



Energy Savings Siem Reap – Promoting and Demonstrating Energy Conservation in Siem Reap, Cambodia

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Initiative on Energy, Environment and Ecosystem
(3E) Nexus for Sustainable Development**

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Presentation Outline

- 1 About the Project
- 2 Project Objectives
- 3 Implementing Partners
- 4 Awareness Raising Development
- 5 Energy Labelling Development
- 6 Demonstration Activities
- 7 What We Achieved?
- 8 Challenges
- 9 Conclusions

Background

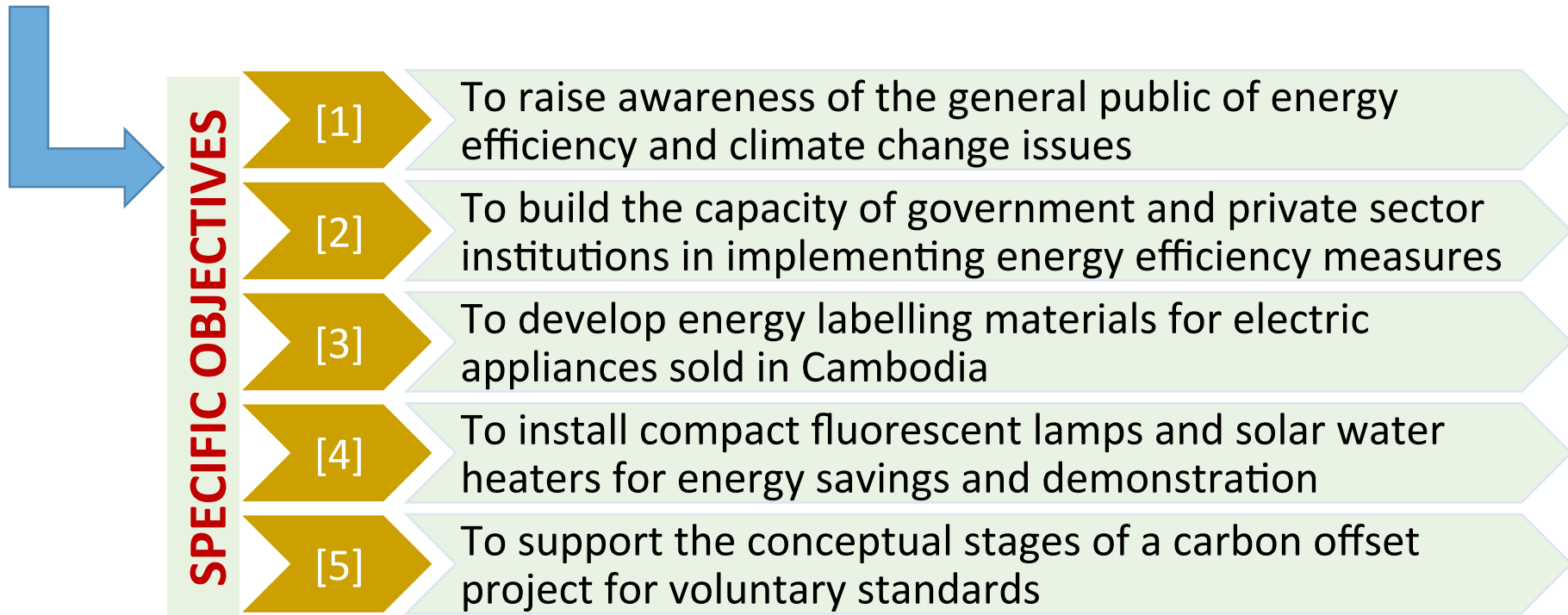
- Cambodia's energy sector
 - still struggling to meet the increasing demands of an expanding economy and a growing population.
 - unreliable and insufficient supply, high electricity tariffs, and low rates of electrification.
- Cambodia's electrification rate is among the lowest in Asia (about 12% of population having electricity access)
- Government aims to increase electricity coverage to 70% of the population by 2030 constitutes a daunting challenge.
- Energy efficiency and renewable energy present opportunities for
 - conserving power
 - realizing financial savings
 - enhancing energy security
 - Contributing to the mitigation of climate change.

