

RESIREA
Final Capacity Building on Biomass and PV Workshop
27th – 30th November 2009, Battambang Cambodia

Deliverable REPORT:
D18 Training of the operators Training session +
support documentation

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Project:	EIE/06/272/SI2.449064
Acronym	RESIREA
Name:	Renewable Energy Sustainable Programs for Intelligent Rural Electrification and Poverty Alleviation
Project time	36 Months

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1 General information

The RESIREA project launched in 2007 is a cooperation project of Intelligent Energy Europe Programmed developed by the European partners Fondation Energies pour le Monde, Fraunhofer ISE and CRA-W.

The project approach is to increase rural access to energy with off-grid power supply solutions based on renewable energy sources in the Lower Delta Mekong Countries Cambodia, Lao PDR and Vietnam. Three different provinces are targeted: **Kampong Thom** in Cambodia, **Oudomxay** in Laos and **Dak Nong** in Vietnam.

The final capacity building workshop RESIREA project offered to local private renewable energy companies as well as other local operators (mostly part of the local governments) learning and experiences about Renewable Energy Technologies and System components based on Biomass and Photovoltaic systems. The Workshop gave the chance to participate in discussions with representatives of the provinces, experts on biomass and in Photovoltaic Systems and other local stakeholders such as local operators, and companies.

The workshop comprised topics of main focus of RESIREA project on elaborating adapted and sustainable electrification projects in the selected villages with:

- Selection of appropriate options based on: Biomass, Photovoltaic systems, which are feasible to meet the electricity needs and willingness to pay
- Elaboration of operation and management schemes adapted to local context
- Economical analysis and elaboration of financing scheme ensuring sustainability

The training session showed about the potential of renewable energy technologies for decentralized energy supply schemes in the Lower Delta Mekong Countries, the results of estimations of the RESIREA project and different topics for understanding better specially the operation maintenance of the systems. Networking and match – making has been looking for as well as the possibility for discussions with all of the participants.

Additional the training session looked to aware the participants about the problems and other barriers of rural areas for local people who do not have access to electricity and also live in rural areas of developing countries and the use of traditional rural electrification via grid extension is financially prohibitive in these remote areas.

The integration of decentralized renewable energy systems in rural electrification framework required removing different barriers: technical barriers are related to the lack of quality standards for components and systems, installation and commissioning guidelines and maintenance protocols, economical barriers are related to the lack of access to financial mechanisms and the high cost of operating in a scattered market.

As well as recommendations, advantages of using decentralized system were also discussed. Decentralised renewable energy systems are an alternative to provide access to electricity to remote communities. In many cases this option is cheaper than the grid extension. At the same time it reduces the energy dependence of these communities by using a local resource. Another common feature among renewable energy technologies was the challenge for electricity operators due to the difficulty of applying in this context the business models adapted to traditional, centralized grids.

The specific training activities planned were then given by a regional, but international workshop at Battambang in Cambodia, starting from the 27th and ending on the 30th of November 2009.

2 Context of RESIREA project

Launched in 2007, with the financial support of the European Commission and the French agency for environment ADEME, RESIREA is a planning project for rural electrification projects through renewable energies in three provinces of South East Asia: Oudomxay in Lao PDR, Kampong Thom in Cambodia and Dak Nong in Vietnam.

RESIREA project is implemented by a consortium of European partners composed of the Fraunhofer Institute for Solar Energy Systems ISE, and the Center for Agronomical Research (CRA-W). To elaborate sustainable electrification projects, RESIREA has used and developed an innovative methodology, based on in-depth knowledge of the local and provincial contexts and of the renewable energy potential.

Priority villages have been identified in the three provinces as the most promising and favourable sites to implement rural electrification projects. This selection has been done using a GIS and multi-criteria analysis. This selection was validated by local authorities during provincial workshops held in March and April 2008. Detailed studies have been then completed in the priority villages, to apprehend the local context and analyze the energy demand and solvability of the targeted population.

In 2009, the collected data will be used to design sustainable electrification projects in the targeted area. Project documents will be submitted end of 2009 to operators and financing agencies.

