLV situation [LSC].
- Development of an eco-label to support the decisions from (i). This will be achieved through a design competition, requiring:
  - Specification of label requirements [LSC / NPI];
  - Review of specifications [ADB / NFPs];
  - Terms of reference for the design competition [LSC];
  - Announcement of the competition and follow-on advertising of timing, requirements and prizes [WGA];
  - Design competition judging [NFPs / TFPs / LSC];
- Preparation of guidelines on CLV eco-label use [RegKM].

Adoption of an eco-labeling will require the IAs to adopt the label and support the use of the pool of inspectors prior to labeling being implemented.

7.1.3. Task 1.3: Inform & enhance biomass, bioenergy & food security policy dialogues relating to standards operationalization & quality control

The TA will both undertake and/or contract a range of studies to inform dialogues on issues related to certification, standards and labeling. A total of 3 regional studies and 3 national studies will be completed alongside training in the application of the BEFS Analytical Framework[22] which will then be applied to relevant pilot projects. This task will be achieved through the following activities:

i) Study: Feasibility and development of GBEP labeling system

The study is expected to require 20 days input for each country including reporting using a single consultant for all three countries – the following activities will be completed:

- Preparation of ToR and detailed work plan [iLSC]
- ADB review / approval of TOR
- RFP/contracting [LSC team and TL]
- Report finalization – country level presentations and comments incorporated [LSC team]
- Knowledge products developed [iCB / RegKM]

ii) Study: Feasibility of CLV traceability system

The study are expected to take 20 days per country including reporting using a single consultant for all 3 countries – the following activities will be completed:

- Preparation of terms of references and detailed work plan [iLSC];
- ADB review of TOR
- RFP/contracting [NPI / iLSC];
- Report finalization – country level presentations and comments incorporated [iLSC]
- External peer review
- Knowledge products developed [iCB / RegKM]

iii) Review of international standards and certification systems for bioenergy & climate-friendly agriculture

The following activities will be completed:

- Preparation of ToR and detailed work plan [iLSC];
- Study implementation [iLSC / NPIs]
- Report finalization – country level presentations and comments incorporated [iLSC]
- External Peer Review
- Dissemination and knowledge products developed [iCB / RegKM].

iv) Case Studies on Participatory Guarantee Systems

The following activities will be completed:

- Preparation of ToR and detailed work plan [iLSC];
- Study contracted [NPIs / TL];
- Study implementation – Service Provider
- Report finalization – country level presentations and comments incorporated [iLSC];
- External peer review
- Dissemination and knowledge products developed [iCB / RegKM]
- Roadmap for a program on climate-friendly certification to be developed under the follow on investment project [iLSC].

v) Study: Review of relevant CLV Laws, Regulations, Policies and Plans

The following activities will be completed:

- Preparation of ToR and detailed work plan [iLSC];
- Study implementation [NPIs / iLSC];
- Report finalization – country level presentations and comments incorporated [iLSC];

[22] *http://www.fao.org/energy/befs/en*

- External peer review;
- Dissemination and knowledge products developed [iCB / RegKM].

7.2. OUTPUT 2: PILOT-TESTED CLIMATE FRIENDLY INVESTMENT PROJECTS FOR WIDER IMPLEMENTATION

The output indicator is "Construction of at least 5,000 bio-digesters, 600 biochar kilns, 75,000 improved cookstoves; and introduction of at least 300 farmers to sustainable certification standards".

During the inception phase technologies and existing programs were assessed for their technology readiness levels (TRL) – see Table 16. The assessments raise doubts about the readiness for some of the priority technologies to be fully up-scaled. To do so involves risks that were not identified during the TA concept paper approval process. The design of the pilot is accepting this risk for the ICS and the biogas/biodigester pilots. The biochar and bioslurry demonstrations are seeking to confirm technology through prototype demonstrations in field settings in an attempt to improve their readiness before the investment program.

Table 13: Technology Readiness Level Assessments

	Priority Biomass Technologies			
Country	**ICS**	**Biogas**	**Bioslurry Treatment**	**Biochar and related products**
Cambodia	9	7	3-4	3
Lao PDR	8	7	3-4	3
Viet Nam	5-7	9	5	3

Level 1: Basic principles observed. Level 2 = Application formulated, Level 3= Experimental function – proof of concept, Level 4 = Laboratory validation, Level 5 =Validation in Field setting, Level 6 = System prototype demonstration, Level 7 = System prototype in field setting, Level 8 = System tested and demonstrated successfully, Level 9 = Operational Success Demonstrated

The activities to achieve the output indicator are in the form of pilot investment projects that are presented in the work-plan as a generic set of tasks. The list of pilot projects is included in APPENDIX 3:, with draft terms of reference available from the IAs.

The following tasks will be implemented to deliver the proposed 10 pilots for inclusion in the follow-on investment program.

7.2.1. Task 2.1: Selection of Priority Technologies

i) Identification of existing technology, stakeholder and review of existing technology, emerging technologies and on-going programs [iBM / IAs];
ii) Counterpart ranking of technologies [IAs];
iii) Technology Readiness Assessments [iBM];
iv) Country agreement on priority technology pilots [iBM / IAs / TL];
v) Country level consultations [IAs / TL];

7.2.2. Task 2.2: Pilot feasibility studies and due diligence

i) Identification of pilot components [iBM / IAs];
ii) Identification of potential partners [iBM / NPIs];
iii) Develop pilot outputs
iv) Development of Feasibility Study terms of reference [iBM / TL];
v) Feasibility study contracting [TL / NPIs];
vi) Feasibility study review [TL / iBM / IAs / NPIs].

