

2017 ASEM Eco-Innovation Capacity-Building Program

Cambodia

December 2017



Executive Summary

Overview

The global paradigm shift in the industrial environment has put businesses under pressure to tackle climate change and secure cost-competitive energy and natural resources. However, many small and medium-sized enterprises (SMEs) in developing countries are ill-equipped to cope with climate change. This project aims to build the Eco-Innovation capacity of SMEs in ASEM member states, focusing on four major areas as outlined by the OECD: system, process, product, and business innovation. To this end, the 2017 ASEM Eco-Innovation Capacity-Building Program in Cambodia offers seminars and workshops that train SMEs to run their own Eco-Innovation programs and ultimately lays the foundation for enhancing the green competitiveness of Cambodia, an ASEM member.

Project Results

The 2017 ASEM Eco-Innovation Capacity-Building Program in Cambodia raised awareness of Eco-Innovation in the country and produced training modules that share tips and resources on various Eco-Innovation areas. The modules covered eco-labeling, clean tech, and eco-design, where each topic was selected based on demand surveys and expert consultation. According to a survey conducted on companies that completed the training, the project improved their awareness of Eco-Innovation from 40% to 72%, an increase of 32 percentage points.

Follow-up Measures

The Cambodian government is expected to create a local ecolabel scheme by cooperating with the Korea Environmental Industry & Technology Institute (KEITI), which manages the official ecolabel in South Korea. ASEIC intends to offer technology seminars and consulting on ecolabel certification to Cambodian SMEs.

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1. Project Background

1.1 Definition of Eco-Innovation

Background of Eco-Innovation

Sustainable Development General Goals (SDGs) are the common goals for all nations from 2016 to 2030. Following Millennium Development Goals (MDGs), they set antipoverty MDGs aimed for as the top priority, but they also aim to alleviate global common threats for all nations, such as polarization of economy and society, intensification of various social inequalities, and environmental destruction, that can threaten continuous developments.

Open Working Group suggested 17 SDGs. These are differentiated from the existing MDGs, as they are in consideration of overall economy, society and environment areas, such as economic growth and climate change.

Major advanced countries, such as EU, the U.S. and Japan are reinforcing environmental regulations every day aiming for cleaner production and building economic system with resource recycling. They are also taking actions to improve environmental characteristics of their products. This applies not only to large enterprises, but also to SMEs, thus they are expected to be gradually exposed to increased costs and regulatory risks from environmental regulations as time goes on.

The large enterprises are responding to the green paradigm, which emphasizes on sustainability of industries by adapting green management system, cleaner production and green technology. However, the SMEs relatively lack human resources, information and etc. compared to large enterprises, thus they cannot actively respond to the green paradigm, such as by adapting environmental management systems.

In order to solve such problems of the SMEs, a green capability reinforcement project, such as ASEM Eco-Innovation Capacity-Building Project for the SMEs, was introduced. Eco-Innovation Capacity-Building Project identifies demand in each country, develop modules and programs according to the demand to enhance the greens capacity, and furthermore, it supports in responding the change of environment in the international community spontaneously.

In particular, the SMEs in developing countries lack information, finance, human resources and etc. needed to build green management system and cleaner production compared to the SMEs in advanced countries, therefore it seems that they are in dire

need for the support from Eco-Innovation Capacity-Building Program.

Basic Concept and Development of Eco-Innovation

According to the European Commission (EC), the definition of Eco-Innovation is "all types of innovations that seek for provable developments, aiming for sustainable developments through alleviation of environmental pollution and utilization of resources with responsibilities, which also includes environmental technology, process, system, service and Eco-Innovation that provides environmental effects though it did not mean to."

The Eco-Innovation Observatory (EIO), operated by a three-year plan of EC, also defines Eco-Innovation as "all types of innovations that use natural resources and reduce emissions of harmful materials in daily lives." The definition by EIO is ahead of the existing idea that it is a kind of innovation aimed to reduce negative environmental impacts. Furthermore, such definition includes the means and methods that minimize the use of natural resources during the processes of designing, producing, using, reusing and recycling products and materials.

Meanwhile, according to the definition of the Organization for Economic Cooperation and Development (OECD), Eco-Innovation is differentiated from all of the other innovations for the following reasons: "It results in alleviation of environmental impacts regardless of intention. It also has a wide range that can surpass the traditional structural limits of innovative organizations, therefore accompanies wider range of social agreements that accelerate social-cultural and structural changes."