Background

- Siem Reap City is the gateway to the ancient city of Angkor, a World Heritage Site
- Since the 1990s, tourism in Angkor has developed rapidly, from a few thousand visitors a year to more than a million, providing a significant source of revenues
- Mass tourism has put additional pressure on society and the environment. Consumption of water and energy has grown rapidly
- Little has been done in practice to promote energy efficiency, energy conservation and renewable energy technologies in Siem Reap
- To a large extent, the general population remains unaware of basic measures to conserve electricity, including switching to CFLs, and of the links between electricity consumption, GHG emissions and climate change

Project Objectives

To raise awareness of energy efficiency and energy conservation in the context of climate change and sustainable development, and to demonstrate the practical feasibility of simple energy conservation measures by installing solar water heaters in selected sites and distributing CFLs to the general population.



Implementing Partners



Period

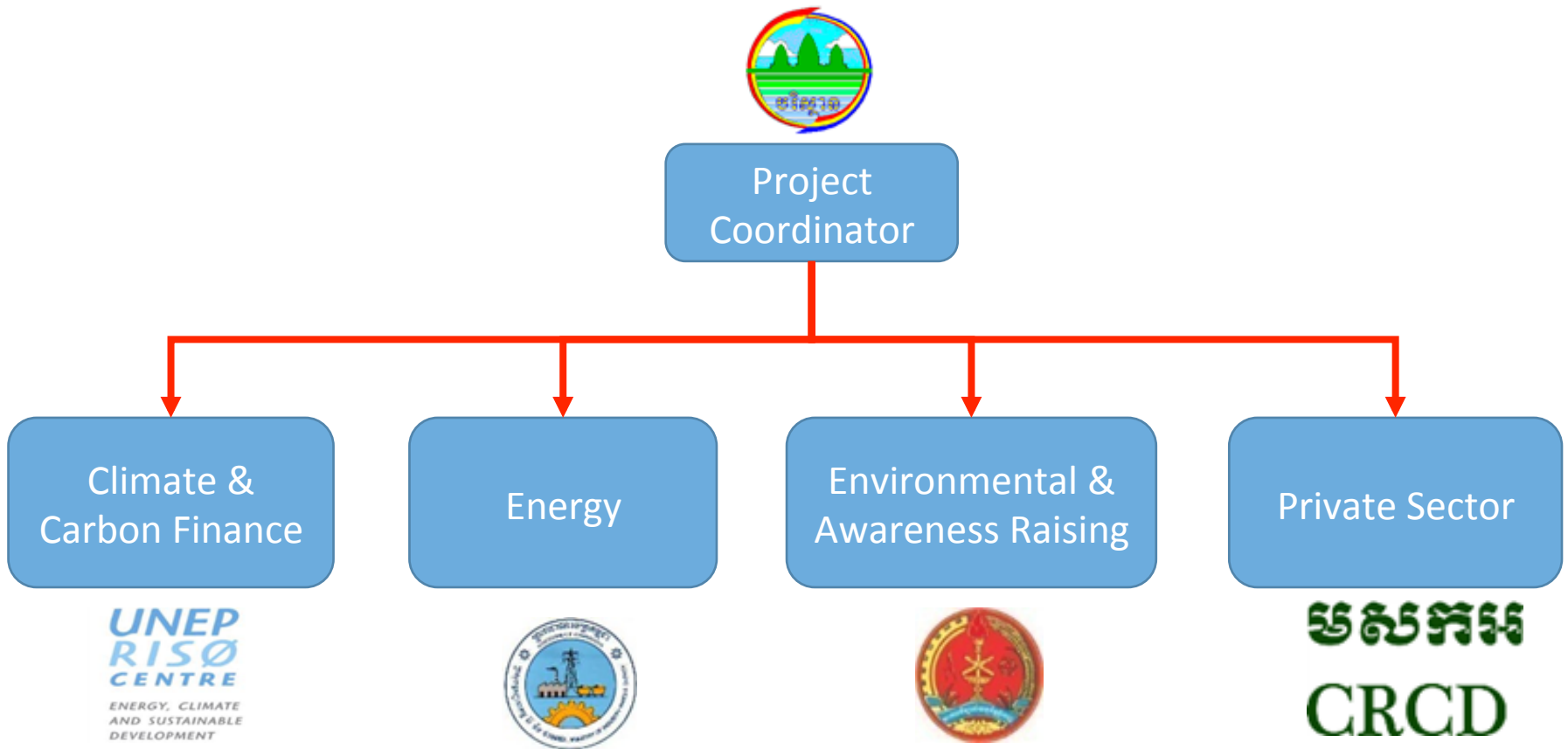
Jan 2011-Dec 2012

Project Site

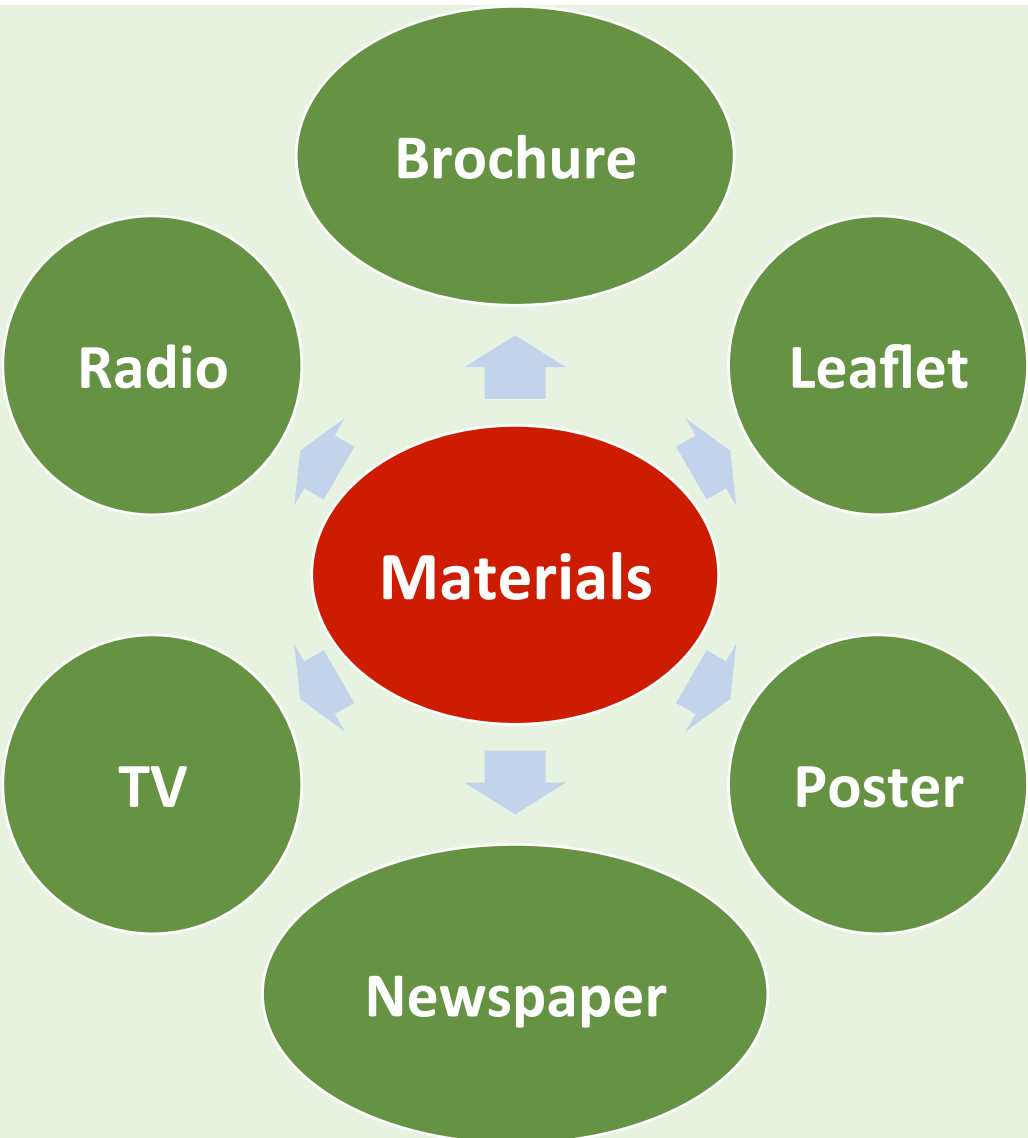
Siem Reap Town

- **MOE:** Ministry of Environment
- **MIME:** Ministry of Industry, Mines and Energy
- **RUPP:** Royal University of Phnom Penh
- **CRCD:** Cambodian Research Centre for Development
- **UNEP Risoe Centre** on Energy, Climate and Sustainable Development (URC)

Implementing Partners



Awareness Raising Materials Development



អង្គប្រយោជន៍វិទ្យាសាស្ត្រប្រើប្រាស់ធនធានអគ្គិសនីដោយ ពន្លឺព្រះអាទិត្យ

អង្គប្រយោជន៍វិទ្យាសាស្ត្រប្រើប្រាស់វត្ថុធាតុដើមស្លៀកបំពាក់សម្រាប់ប្រើប្រាស់ថាមពល (អំពូលពិសេស)

ស្លៀកបំពាក់សម្រាប់ប្រើប្រាស់ថាមពល

5W = 25W
8W = 40W
11W = 60W
14W = 75W
20W = 100W
29W = 130W

ស្លៀកបំពាក់ ៥ អំពូល

អង្គប្រយោជន៍វិទ្យាសាស្ត្រ គូការអភិវឌ្ឍន៍វត្ថុធាតុដើមសម្រាប់ប្រើប្រាស់ថាមពល CFL

កាត់បន្ថយការប្រើប្រាស់ថាមពល

ដំឡើងប្រព័ន្ធធារាសាស្ត្រទឹកស្អាត

អង្គប្រយោជន៍វិទ្យាសាស្ត្រ គូការអភិវឌ្ឍន៍វត្ថុធាតុដើមសម្រាប់ប្រើប្រាស់ថាមពល CFL

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ដំឡើងប្រព័ន្ធធារាសាស្ត្រទឹកស្អាត

Capacity Building and Awareness Raising Campaigns

- Delivery a series of trainings to raise awareness on climate change and energy efficiency to high school, universities, public and private sectors
- Broadcasted on TV and Radio for 2 months covering the whole Siem Reap and neighboring provinces



- Number of Workshops & Trainings: 5
- Total of **712** participants trained

Summary of Awareness Raising Materials Production

Materials	Produced Materials		Distribution Channels
	CFL	SWH	
Leaflet	30,000	5,000	High schools, universities, local people, local authority, public and private institutions
Brochure	30,000	5,000	
Poster	8,000	5,000	
Newspaper		1	Local newspaper
Radio	1	1	Provincial Radio
Short Video Clip	1	1	Provincial TV

Energy Labelling Development

The use of the labelling programs, along with their main characteristics, will be explained to the general public as part of the awareness raising campaigns.