7.2.3. Task 2.3: Pilot Implementation and Monitoring

i) Procurement of implementation partners [NPIs / TL];

ii) Implementation of pilot programs (service provider)
- Stakeholder awareness
- Supply capacity development program
- Demand identification program
- Supporting studies, if any (link to knowledge management and capacity building outputs).

iii) Completion – stakeholder review [TL / NPIs / IAs];

7.2.4. Task 2.4: Formulation of regional investment subproject model

i) Convene a stakeholder meeting [IA / TL / NPIs / iBM] that considers:
- Lessons learned at design, implementation and achievement;
- Strengths and weaknesses;
- Suggested improvements;
- Investment model adaptation and formulation [TL / iPSD];

ii) Regional Meeting – sharing of lessons from each country pilots, with a session on each of the topics [TL / iPSD / NPIs];

iii) Preparation of core subprojects for follow-on investment program [TL / NPIs / IAs];

7.3. OUTPUT 3: ENHANCED CAPACITY FOR EFFICIENT USE OF BIOMASS

The indicator for this output area states an increased capacity for gender -sensitive investment among at least 500 government officials, 400 service providers and 3,000 farmers. 2,035 of those trained will be female and of the total trainees, some 2,590 will have demonstrated increased capacity.

The TA will achieve this output indicator through the following tasks:

1. Development and delivery of gender-sensitive awareness-raising programs on the benefits of efficient utilization of biomass for supporting bioenergy, climate-friendly agriculture and food security.
2. Development and delivery of program of training and capacity building for investment project preparation and implementation;
3. Development of a social baseline for the proposed investment project;
4. Development and delivery of training on best practice in the efficient utilization of biomass for enhancing bioenergy, climate-friendly agriculture and food security.

Each of these outputs will be delivered through the following tasks.

7.3.1. Task 3.1 - Develop and deliver gender-sensitive awareness-raising program on the benefits of efficient utilization of biomass for supporting bioenergy, climate-friendly agriculture and food security

i) Develop and deliver awareness-raising material on efficient use of biomass for bioenergy and food security

- Collation and consolidation of existing resources from BEFS, GBEP, etc. into easily accessible format(s) for awareness-raising including: [iCB]
  - Sustainability indicators, primarily based on GBEP;
  - General importance of climate-friendly agriculture to soil fertility and national and regional food security;
  - Opportunities, current status (global/regional), benefits and costs of efficient biomass utilization technologies, along with future technology development activities;
  - Gender-sensitive aspects of efficient use of biomass;
  - TA7833 plans, events, initiatives and how to get further involved.
- Prepare policy briefs relating to bioenergy and CFA for dissemination under Output 4.

ii) Finalize list of target agencies and individuals

- Including technical & policy public and private stakeholders based on predefined criteria and assess initial awareness levels (e.g. via SurveyMonkey and online questionnaire). Initial target stakeholders would include:
  - Government officials (x 500) engaged in agriculture, forestry and energy, especially those with remits relating to agricultural / energy technology, policy making, financing, extension, planning, standards, etc.
  - Service providers and private sector actors (x 400), including: SMEs (especially rice production / processing enterprises, agricultural input traders, stove producers, etc.); local NGOs, MFIs, women's groups, etc. Priority will be given to the respondents to the TA7833 calls for expressions of interest for FS/PP implementation.

iii) Plan awareness-raising campaign inc. schedule, M&E and multimedia delivery mechanisms

- Including PowerPoints and embedded short videos on a web-based platform[23] as appropriate for target audience);

iv) Manage advertising and delivery of multimedia awareness-raising program

- Via ministerial email shots, LinkedIN, Facebook, using a 'hit counter' and feedback forms to track participation.

v) Collate feedback, evaluation findings and experiences / materials from Output 2 pilot project implementation

- e.g. short videos made by pilot proponents/NPIs and adapt materials accordingly;

vi) Re-launch awareness-raising program

- Incorporating enhanced content from v) above and including information on innovative financing mechanisms.

vii) Develop and deliver specific awareness-raising materials for farmers

- Based on consolidated outputs & experience from TA7833 for targeting farmers (x 3,000) in TA7833 focal areas (e.g. DVD/VCDs).

7.3.2. Task 3.2 - Develop and deliver training and capacity building programs

In tandem with the awareness-raising program, the following targeted training activities will be implemented in order to consolidate and enhance capacity development relating to TA7833 core topics, including: BEFS Approach; Sustainability indicators, primarily based on GBEP; AROS standards; Biomass assessment methods and approaches; Innovative financing mechanisms for scaling-up bioenergy and food security investments and activities; ADB investment project readiness and implementation.

i) Capacity development needs assessment

- Since many of the target beneficiaries and subjects overlap and have considerable cross-commonalities, capacity needs assessment will be linked with the awareness-raising activities in task 3.1, supplemented by the findings of the assessments carried out by the FS/PP proponents.

[23] *TA7833 has approached the SIDA / ADB-funded www.redrawtheline.org initiative to encourage them to expand to CAM and LAO (they already target VIE) and to host material we develop. Would be a neat tie-in and good for those with net access. For offline awareness-raising, could use same source material for radio and VCDs, etc. Other options include: self-learning DVDs; Streaming or downloadable web seminars; A dedicated GMS Bioenergy YouTube channel (perhaps also linked to the ADB website – see Coral Triangle Initiative); PodCasts; etc.*

- In addition, each training activity will include before/after capacity assessments to capture the subject-specific knowledge, skills and awareness of participants.
- On the basis of findings from i) and ii), a consolidated training program will be defined and agreed with NFP and TFPs.

ii) In-situ training and facilitation

All in-situ training and facilitation will take place in the form of add-on, pre- or side-events at key TA7833 forums / conferences in order to: facilitate availability / attention of key stakeholders; place training within the context of key decision making; enhance ability of forum/conference participants to engage on an informed basis in proceedings; etc. Training will address the following topics:

- BEFS Approach, addressing policy and technical issues at the nexus of bioenergy, food security and CFA.
  - Including application of the BEFS analytical framework, assessment tools and the overall impact of bioenergy on household food security;
  - Training will include application of the BEFS Framework to selected pilot studies involving: development of ToR and RFPs on BEFS for application to selected pilot studies; Implementation of BEFS TOR; Summary report and knowledge product development.
  - Where possible, TA7833 will utilize FAO training resources and ideally FAO personnel.
- Sustainability indicators, primarily based on GBEP;
- AROS standards;
- Biomass assessment methods and approaches;
- Innovative financing mechanisms for scaling-up bioenergy and food security investments and activities;
- ADB investment project readiness and implementation
  - Targeting implementation agencies and key stakeholders as identified during the pilot project implementation. Existing on-going training programs for ADB project implementation will be identified for possible twinning and co-financing;
  - Specific training program will be provided in each country covering key topics including, some or all of the following: Work planning and reporting; Procurement planning; Procurement implementation and contracting; Contract management and disbursement procedures; Project Performance Management and Reporting.
  - Identification of implementation agencies and partners from Pilot FS
  - Rapid training needs assessment of EA/IAs and Implementation partners
  - Identify and schedule existing training being provided by ADB resident mission staff and develop participation from TA trainees
  - Training program developed and reviewed by AD and NFP
  - Specific training events provided as 2 training sessions each comprising 2 half days in each country

iii) Facilitate regional study tours and biomass technology exposure visits

- All NFPS, TFPs and key stakeholders will be engaged in study tours relating to TA7833 core topics, including:
  - Biochar, including production via kilns, gasification ICS, etc. and its application as soil amendment / biofertilizers (March 2013, Siem Reap, Cambodia);
  - Biogas / bioslurry application for enhancing production from SRI (MM YYYY, Viet Nam);
  - Improved cook stoves, including technology assessment and testing (TBD).

iv) Develop and deliver distance learning program

- Distance learning platforms will be reviewed and evaluated regarding their appropriateness for use in the capacity building program.

- Subjects and learning resources will be developed in accordance with the awareness-raising and in-situ training material and on-going learning from pilot project implementation.
- Delivery will be in the form of webinars and online mini-modular formats, using GoToMeeting.com;
- Following full completion of the distance learning program, participants will be subjected to a online written summary exam (delivered via SurveyMonkey). Successful participants will receive a certificate from e.g. ADB Institute; WGA Secretariat; AIT, etc (TBD).

v) Evaluation and adaptation of training & capacity development resources

- Training resources and approaches will be periodically revised based on evaluations and feedback from participants of events / initiatives.

7.3.3. Task 3.3 - Development of a social baseline for the proposed investment project

i) Social assessment terms of reference included in the pilot study feasibility work program (TL/CB Experts)

ii) Social survey and stakeholder surveys completed (FS service provider)

iii) Consolidation of survey findings across surveys and across countries with triangulation with secondary data and local statistics (Int. CB expert with national consultant support)

iv) Draft SPRSS for each investment model and a consolidated SPRSS for each country's proposed investment program (Int. CB expert and TL)

7.3.4. Task 1.4: Organize annual international conference on household bioenergy and food security

The TA will convene two international conferences on household bioenergy and food security in one of the CLV countries in 2013 and 2014 to be held in conjunction with other relevant partners / events in this sector.

Ensuring a high profile and strong attendance from relevant stakeholders in the governments, private sector, NGOs, trade associations, etc. from the entire GMS region in order to foster full exchange of information, particularly from technologically advanced to less advanced countries.

The focus of these annual workshops will be to: a) assemble best practices related to standards, technologies and business models to inform initial pilot project design; b) to gather knowledge and expertise for feeding into knowledge product development under Component 3; c) to share R-CDTA experience, research and findings (including draft knowledge products prior to dissemination), and; d) to strengthen the GMS network of household bioenergy practitioners and researchers.

These workshops may include inviting high specialized external presenters to attend for the purpose of critical assessment of proposed technical options and directions. The Consultant has already identified potential such presenters as Industrial Product Designer / Improved Cookstove Specialist, Mr. Chris Adam.

With a view to linking policy and practice and ensuring a sound technical foundation for regional cooperation on bioenergy and food security, it may be worthwhile to coordinate the annual international workshop to be staged around the same time / location as the annual policy dialogue forum.

7.4. OUTPUT 4: DEVELOPMENT & DISSEMINATION OF KNOWLEDGE PRODUCTS

A total of three indicators are presented for this output and include:

i) Define a methodology for assessing and prioritizing the use of biomass for bioenergy and food security;
ii) Compendium of good practice in biomass use;
iii) Booklets on different models of improved cookstove, biochar kin and biodigesters.

The TA will carry out the following tasks to achieve these outputs:

1. Baseline assessments with supporting evaluation methodologies
2. Institutional arrangements, technology use case studies and supporting services for ensuring quality control and best practice for the use of biomass technology.
3. Knowledge products to support biomass technology and use

7.4.1. Task 4.1: Baseline assessments with supporting evaluation methodologies

i) Conduct baseline survey of biomass resources and technologies, including:

- Review current biomass assessments and data availability within the GMS [iBM];
  - Literature and secondary review of exiting biomass data sets and reports [iBM / NPIs]
  - Preparation of a study terms of reference [iBM]
  - Study completed [NPIs]
  - Draft report reviewed [iBM]
  - Final report presented to IAs
  - Knowledge product – summary of (i) and (v) above [iBM/ RegKM]
- Present biomass resource assessment findings and technology readiness assessments to national stakeholders (BM expert)

ii) Complete a least cost assessment of biomass technologies

- Review and case study (contracted service provider – TL)

iii) Identify international biomass assessment and priority assessment frameworks

- Including multi-criteria framework including financial and economic parameters and contribution to national policy objectives (BM expert and TL)

iv) Conduct a life cycle assessment for alternative biomass resources and technologies [iBM / NPI];

v) Prioritize options and recommend a common approach across each participating country

- Seek NFP agreement on the recommendation (BM expert and TL)
- Provide detailed implementation procedures and analytical guidelines for the implementation of the proposed methodology (BM expert)
- Seek comment and reviews of the proposed method and incorporate into final document (BM expert)
- Prepare a time bound implementation plan for inclusion in follow on investment loans

7.4.2. Task 4.2: Compile compendium of best practice in efficient utilization of biomass

Compile institutional arrangements, technology use case studies and supporting services for ensuring quality control and best practice for the use of biomass technology within a Compendium of good practice in biomass use.