Eco-Innovation technology reduces or prevents pollutant formation directly from the source; it is any technology that minimizes environmental degradation occurring over the entire product life cycle, from the extraction of raw materials through the manufacturing and consumption of products to their disposal, either by recycling or returning them to nature. It not only includes production technologies that reduce or prevent pollutant formation directly from the source, but also those that provide further management. This can include recycling or conserving materials and energy used in the production process, substituting raw materials with eco-friendly ones, designing processes and improving operation to minimize pollutant formation during production, and better utilizing raw materials to reduce losses.

The concept of Eco-Innovation can be applied to any industry or product. Cleaner production removes or reduces all emissions and wastes in the production process by conserving raw material, water, and energy and eliminating toxic or hazardous materials.

While there are many ways to mitigate impact on the environment, safety, and health throughout the entire process, there are three critical factors in realizing Eco-Innovation: change in mindset, utilization of expertise, and advancement of technology.

1.2 Promotion of Eco-Innovation



[Figure 1] Promotion of Eco-Innovation

One of the main roles of ASEIC, which was established to promote eco-friendliness and low carbon green growth among ASEM members in Europe and Asia, will be to leverage ROK's strong Eco-Innovation capabilities to promote Eco-Innovative practices in other Asian ASEM member states. Since many developing countries are not aware of Eco-Innovation, have not yet recognized the need for it, or lack the technology for it, they are still experiencing the vicious cycle of serious environmental problems and weakening global competitiveness.

Eco-Innovation should be a tool, not for competition, but for sharing technology and experience among companies and countries in an effort to solve global environmental issues together. It is therefore essential to promote best practices (success stories) of Eco-Innovation and cleaner production technologies with countries that have limited access to them through close cooperation with their governments.

Accordingly, the 2017 Eco-Innovation Capacity-Building Project worked with the government and other relevant organizations of the Cambodia to lay the foundation for promoting the idea of Eco-Innovation and building local competencies.

2. Cambodia Status

Country Overview

<Table 1> Country Overview

Capital	Phnom Penh
Area	181,000km ² (4/5 of Korean Peninsula)
Climate	Tropical monsoon
Population	15,900,000 ('16)
Ethnicity	Khmer (90%), Vietnamese (5%)
Language	Khmer (Official, 96%)
Religion	Buddhism (97%), Islam (2%)

Indicators

<Table 2> Economic Data

GDP	19.4 billion USD ('16)
GDP per capita	1,228 USD ('16)
Economic Growth Rate	6.9% ('16)
Inflation Rate	2.7% ('16)
Currency Unit	Riel (CR)
Exchange Rate	US\$ 1= 4,063.5 M\$ ('16)
Industrial Structure	Services(42%), Agriculture(28%), Manufacturing(30%)(‘15)
Trade Scale	Exported 653 Million USD ; textiles, automobiles, foodstuffs ('15) Imported 217 Million USD ; Y-Import; clothing, wires, shoes ('15)
Major Trading Products	Exports: Clothing, lumber, natural rubber, rice, fish, tobacco, shoes Imports: Petroleum products, tobacco, gold, building material, machinery, motorcycles, medicines

(Source: Cambodia Country Facts, Korea EXIM Bank, 2017)

Definition of SMEs in Cambodia

Cambodia classifies its SMEs based on the businesses' number of employees and capital in accordance with the SME Development Framework.

<Table 3> Classification of Cambodian SMEs

Classification	Standards	
	Employees	Capital (USD)
Micro	Less than 10	Less than 50,000
Small	11 to 50	50,000 to 250,000
Medium	51 to 100	250,000 to 500,000
Large	More than 100	More than 500,000

Current Status of Cambodian SMEs

For small (35.1%), medium (52.4%), and large (52.1%) SMEs, agriculture accounts for the largest share. For microbusinesses, services have the largest share at 38.8%.

<Table 4> Makeup of Cambodian SMEs

Classification	Business Size				
	Micro	Small	Medium	Large	Total
Agriculture	11.2	35.1	52.4	52.1	31.9
Retail	6.7	10.5	7.3	4.1	7.7
Wholesale	2.8	9.9	11.0	6.8	7.1
Hotel/Hospitality	15.2	13.5	12.2	26.0	15.7
Manufacturing	25.3	17.5	11.0	6.8	17.7
Services	38.8	13.5	6.1	4.1	19.8
TOTAL	100	100	100	100	100

(IFC, 2010)

SME Support Policy in Cambodia

In July 2004, the Cambodian central government ratified the “Rectangular Strategy” with the goal of increasing its efficiency by promoting economic growth, creating employment, and ensuring competition. SME development projects were proposed as part of the Strategy, but their actual execution was inadequate. The Strategy laid a foundation for establishing the “SME Development Framework.”