3 Workshop methodology and schedule

After 2 years of studies, the partners have finalized the collection of data in the provinces. At this stage of the project, it was important to gather all actors who could be interested in RESIREA next stages and give a Capacity building Workshop.

Objectives

The training plan of the project includes the following objectives:

Main objective

- To train local actors of rural electrification in Ecuador and Peru in renewable energy for electricity generation

Specific objectives

- To conduct capacity building activities in order to improve the integration of the decentralized renewable energy systems in the current rural electrification frame.
- To disseminate best practices in technical design, operation and maintenance, also, for stand alone electricity installations powered with renewable sources.
- To spread management tools and commissioning and maintenance guidelines developed in the frame of RESIREA project among the participating institutions.
- To promote the networking among institutions involved in rural electrification process and the organisms establishing energy policies.
- Discuss the results of the surveys and results of RESIREA Project,
- Provide all clarifications and explanation about the methodology of RESIREA project,

Target groups

Target groups for the training activities in the project are all the stakeholders of the electrification sector. They can be divided in the following groups. The final selection of participants in the workshops will be held in each country by the local partners.

Government

This group consists of the organisms and local institutions which have authority in the development of energy policies. It includes the governments of target countries, renewable energy and rural electrification agencies in the correspondent ministry, regulation bodies, and local authorities.

The government role is to contribute with the global vision of the country development, of the energy sector and the environmental and social challenges of rural electrification. The participation of representatives of this group is a crucial aspect, regarding the number of persons involved and their authority in sector development issues.

Electricity service operators

This group consists of the institutions involved in the implementation of rural electrification programmes. It includes professionals from public or private electricity service operators, from organizations working in rural infrastructures and manufacturer companies of equipment and alternative technologies.

Its role is to contribute with the vision of the sector development, its particular concerns and the technical knowledge in energy generation. This group includes participants from public, mixed or private enterprises in order to form a group representative of the current situation in each target country.

Civil Society

This group includes the representatives of municipalities and communities, non-governmental organisations and the international donor community. It is important to attend the representation of the minorities, particularly of the indigenous people and women. This is a delicate issue due to the fact that the minorities are not always homogeneous or are not organized groups. Therefore, in general, one representative is not able to take part in the name of all of them.

Civil society represents the whole population, therefore all the interests regarding the development of a sector in a specific country. The role of the representatives of this group is to defend the vision of the final users, their worries and their perspectives.

Training methodology

The proposed training methodology includes celebrating simultaneous workshop sessions. Two workshops were principally defined. The objective of the first workshop was to understand Biomass as a resource, biomass technologies as well as the operation and maintenance of the different systems. A focus point was on gasifiers with a Visit to gasifier in operation. The last part of the first workshop was to identify the technical and economical barriers of rural electrification with renewable energy systems. The second workshop included the same topic but for Photovoltaic systems. Both workshops emphasized on the advantages and the limitations of each option considered.

The number of attendees at the regional international workshop has been very specified with invitations supported by RESIREA Project three participants of Cambodia, three participants of Lao PDR and 4 Participants from Vietnam. Additional participants have been also welcome. Working groups were defined at the beginning of the workshops. The groups have been heterogeneous and representative. The workshops have been designed in a way as to foster the exchanges among participants about their personal experiences and regional context.

The main content of the workshops have been taken place in two training days. The date of each workshop has to be defined three months beforehand in order to guarantee an appropriate dissemination of the event.

Teaching staff

The capacity building Staff has been mainly by developing, organising, and presenting the material by Romain Crehay for Biomass from Centre wallon de Recherches agronomiques CRA-W and Brisa Ortiz for Photovoltaic Systems from Fraunhofer ISE. SME Cambodia has helped on the organising the workshop.

According to the number of attendees of the workshop, one or more persons between the organization team will assume the facilitation tasks. These functions are: ensuring the neutrality in the discussion group taking care of the balance among the parts and

interests, promoting a fluid dialogue and guiding the group towards conclusions reached jointly.