- Prepare a proposed scope of report with a proposed structure based on chapter and section headings – distribute to NFP, primary stakeholders, and ADB for comment (BM expert)
- Update the structure and distribute (BM expert)
- Identify by using key informant and stakeholder identification of:
  - examples of global best practice,
  - examples of GMS best practice examples,
  - examples of national best practice (BM Expert and individual TFPs, International technical specialists)
- Review examples and prepare a write up in the form of case studies with a supporting summary of best practice linked to differing examples (BM expert)
- Incorporate knowledge management reviews and studies from output 4.1 into the compendium – see Output 4.3 (BM expert)
- Peer review with TFPs and TA team members (BM expert)
- External Peer review – ADB and international center of excellence (BM expert and TL)

7.4.3. Task 4.3: Develop & disseminate knowledge products to support efficient biomass utilization technology

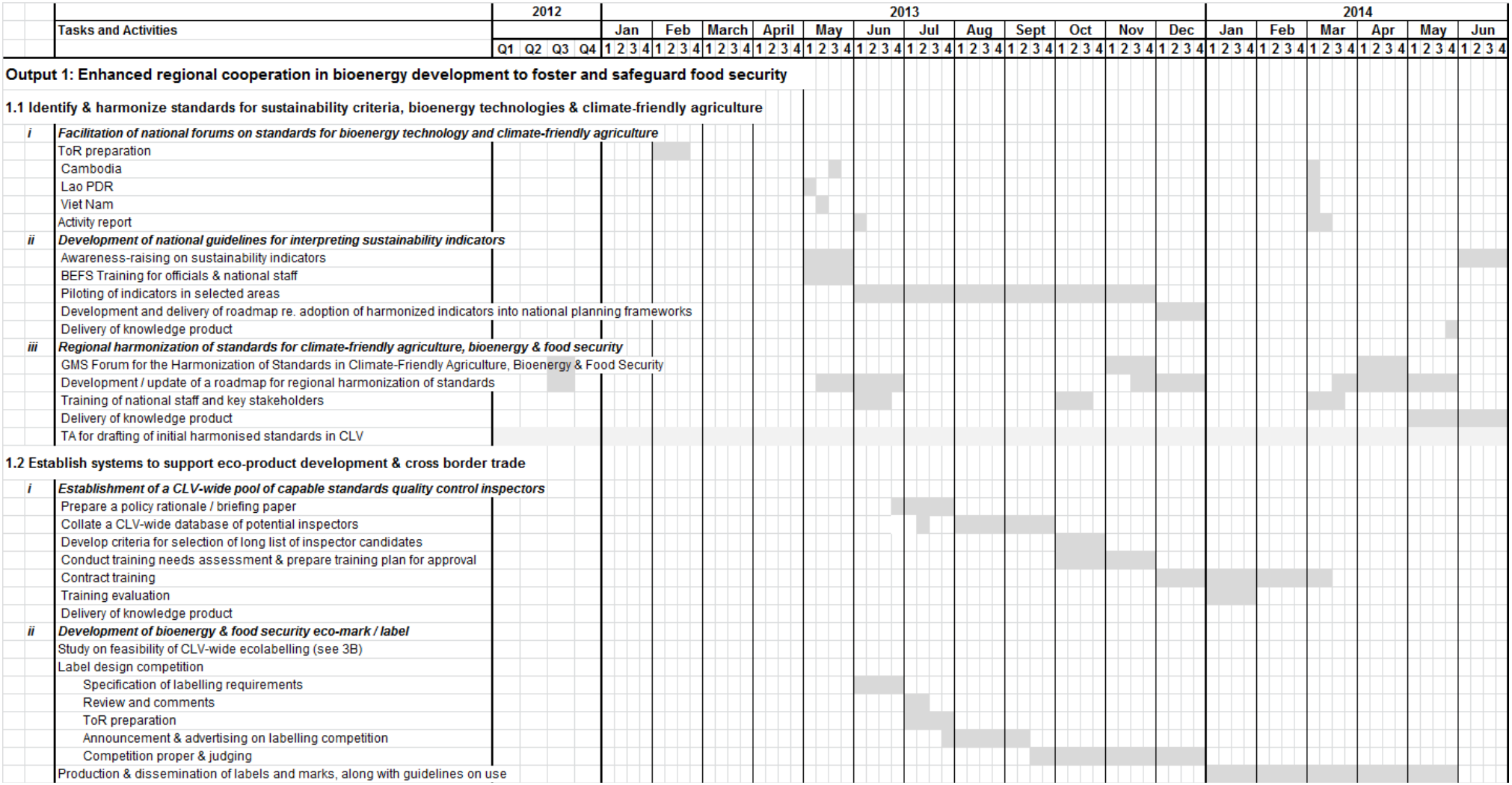
The following activities will be undertaken to complete the task:

- Devise knowledge product development and dissemination plan incorporating multi-media outlets, including print, DVD, TV, radio, internet (e.g. ADB-WGA site).
- Agree standard templates / logos with ADB and IAs, incorporating guidelines for knowledge product development, structure, formatting, focus, style and content.
- Contract the International Biochar Initiative to prepare a knowledge management product on biochar and its use, agree on structure and scope of work, review sections with edits and comments, distribute for comment and finalize – (IBI - TL and Biochar expert)
- Contract GERES to prepare a knowledge product on ICS technologies and their benefits agree on structure and scope of work, review sections with edits and comments, distribute for comment and finalize (GERES - TL and ICS expert)
- Prepare a Knowledge product on biogas and bioslurry management through a review of existing materials (especially those in Viet Nam, and those produced by SNV and its partners). Agree on structure and scope of work, review sections with edits and comments, distribute for comment and finalize (Biogas expert or possible service contract)
- Prepare a knowledge product on the carbon benefit of alternative biomass technologies and how these benefits can be captured within a carbon financing scheme (Nexus partner contract - TL).
- Catalogue all knowledge products into a single DVD.