With the establishment of the Cambodian SME subcommittee, the SME Development Framework provided the first advanced strategies for SMEs at the national level. The framework consists of two medium-term plans: in the first stage (2005–2007), a favorable environment for SMEs is created, whereas, in the second stage, SMEs are supported through the improvement of their business environment and value so that they can be integrated into the global network. The detailed strategies proposed for the second stage include i) identifying the effect of regulations on SMEs, ii) minimizing legal requirements, iii) obtaining feedback on government decisions, and iv) demanding legal improvements to reduce uncertainty and risk for SMEs.

<Table 5> Cambodian SMEs Support Policies

Classification	Government Agency	Legislation	Action Plan/Program
SME Promotion	Ministry of Industry and Handicraft	-	- SME Development Framework (2005)
Banking Sector	National Bank of Cambodia [banks and MFIs]	Law on Banking and Financial Institutions	- SME Development Strategic Framework 2010-2015 - Financial Sector Development Strategy 2006-2015
Nonbank Sector	Ministry of Economy and Finance [pawnshop, insurance, and real estate]	-	- Industrial Development Policy 2014-2024
Capital Markets	Securities and Exchange Commission of Cambodia	Law on Securities	- National Strategic Development Plan 2014-2018

<Table 6> Cambodia One Village One Product

- **“One Village, One product”** program : records size, number, and location of products within a regional cluster, then cooperates with donors to provide public services.
- By strengthening and expanding the potential of regional products, female entrepreneurs, disabled people, production businesses reduces the poverty rate of local communities, and expands competition and exchanges with other ASEAN nations.
- “One Village, One product” program national level committee chair Chan Sarun visited an artisan product center in Wat Phnom (Feb. 12, 2016)



<Cambodia One Village, One Product>

Response to Climate Change

Cambodia, in its Intended Nationally Determined Contribution (INDC), pledged to cut its greenhouse gas emissions by 27% from the business-as-usual (BAU) by 2030 (3.1 million tons of CO₂ eq). To achieve this reduction target, it will concentrate its efforts on the energy, manufacturing, and transportation sectors. According to the national energy efficiency policy draft, Cambodia aims to reduce its energy demand by 20% below BAU levels by 2035 and its CO₂ emissions by 3 million tons. The energy efficiency policy for Cambodia was drafted by the European Union Energy Initiative Partnership Dialogue Facility (EUEI-PDF) upon the request of Ministry of Industry, Mines, and Energy but was not actually reflected in the government’s policy.

Current Status of Cambodia’s Eco-Friendly Market

Upcycling goes beyond simply recycling waste materials. The concept is to add designs and values to them for creating newly born products. Upcycled products can be easily found in Cambodia’s markets, streets, and shops. These products come in various designs and categories, including fashion items such as bracelets, bags, purses, notepads, which are mainly made out of cement bags and fertilizer sacks. Major brands include Smarteria and Friends ‘n’ Stuff.

<Table 7> Current Status of Environmentally Friendly Market in Cambodia

Smarteria	Friends 'N' Stuff
<ul style="list-style-type: none"> - Stores: 3 Stores in Phnom Penh, and 2 stores in Siem Reap. Distribution network covers 18 other countries, as well as online sales. - Characteristic: the 'Freitag' of Cambodia, business expanded from Cambodia to other countries (Korea, Australia, France, and Germany). Unlike upcycling products sold in market, products have fixed price. Designers are Italian, and manufacturers are Cambodian. - Products: accessory up cycling products such as bags, purses, notebook pouch, key ring - Materials: nets that lost sale value during production, discarded motorcycle seats and plastic 	<ul style="list-style-type: none"> - Stores : Stores in Phnom Penh, and 2 stores in Siem Reap - Characteristic: Manufactured by NGO called 'Friends international'. Actual production done by Cambodian children. Parents are also taught sewing skills to produce products. - Price: fixed pricing - Product: notepads, pencil holders, rings, bracelets, key rings, coasters - Materials: wastepaper, rice bags, food wrappers, discarded spoons and forks, tires, scarfs.
	