Air Conditioner, Fan and Refrigerator appliances were selected

Relabeling in Khmer rather than re-rating the appliances

ឆ្នាំវាយតម្លៃ
2011

ស្លាកសញ្ញាបង្ហាញពីកម្រិតប្រសិទ្ធភាពនៃឧបករណ៍អគ្គិសនី
សំរាប់ : ម៉ាស៊ីនត្រជាក់ (ប្រភេទបំបែក)

ថាមពលប្រើក្នុង១ឆ្នាំ (គិតតាមតម្លៃ)	
តម្លៃអគ្គិសនីប្រើប្រាស់ (បាត/ឆ្នាំ)	
ប្រសិទ្ធភាព (បីចេញ/ម៉ោង/វ៉ាត់)	

ម៉ាក : ម៉ូដែល
អាណុញ : បីចេញ/ម៉ោង
ម៉ូដែលវិល្លកម្ពុជា : ម៉ូដែលក្នុងដងសាមីរ

កម្រិតថ្លៃ
ក្រសួងថាមពល

កំណត់សំគាល់: បកប្រែពីស្លាកសញ្ញាឧបករណ៍អគ្គិសនីទំនើបនៅប្រទេសថៃ

ឆ្នាំវាយតម្លៃ
2008

ស្លាកសញ្ញាបង្ហាញពីកម្រិតប្រសិទ្ធភាពនៃឧបករណ៍អគ្គិសនី
សំរាប់ : ទូទឹកកកទម្ងន់ ២ (NON - CFC)

ថាមពលប្រើក្នុង១ឆ្នាំ (គិតតាមតម្លៃ)	435.45
តម្លៃអគ្គិសនីប្រើប្រាស់ (បាត/ឆ្នាំ)	1,428.26

ប្រភេទ : **SANYO** ស៊េរី **SR - F808**

ចំណុះ (លីត្រ) **232.0** (**8.2** ហ្គាតូប)

កម្រិតថ្លៃ
ក្រសួងថាមពល

កំណត់សំគាល់: បកប្រែពីស្លាកសញ្ញាឧបករណ៍អគ្គិសនីទំនើបនៅប្រទេសថៃ

ឆ្នាំវាយតម្លៃ
2008

ស្លាកសញ្ញាបង្ហាញពីកម្រិតប្រសិទ្ធភាពនៃឧបករណ៍អគ្គិសនី
សំរាប់ : កង្ហារអគ្គិសនី

ថាមពលប្រើក្នុង១ឆ្នាំ (គិតតាមតម្លៃ)	139.01
តម្លៃអគ្គិសនីប្រើប្រាស់ (បាត/ឆ្នាំ)	455.94
ប្រសិទ្ធភាព	1.32

កង្ហារអគ្គិសនី **HATARI** ស៊េរី : **HC-S16M5**

ទំហំ **16** បរិមាណខ្យល់ **62.93**

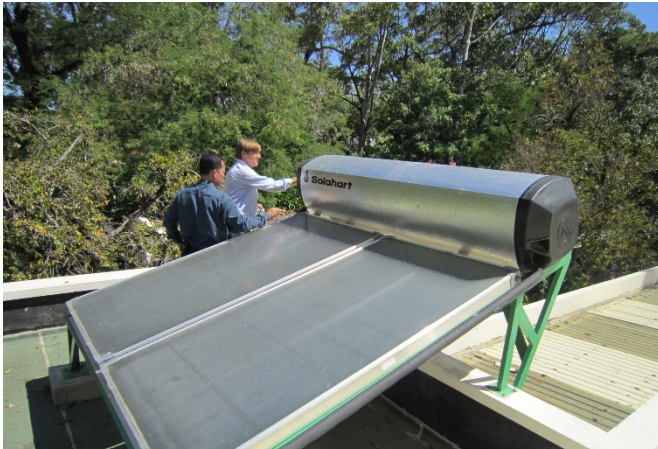
កម្រិតថ្លៃ
ក្រសួងថាមពល

កំណត់សំគាល់: បកប្រែពីស្លាកសញ្ញាឧបករណ៍អគ្គិសនីទំនើបនៅប្រទេសថៃ

Selected Technologies



Compact Fluorescence Lamps (CFLs)



Solar Water Heater

- commercially viable and reliable although neither has achieved popular success and acceptance in Cambodia
- CFLs use up to 75% less electricity than incandescent light bulbs and last up to ten times longer
- Requires no electricity for SWH and it lasts for about 20 years

How Demonstration Activities Work?