8. UPDATED WORK PROGRAM & SCHEDULE

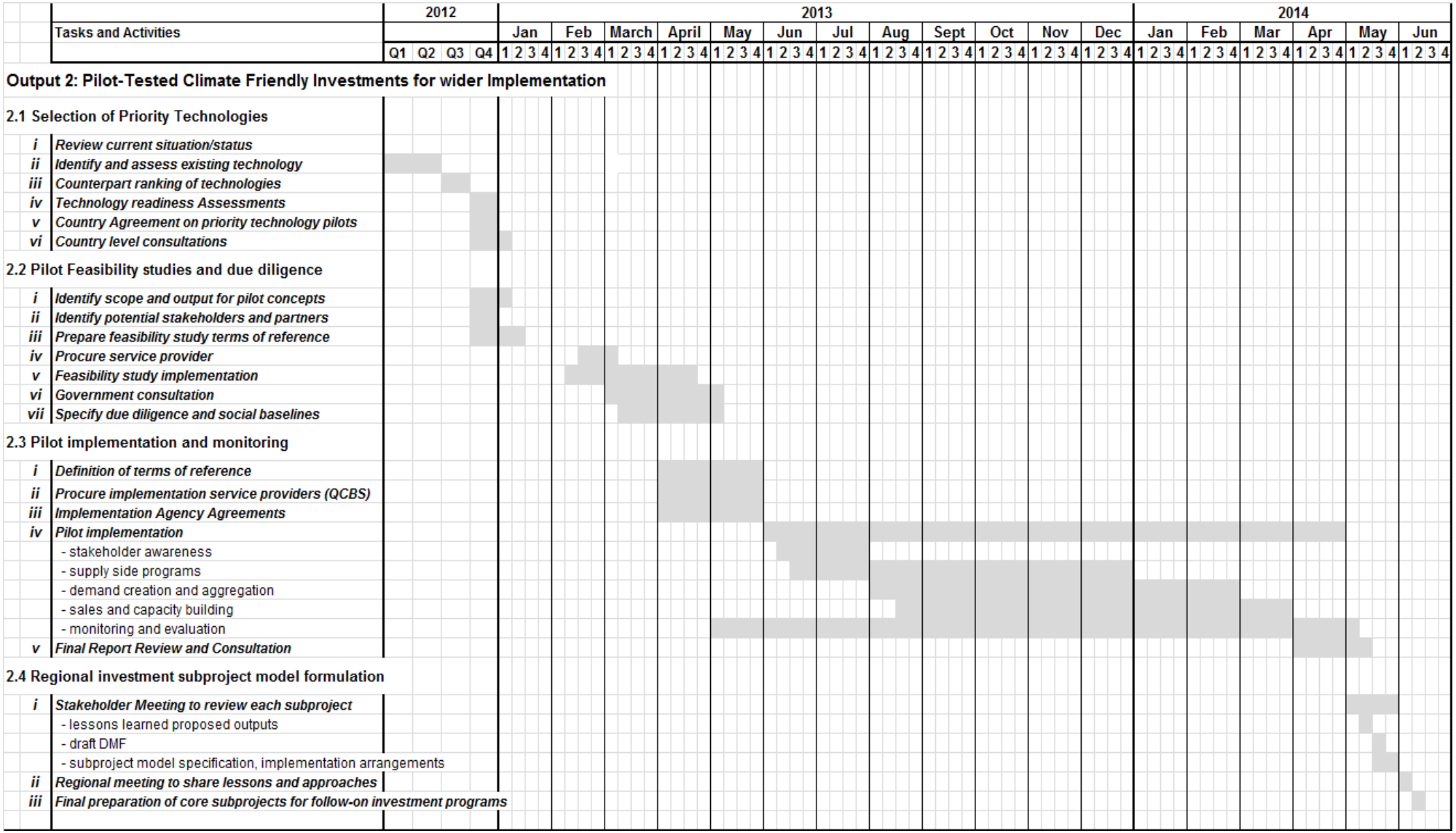
8.1. WORKPLAN

8.1.1. OUTPUT 1



	Tasks and Activities	2012				2013																		2014					
						Jan	Feb	March	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun						
		Q1	Q2	Q3	Q4	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 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						
1.3 Inform & enhance biomass, bioenergy & food security policy dialogues relating to standards operationalization & quality control																													
	i	***Study on feasibility & development of GBEP labelling system***																											
		ToR preparation																											
		Approval																											
		Study contracted																											
		Completion																											
		External peer review																											
		Delivery of knowledge product																											
	ii	***Study on the feasibility of a CLV traceability system***																											
		ToR preparation																											
		Approval																											
		Study contracted																											
		Completion																											
		External peer review																											
		Delivery of knowledge product																											
	iii	***Review of international standards and certification systems on bioenegy and climate-friendly agriculture***																											
		Prepare outline of review for team comments																											
		Initial draft for team inputs/comments																											
		External peer review																											
		Knowledge products																											
	iv	***Case Studies on Participatory Guarantee Systems***																											
		Preparation of study outline/methodology for team review																											
		Desk study of international experience																											
		Desk study of country level secondary sources																											
		Field study																											
		Consolidation of findings																											
		Draft paper for review																											
		Completion/Submission of case studies																											
		Delivery of knowledge product																											
		Recommendations for a program on climate friendly certification development under ADB investment program																											
	v	***Review of relevant CLV laws, regulations, policies and plans***																											
		ToR preparation																											
		Approval																											
		Study contracted																											
		Initial comments																											
		Recommendations and completion																											
		External peer review																											
		Delivery of knowledge product																											