	

Eco-Labeling in Cambodia

Cambodia does not have an eco-labeling scheme. The Institute of Standards of Cambodia (ISC) is the organization that is responsible for creating standards for products, materials, services, and management systems, as well as enforcing them. The ISC continues having meetings for related issues with some international institutions who actively take part in promoting eco-labeling, such as the EU's International Centre for

Trade and Sustainable Development (ICTSD). To improve the quality of tourism products and services, the Ministry of Tourism plans to create an eco-label to be provided to and certify businesses that strictly comply with the standards of the Ministry of Environment (MOE). A number of Cambodian businesses have already acquired foreign eco-labels such as those issued by Audubon International, Wildlife Friendly Enterprise Network, Earth Check, Green Globe, Programme for the Endorsement of Forest Certification (PEFC), and TCO Development.

Green Procurement in Cambodia

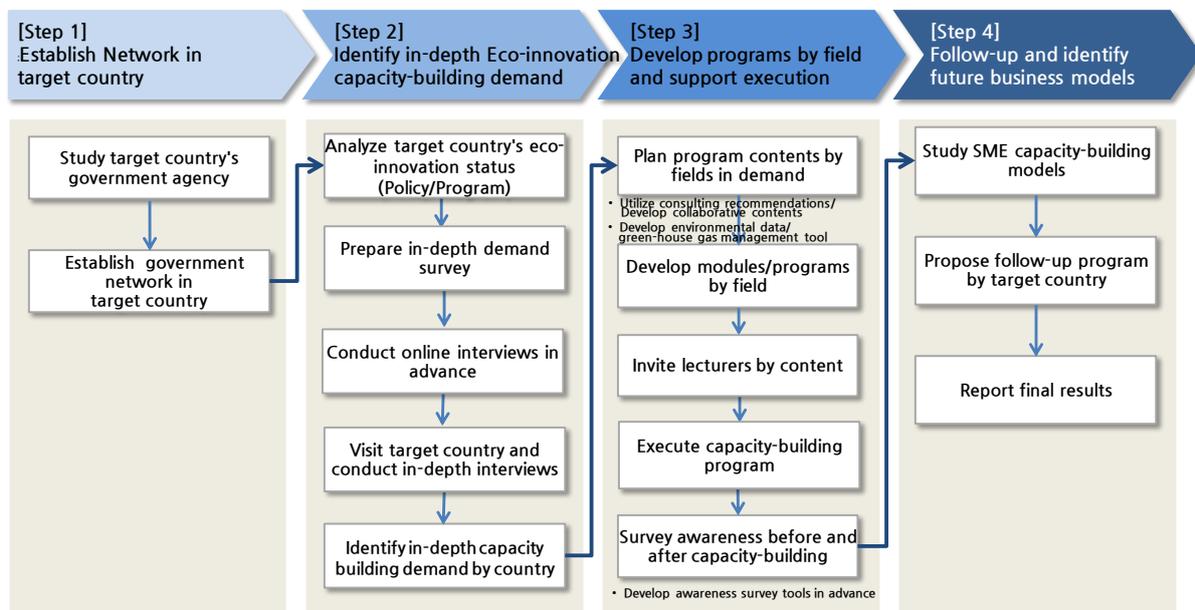
In March 2013, the Cambodian government approved the 2013–2030 National Green Growth Strategy, which considers the environment in developing the national economy. In most developing nations, public procurement accounts for 20%–30% of their gross domestic product (GDP). Although Cambodia has a central procurement agency under its Ministry of Economy and Finance, it cannot accurately gauge its procurement volumes. As a result, relevant legislation and internal regulations are unclear. Moreover, it cannot accurately verify whether green procurement is taking place.

3. Results of Eco-Innovation Capacity-Building

3.1 Project Execution Details

Objective Framework

The project consists of four steps. Step 1 establishes a cooperative network with government and partners. Step 2 identifies the demand for capacity building towards Eco-Innovation in depth. Step 3 develops the Capacity-Building and training programs for respective sectors. Step 4 builds a system that encourages voluntary participation from the recipient country and prepare for follow-up programs.