Training materials

Training materials include the set of slides used in. The main slides of the workshop are attached in anex1 and annex II.

Agenda and Time Table

Contents and presentations - RESIREA Education Workshop 27-30 /11/09

Contents and presentations - RESIREA Education Workshop 27-30 /11/09

	Description		Who		Who prepares?		Pwpt N°	Duration (min)
	Draft format of all ppt presentations (frame)							
Friday 27.11.09	Travelling from Phnom Pehn to Battambang		Romain & Brisa, 4 Vietnamese and 2 Lao participants					
19:00	Dinner Together							
20:00	Workshop organisation details	definition of the groups						
Saturday 28.11.10	Workshop on biomass and PV							
08:00	SME Welcome & Orgnaisation Details		SME					

	Biomass Parallel Session Group A (Cambodian attendance)			PV Parallel Session Group B (Lao Vietnamese attendance)				
		Who prepares?	Who speaks?		Who prepares?	Who speaks?		
08:30	Overview Biomass electrification technologies	Romain	Romain	Overview PV electrification technologies	Brisa	Brisa		45
	Presentation of Along Tamei and technology provided by SME Cambodia	SME	SME	Sizing PV systems	Brisa	Brisa		45
10:00	Questions discussion	Romain/ SME	Romain/S ME	Questions discussion	Brisa	Brisa	 	30
10:30	coffee break			coffee break			 	30
	Biomass Parallel Session Group A (Lao + Vietnamese attendance)			PV Parallel Session Group B (Cambodian attendance)				
11:00	Overview Biomass electrification technologies	Romain	Romain	Overview PV electrification technologies	Brisa	Brisa		45
	Presentation of Along Tamei and technology provided by SME Cambodia	Romain	Romain	sizing and operating PV systems	Brisa	Brisa		45
12:30	Questions discussion	Romain	Romain	Questions discussion	Brisa	Brisa	 	30

13:00	Lunch							60
14:00	All Participants Travelling together. Visit to Along Tamei							
15:00	Biomass Parallel Sesion Group A (Cambodian attendance)			Biomass Parallel Sesion Group A (Lao + Vietnamese attendance)				
	Visit of Along Tamei gasification plant	Romain	Romain	Visit of Along Tamei gasification plant	Romain	Romain		
	Special focus on operation and maintenance of the plant and organisational scheme	Romain	Romain	Special focus on operation and maintenance of the plant and organisational scheme	Romain	Romain		
17:00	Come back to Battambang							
19:00	Free Evening							
Sunday 29.11.10	Biomass Parallel Session Group A (Cambodian attendance)			PV Parallel Session Group B (Lao Vietnamese attendance)				
08:30	Operating and Maintenance	Romain	Romain	Operating and Maintenance	Brisa	Brisa		60
09:30	Sharing Experiences among Participants and Building Network	Romain	Romain	Sharing Experiences among	Brisa	Brisa		60

				Participants and Building Network				
10:30	Coffee break							30
	Biomass Parallel Session Group A (Lao and Vietnamese attendance)			PV Parallel Session Group B (Cambodian attendance)				
11:00	Operating and Maintenance	Romain	Romain	Operating and Maintenance	Brisa	Brisa		60
12:00	Sharing Experiences among Participants and Building Network	Romain	Romain	Sharing Experiences among Participants and Building Network	Brisa	Brisa		60
13:00	Lunch							
14:00	Traveling from Battambang to Phnom Pehn							
Monday 30.11.09	Departure to Phnom Pehn and later to own countries							

4 Participants

The main participants represented the different categories of actors who could be interested in the implementation of the electrification projects that will be submitted at the end of RESIREA:

Institutional bodies: MIME, EAC, provincial authorities (DIME, DAFO,)

Actors involved in energy: CEC, SME Cambodia, CEG, EDC, Kc-Solar,

The signed attendance list of participants is attached in annex III.