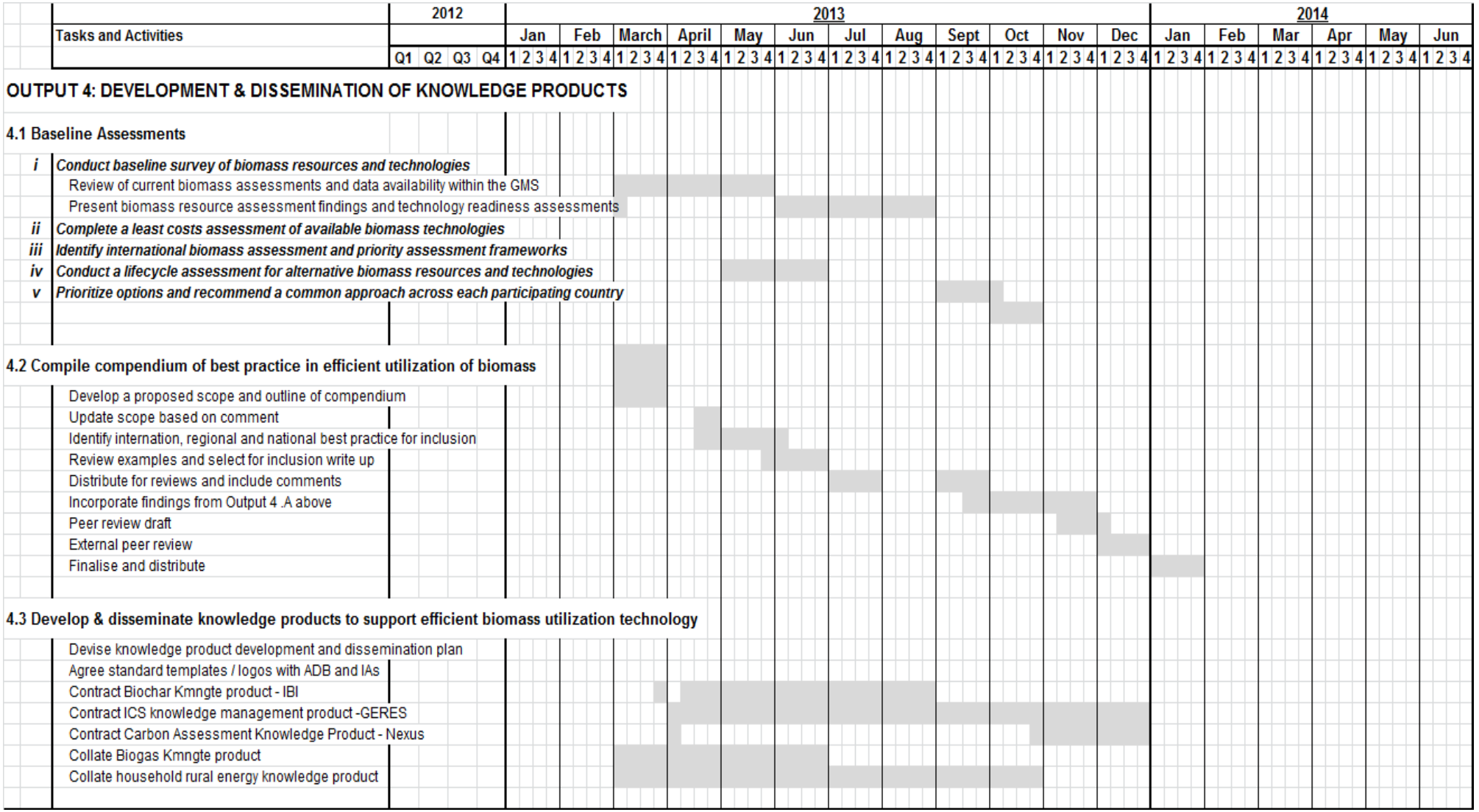
8.1.2. OUTPUT 2


2012
2013
2014
Tasks and Activities
Q1 Q2 Q3 Q4
Jan Feb March April May Jun Jul Aug Sept Oct Nov Dec
Jan Feb Mar Apr May Jun
Output 2: Pilot-Tested Climate Friendly Investments for wider Implementation
2.1 Selection of Priority Technologies
i Review current situation/status
ii Identify and assess existing technology
iii Counterpart ranking of technologies
iv Technology readiness Assessments
v Country Agreement on priority technology pilots
vi Country level consultations
2.2 Pilot Feasibility studies and due diligence
i Identify scope and output for pilot concepts
ii Identify potential stakeholders and partners
iii Prepare feasibility study terms of reference
iv Procure service provider
v Feasibility study implementation
vi Government consultation
vii Specify due diligence and social baselines
2.3 Pilot implementation and monitoring
i Definition of terms of reference
ii Procure implementation service providers (QCBS)
iii Implementation Agency Agreements
iv Pilot implementation
- stakeholder awareness
- supply side programs
- demand creation and aggregation
- sales and capacity building
- monitoring and evaluation
v 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

8.1.3. OUTPUT 3

	Tasks and Activities	2012				2013												2014					
						Jan	Feb	March	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
		Q1	Q2	Q3	Q4	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 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
Output 3: Enhanced Capacity for Efficient Use of Biomass																							
3.1 Development and delivery of awareness-raising programs																							
i	***Develop and deliver awareness-raising material on efficient use of biomass for bioenergy and food security***																						
	Collation and consolidation of existing resources																						
	Prepare policy briefs relating to bioenergy and CFA																						
ii	***Finalise list of target agencies and individuals***																						
iii	***Plan awareness-raising campaign inc. schedule, M&E and multimedia delivery mechanisms***																						
iv	***Manage advertising and delivery of multimedia awareness-raising program***																						
v	***Collate feedback, evaluation findings and experiences***																						
vi	***Re-launch awareness-raising program***																						
vii	***Develop and deliver specific awareness-raising materials for farmers***																						
3.2 Develop and deliver training and capacity building programs																							
i	***Capacity development needs assessment***																						
ii	***In-situ training and facilitation***																						
	BEFS Approach																						
	Sustainability indicators, primarily based on GBEP																						
	AROS standards																						
	Biomass assessment methods and approaches																						
	Innovative financing mechanisms for scaling-up bioenergy and food security investments and activities																						
	ADB investment project readiness and implementation																						
iii	***Facilitate regional study tours and biomass technology exposure visits***																						
	Biochar, including production via kilns, gasification ICS, etc.																						
	Biogas / bioslurry																						
	ICS, including technology assessment and testing																						
iv	***Develop and deliver distance learning program***																						
v	***Evaluation and adaptation of training & capacity development resources***																						
3.3 Development of a social baseline for the proposed investment project																							
i	***Incorporation in Feasibility Terms of Reference***																						
ii	***Social survey completed by FS service providers***																						
iii	***Consolidation of social survey findings across pilots***																						
iv	***Assemblage of secondary data and data triangulation***																						
v	***Draft SPRSS report for each investment loan (n=3)***																						
3.4 Organize annual international conference on household bioenergy and food security																							