[Figure 2] Eco-Innovation Framework

3.2 Main Activities

3.2.1 Establishing Networks

National Council for Sustainable Development, Department of Green Economy, Ministry of Environment (MOE)



[Figure 3] Cambodia's MOE

The National Council for Sustainable Development was established in 2006, under the leadership of the Minister of Environment. The council plays an overarching role in responding to climate change in Cambodia. Its main tasks include overseeing and executing policies,

strategies, legislation, plans, and programs concerned with climate change. Moreover, it is responsible for creating legislation for sustainable development, policies, strategies; implementing plans, programs, and projects; and establishing local, national, and global cooperative relations with development partners, civil societies, private enterprises, people in the academia, and stakeholders.

3.2.2 Identifying Demand

Request for Proposals

Cambodia is interested in four areas, namely, eco-friendly products and technology, green marketing and eco-labeling, waste management, and energy-efficient models, with the agricultural product processing, food processing, and hospitality industries as the targets. This program aims to understand advanced technologies and management strategies related to Eco-Innovation and identify opportunities in related markets.

Related Legislation/Program

Cambodia provides training to improve the abilities of the engineers and technicians, as

well as institutional support to improve SME production facilities and support for the modernization and capacity-building of local SMEs on an incentive basis. The Ministry of Industry and Handicraft and the Federation of Associations for SMEs of Cambodia implement the “One Village, One Product” program to promote local SME products, increase the income of agricultural areas, and create employment.

Online Demand Survey

Cambodia’s demand can be classified into that of the government and the SMEs, with the government side requiring capacity-building on adopting a national eco-labeling scheme and local waste management. For SMEs, the areas of interest are green marketing, environmentally friendly products/technologies, and energy efficiency improvement in preparation for their expansion into overseas markets.

<Table 8> Online Demand Survey

<p style="text-align: center;">ASEM Eco-Innovation Preliminary Demand Interview</p> <ul style="list-style-type: none">♦ Date(s): May 25, 2017, 16:00♦ Method: Conference call♦ Interview hosts: Hankyung Lee, Kyeong yeon Kim (Consultants from ECO&PARTNERS)♦ Interviewees: Mr. Nop Sokhai (Deputy Director)

Visit Demand Survey

Meetings were held with MOE officials to identify government demand, and members of the Federation of Associations for SMEs of Cambodia were interviewed to identify the industry demand. An interview with NEXUS, a local institution for climate change projects, confirmed the presence of Eco-Innovation activities in Cambodia. Through the meetings with the MOE officials, it was determined that with the intention of establishment of its own eco-labeling certification agency, the government is in need of capacity-building for the certifications, standards, and systems. Furthermore, diverse programs that will be used to increase the awareness of Cambodia’s SMEs on eco-labeling and environmental management was requested during the meetings. The Federation of Associations for SMEs of Cambodia requested for capacity-building in the implementation of a better

waste management to reduce production costs for businesses, as well as preparation for a global value chain. Textiles and food processing were identified during the interviews as the prior targets for capacity building.

<Table 9> Cambodia Visit Demand Survey

Date	2017. 6. 20. 9AM w/ NCSD 2017. 6. 20. 2PM w/ Federation of SMEs 2017. 6. 20. 4PM w/ NEXUS
Project	ASEIC Eco-Innovation local capacity-building program module development and identifying underlying demand
Location	- MOE (Ministry of Environment) 4fl conference room - Federation of SMEs Office - Nexus Office
Korean Participants	- ASEIC : Kang Yoon Ji PM - ECO&PARTNERS : Lee Han Kyung CEO, Kim Kyeong Yeon Senior Consultant
Cambodian Participants	<ul style="list-style-type: none"> • MOE <ul style="list-style-type: none"> - Sovithea Khun, Deputy director - Mr. Sokhai Nop, Chief office and two others • SMEs Associations <ul style="list-style-type: none"> - UTUN (Managing director of TUN Plastic industries) - Kyaw Min (Managing director of Interact International Col, Ltd) - Thet Thet Khine (Golden Sun Co-op., Ltd) - Myint Htwe (Chairman of Myanmar Arts & Crafts Association) - Tin Maung Naing (Chairman of KOL Holding Public Co., Ltd.)
Agenda	<ul style="list-style-type: none"> • Demand for capacity-building : eco-labeling, environment management, green marketing <ul style="list-style-type: none"> - Eco-labeling for local environmental institution in Cambodia - Raising SME awareness on environmental management - Waste management that SMEs can apply in production - Green marketing for SMEs in preparation for Global Value Chain • Capacity-building target <ul style="list-style-type: none"> - Textiles, food processing • Capacity-building format <ul style="list-style-type: none"> - Day 1: Eco-labeling institution seminar for government officials - Day 2: Eco-labeling/eco-design/cleaner production seminar for SMEs



3.2.3 Program Development

Overview of Capacity-building Seminar

Cambodia held a two-day capacity-building seminar, which focused on eco-labeling, eco-design, and cleaner production anchored on waste management. Government officials were the participants on the first day, and on the second day, a seminar was conducted to give lectures to participants from SMEs.