List of participants

Final Capacity Building on Biomass and PV Workshop Battambang 27th – 30th November 2009

Contact Person	Nr.	Organization	Activities	Email
Project Partners and Organisation				
Europe				
Romain Crehay	1	Cra-W	Project manager	crehay@cra.wallonie.be
Brisa Ortiz	2	Fraunhofer ISE	Project manager	brisa.ortiz@ise.fraunhofer.de
Bruno Harmant	3	SMECambodia	Organisation	
Tony Knowles	4	SMECambodia	Organisation & Presentation	
Participants				
Vietnam				
Mr. Tiet Vinh Phu (EnerTEAM)	5	EnerTEAM		
Mr. Lam Huu Tan	6	EnerTEAM		lthan_l@gmail.com
Mr. Tle Xuan Qua	7	EnerTEAM		
Mr Tan Vien Hang	8	Dankong Province		
LAO PDR				
Mr. anousak phongsavath	9			
Mr. Thipdouangchai Anou	10			

Mr. Sakhone	11	Deputy Head of Electricity Unit of Oudomxay		
Cambodia				
Mr Ly Chamroeon	12	MIME		
Mr Ros Visith	13	SIME BTB		
Mr. Yim Sophy	14			
Provisionnal total	14			

5 Annexes

5.1 Annex I: Biomass Workshop Material

WorkshopMaterial_Battambang_Biomass_09 attached as PDF Document

5.2 Annex II: Photovoltaic Workshop Material

WorkshopMaterial_Battambang_Photovoltaics_09 attached as PDF Document

5.3 Annex III: List of Participants of Attendance Signed

Contact Person	Nr. of persons	Organization	Activities	Email	Telephone	arrival Time	departure time	Transportation meet point	Comments
List of participants - WORKSHOP Battambang									
Final Capacity Building on Biomass and PV Workshop									
Battambang 27th – 30th November 2009									
Project Partners and Organisation									
Europe									
1	Romain Crehay	1	Cja-W	Project manager	crehay@era.walkele.be				
2	Brise Ortiz	2	Fraunhofer ISE	Project manager	brise.ortiz@ise.fraunhofer.de	27.11.09 @ 14:00:00		Phnom Penh airport	
3		3	SMC Cambodia						
4		4							
Participants									
Vietnam									
1	M. Tiet Vinh Phu (Enerteam)	5	Enerteam			84907589887			
2		6							
3		7							
4		8							
LAO PDR									
1		9							
2	Mr. Sakhone	10	Deputy Head of Electricity Unit of Oudomxay						
Cambodia									
1	YIM SAPHY	11	MIME	(y.im.saphy@yahoo.com)	016 599997				
2	CEUNG SOCHEAT	12	DIME		012 848622				
3	BOS VISITH	13	DIME		012 530680				
4	LYCHAMROEUN	14	MIME	lychamroeun@012-721230					
Provisional total		14		bos@yahoo.com					

List of participants - WORKSHOP Battambang
Final Capacity Building on Biomass and PV Workshop
Battambang 27th – 30th November 2009

Contact Person	Nr. of persons	Organization	Activities	Email	Telephone	arrival Time	departure time	Transportation meet point	Comments
Project Partners and Organization									
Europe									
1	1	Cra-W	Project manager	crehay@cra.wallonie.be					
2	2	Fraunhofer ISE	Project manager	brisa.ortiz@ise.fraunhofer.de		27.11.09 @ 14:00:00		Phnom Penh airport	
3	3	SMECambodia	BDS.	UNROUR0346	012 815 887				
4	4								
Participants									
Vietnam									
1	5	EnerTEAM		tienvinhphuc@gmail.com		04907505887			
✓		Đo ST-BKING	vice manager	dothung57@gmail.com	0913 480 919				
✓		LE XUAN QUANG		lxquang@ener.com	0915 918 222				
2	6	ENERTEAM		lham-e@ener.com	+84 9 19 88 7 3 1 2				
3	7								
4	8								
LAO PDR									
1	9								
2	10	Deputy Head of Electricity Unit of Outdormay							
Cambodia									
1	11								
2	12								
3	13								
4	14								
Provisionnal total									
	14								

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