8.1.4. OUTPUT 4


2012
2013
2014
Tasks and Activities
Jan Feb March April May Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar Apr May Jun
Q1 Q2 Q3 Q4
OUTPUT 4: DEVELOPMENT & DISSEMINATION OF KNOWLEDGE PRODUCTS
4.1 Baseline Assessments
i Conduct baseline survey of biomass resources and technologies
Review of current biomass assessments and data availability within the GMS
Present biomass resource assessment findings and technology readiness assessments
ii Complete a least costs assessment of available biomass technologies
iii Identify international biomass assessment and priority assessment frameworks
iv Conduct a lifecycle assessment for alternative biomass resources and technologies
v Prioritize options and recommend a common approach across each participating country
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 internation, regional and national best practice for inclusion
Review examples and select for inclusion write up
Distribute for reviews and include comments
Incorporate findings from Output 4 .A above
Peer review draft
External peer review
Finalise and distribute
4.3 Develop & disseminate knowledge products to support efficient biomass utilization technology
Devise knowledge product development and dissemination plan
Agree standard templates / logos with ADB and IAs
Contract Biochar Kmngte product - IBI
Contract ICS knowledge management product -GERES
Contract Carbon Assessment Knowledge Product - Nexus
Collate Biogas Kmngte product
Collate household rural energy knowledge product

8.2. PERSONNEL SCHEDULE

Personnel Schedule				2013												2014					
Tasks and Activities	INPUTS			2012	Jan	Feb	March	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
	Total	Used	Remaining		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 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
International																					
Int. Team Leader / Lindsay SAUNDERS	7.50	0.50	7.00																		
Int. Legal, Standards & Certification Specialist / Donah BARACOL-PINHÃO	5.87	3.37	2.50																		
Int. Improved Cookstove Specialist / Ewan BLOOMFIELD	1.00	0.73	0.27																		
Int. Biomass / Biochar Technology Specialist / Simon SHACKLEY	4.88	0.88	4.00																		
Int. Private Sector Development Specialist / Jason YAPP	6.67	4.67	2.00																		
Int. Bioenergy Capacity Building Specialist / Greg MUNFORD	3.00	0.00	3.00																		
Cambodia																					
National Project Implementation Specialist-CAM / HEM Sovannarith	23.50	7.53	15.97																		
Private Sector Development Specialist-CAM / Sam BONA	5.00	2.12	2.88																		
Project Assistant (Regional) / KEO Sokheng	N/A																				
Viet Nam																					
National Project Implementation Specialist-VIE / LI Thi Thoa	16.52	0.50	16.02																		
Private Sector Development Specialist-VIE / LE Thi My Linh	4.00	1.23	2.77																		
Legal, Standards & Certification Specialist-VIE / NGUYEN Minh Bao	3.48	1.15	2.33																		
Project Assistant / Trang Vu	N/A																				
Lao PDR																					
National Project Implementation Specialist-LAO / Phonexay KHAMMAVONG	22.50	6.57	15.93																		
Private Sector Development Specialist-LAO / Bounthavy CHALEUNPHONH	5.00	1.40	3.60																		
Legal, Standards & Certification Specialist-LAO / Phouvong CHITTANAVANH	2.00	0.00	2.00																		
Project Assistant / TBC	N/A																				
TOTAL	**110.92**	**30.65**	**80.27**																		

APPENDIX 1: DESIGN AND MONITORING FRAMEWORK (DMF)

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[24]	**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.

[24] *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[25] 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		

[25] *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: TERMS OF REFERENCE FOR TA7833 PARTIES

1. NATIONAL FOCAL POINT (NFP) - AGENCY OR INDIVIDUAL

- Lead in the implementation of project activities in partnership with the TA Team and Technical Focal Points on an institutional basis for project implementation.
- Ensure necessary facilities, services and support is provided to the TFPs and TA Team:
  - Functional, air-conditioned office space in a location convenient for liaison within the Ministry;
  - Office furniture (desks, chairs, bookcases, meeting table, etc.);
  - Utility costs (water, electricity, internet access; waste collection; etc.);
  - Cleaning and security services as per the rest of the building;
  - Use of meeting rooms as required.
- Facilitate the TA Team Consultants' activities by providing available required documents and facilitating to access information resources, statistics, databases and literature, as available in the Ministry and related to the working topics of bioenergy and food security.
- Access to transport for engagement of Ministry staff in field operations when necessary.
- Access to funds for engagement of Ministry staff in field operations and national/GMS-regional events as and when necessary.
- Organize translation of key documents / summaries as and necessary in accordance with internal ministry standard practices.

2. TECHNICAL FOCAL POINTS (TFP)

- Lead and/or support the implementation of project activities of relevance to their technical area of responsibility in partnership with the TA Team Consultants, especially in terms of national-level project activities.