- For Household only
- 3 CFLs per family
- 0.5 USD / CFL

Number of CFLs: 60,000

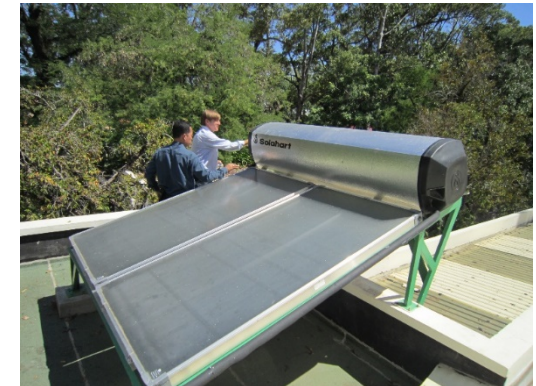


- Government Buildings, hotels, guesthouse and restaurants
- 400 USD / SWH

Number of SWH: 20

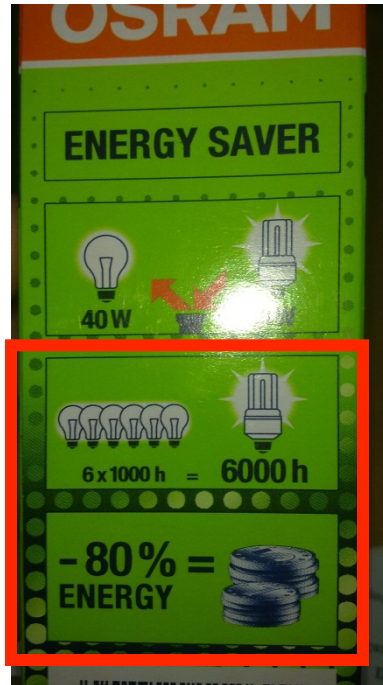


CFLs



Solar Water Heater

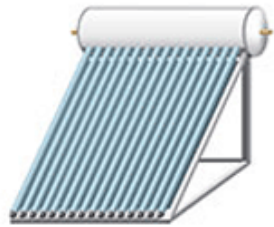
Why uses CFL?



- Uses about 75-80% less energy than standard incandescent bulbs
 - Reduces the monthly electricity bill (**SAVE MONEY**)
 - Contributes (indirect) to the GHGs emission reduction (**SAVE THE ENVIRONMENT**)
- Lasts up to 10 times longer
- Less Mercury content and emission (Good for human health)



Advantages of SWH



- Uses renewable energy source-**SOLAR**
- Long term benefit by having free water (No electricity requires → Reduce the electricity bills)
- Longer useful life (up to 20 years or more)
- Works in very climate (warm and cold climate)
- Proven efficiency technology

- **Environmental Benefits**

- No pollution
- When a SWH replaces an electric water heater, the electricity displaced over 20 years represents more than 50 tons of avoided carbon dioxide emissions alone.



Model of Success in CFLs Distribution



Less Participation from the households

Distribution at a fixed location



Distribution via commune officer



Distribution Point at village level

What We Achieved?

- Awareness raising of energy efficiency and energy conservation increased
- Energy efficiency of electric appliances labelled in Khmer
- Information on energy conservation and energy efficiency available in Khmer and disseminated
- Greenhouse gas emissions reduced
- Electricity consumption for equivalent output level decreased

Challenges

- Affordability and acceptability of the target beneficiaries
- Efficiency and accessibility of the information and knowledge transfer provided by the project → lack of participation during the project implementation especially the installation of SWH
- Time consuming in persuading local people to accept the products provided by the project due to their contribution
- Develop new rating system remains a major challenge due to lacking of human resources

Conclusions

- The project has significant multiplier potential as
 - it aims to overcome the existing barriers in terms of knowledge and information,
 - to demonstrate in a practical manner the benefits of energy efficiency.
 - It will constitute a model for scaling up and replication.
- Public involvement is a key to a successful project implementation

Thank You!
😊