3. PROJECT STEERING COMMITTEE

- Annual workplan review and guidance
- Annual report linked to the WGA meeting with a presentation from the TA7833 on planned activities versus actual activities and achievements along.
- Review of policy issues and approaches and recommendations back to each Government on agreed actions
- Resolution of issues regarding counterpart coordination

4. INDIVIDUAL TA CONSULTANTS[26]

4.1 Regional Cooperation and Trade Facilitation Specialist

- Strengthen institutional links and mechanisms for regional cooperation through the GMS WGA secretariat and report directly to ADB.
- Convene the project steering committee and engage its technical and advisory support for the TA;
- Develop and implement a harmonized framework for cross-border eco-trade facilitation programs based on the Core Agriculture Support Program (phase II, 2011–2015);
- Engage the GMS business forum in the mainstreaming of climate-friendly bioenergy and agriculture practices to improve regional food security;

[26] *as per ADB, 2011, TA Paper, TA7833-REG (subject to change by ADB)*

- Facilitate knowledge pooling and exchange, and engage centers of excellence in the generation of new knowledge on regional cooperation, including studies on a life-cycle assessment of the carbon dioxide, energy and water footprint, as well as on eco-labeling, paper-free trade and soil carbon monitoring methodologies;
- Develop policy briefs and project proposals and identify potential development partners to support the activities;
- Work with the TA7833 Team Leader to develop and solicit expressions of interest for the subcontracting of the implementation of pilot projects and studies to NGOs and centers of excellence, and;
- Establish a results-based monitoring and evaluation system for the regional cooperation activities of the WGA.

4.2 Regional Knowledge Management Specialist

- Coordinate knowledge products from the TA for use in broader regional cooperation under the GMS WGA secretariat to ensure synergy with other activities under the Core Agriculture Support Program (phase II, 2011–2015);
- Develop and implement knowledge management and communication dissemination plans to enhance cooperation among GMS countries and development partners;
- Assess knowledge needs at the regional level and knowledge management tools, and establish procedures for information and knowledge exchange, building on the activities of the WGA secretariat;
- Produce knowledge products such as policy briefs and communication materials, provide input for distance learning materials, and use mass communication channels to communicate TA activities;
- Develop content for the WGA website, workshops, and training programs to disseminate the key results of the TA effectively;
- Develop expressions of interest and terms of reference for media agencies and supervise the key deliverables of the regional cooperation program on bioenergy and climate change;
- Coordinate the development of an effective outreach strategy and communication materials;
- Facilitate knowledge sharing with key stakeholders;
- Implement a public awareness campaign through the dissemination of information and the organization of workshops, including the preparation of briefing materials and press releases in accordance with the WGA's mandate;
- Assist the team leader and the regional cooperation and knowledge management specialist in organizing a regional conference to share lessons from past and ongoing projects, and extract knowledge to be used in the design of pilot projects and capacity-building activities, and;
- Coordinate maintenance of the information database and the photo and video libraries, and support links with other websites such as those of national governments.

5. TA CONSULTING FIRM

TA Consultants will participate in the project in line with functions and tasks required in the ToR of the service contract signed between ADB and LML, LML's proposal and the final Inception Report. Once approved by all parties, the Inception Report becomes the key reference document for all parties.

Key roles and responsibility of the TA Consulting Firm include:

- To provide 14 working days' advance notice of their proposed working plan relating to inputs in partner countries.
- To submit written progress reports (in English) every three months, including information on project implementation in TA7833 participating countries.

- To commit to work of high quality in providing technical assistance to the governments of TA783 partner countries and the ADB in achieving the project's objectives and be of benefit to the countries.
- To ensure the accuracy of information in their reports.
- To ensure compliance with the partner country government's laws.
- Provide the following facilities, services and support to be provided by the Consulting Firm (subject to ADB prior approval):
  - Office equipment (PCs, printer, camera, projector, scanner etc.).
  - Office supplies and consumables (paper, ink, stationary, drinking water, coffee/tea, etc.).
  - Consultants' communication costs (mobile phones only and internet)
- Provision of regional and/or national TA Project Assistant(s).

APPENDIX 3: LIST OF PROPOSED PILOT PROJECTS & FEASIBILITY STUDIES

SUBJECT	FEASIBILITY STUDY	PILOT PROJECT
CAMBODIA		
Improved Cook Stoves (ICS)	Feasibility Study for a Planned Pilot Investment Project for Scaling-Up Adoption of Improved Cook Stoves in Cambodia	Exact focus to be determined based on feasibility study recommendations
Biogas / Bioslurry	Feasibility Study for a Planned Pilot Investment Project for Scaling-Up Proven Biogas Technology and Efficient Bioslurry Management Practices	Exact focus to be determined based on feasibility study recommendations
Biochar	Feasibility Study for a Pilot Investment Project Demonstrating the Production and Use of Biochar as a Soil Amendment	Exact focus to be determined based on feasibility study recommendations
LAO PDR		
Improved Cook Stoves (ICS)	Feasibility Study for a Planned Pilot Investment Project for Building Improved Cook Stoves Value Chains	Exact focus to be determined based on feasibility study recommendations
Biogas / Bioslurry	Feasibility Study for a Planned Pilot Investment Project for Scaling-Up Proven Biogas Technology and Efficient Bioslurry Management Practices	Exact focus to be determined based on feasibility study recommendations
Biochar	Feasibility Study for a Pilot Investment Project to Demonstrate Biochar via Rice Mill - Farmer Association Joint Ventures	Exact focus to be determined based on feasibility study recommendations
VIET NAM		
Improved Cook Stoves (ICS)	Feasibility Study for a Planned Pilot Investment Project for Scaling-Up Improved Cook Stove Use	Exact focus to be determined based on feasibility study recommendations
Biogas / Bioslurry	Feasibility Study for a Pilot Investment Project to Scale-Up Efficient Bioslurry Management Practices within the Viet Nam National Biogas Program	Exact focus to be determined based on feasibility study recommendations
Biochar / Climate-Friendly Rice Production	Feasibility Study for a Pilot Investment Project to Scale-Up the use of Biochar from Rice Husks in Climate-Friendly Rice Production	Exact focus to be determined based on feasibility study recommendations