<Table 10> Cambodia Program Overview

	Day 1	Day 2
Time	Nov 7th (Tue)	Nov 8th (Wed)
Subject	Eco-labeling, Eco-design, Clean tech	
Participants	Government	SME
Target Industry	Clothing, textile	Textile, clothing, food processing
Seminar Subject	Eco-labeling	Cost reduction techniques (SCP, clean tech, waste management)
Format	Lecture (25-30)	Lecture (50-100)

Lecturers

Cambodia has a variety of requirements for capacity building, and, among them, efficiently delivering knowledge in various fields is particularly important. Experts in the relevant fields were invited to the seminar to share their knowledge and practical

experience. For the eco-labeling, officers from the Korea Environmental Industry and Technology Institute (KEITI) who are in charge of the Institute's eco-labeling projects were present; for eco-design, a representative from Smart Eco Inc. engaged in eco-design consulting for Korean businesses; and for cleaner production, a certification officer engaged in verifying ISO standardization in the industry and providing field consulting attended.

- **Tae-won Go, Director, Environmental Certification Strategy Office, Korea Environmental Industry and Technology Institute**

Mr. Go is the director for the Certification Evaluation Strategy Office of the KEITI . He manages the Institute's activities related to national standards and cooperation, environmental labelling planning, and relevant legislation and regulations.

- **Jun-jae Lee, Senior Researcher, Environmental Declaration Office, Korea Environmental Industry and Technology Institute**

Mr. Lee is in charge of developing carbon offset programs and guidebooks, responding to certification evaluations for eco-labeling, and managing the institute's activities for water footprint work and developing national LCI DB and international standardization of it.

- **Jae-heon Kim, Researcher, Environmental Declaration Office, Korea Environmental Industry and Technology Institute**

Mr. Kim supports the green building certification of construction companies and related businesses.

- **Ik Kim, CEO, Smart Eco**

Mr. Kim has contributed to introducing and promoting eco-labeling and carbon labeling as the present CEO of Smart Eco and a former director of the Certification Office of the KEITI. He is currently participating in the "Pilot Project for Green Purchasing Consultant and Implementation Services in the Asia Pacific Region" ordered by the KEITI and providing consultant services related to environmental labeling and public procurement in two developing countries.

- **Kil-do Song, Expert Advisor, Korea Management Registrations & Assessments inc.**

Mr. Song is a certification officer at Korea Management Registrations & Assessments inc.

(KMR) for greenhouse gas and ISO standardization, with 18 years of experience in green management and standardization. He was in charge of providing training programs on the ISO, TL, and QS certifications at 50 businesses and training for in-house ISO examiners at LG and Samwon Industry.

Capacity-building Seminar Module Overview

In the "EL1" module, the demand and overview of eco-labeling were given. "EL2" shared cases of eco-labeling in Korea and other countries. "EL3" shared examples of products that were certified eco-friendly. "EL4" shared an overview of green building certification and related cases.

The "CT1" module for SME personnel explained how to identify and analyze problems. "CT3" analyzed a theory and practice for operational waste management. The "ED3" module on eco-design analyzed the global eco-friendly market trends. "ED4" shared eco-designs in the food and beverage industries.

<Table 11> Modules used in Cambodia Project

Category	Classification Number	Module Name	Usage
Energy Efficiency	EE1	Trend on global climate change	
	EE2	Status of climate change response of Korea	
	EE3	Cases of energy efficient technology application	
	EE4	Theory of energy utilities and its characteristics	
	EE5	How to measure the utilities with equipment	
Cleaner Tech	CT1	The need of 3J5S in workplace	○
	CT2	3J5S Methodology	
	CT3	Cases of 3J5S application	○
	CT4	Introduction to Eco-Innovation	
	CT5	Cases of Eco-Innovation application (general)	○
	CT6	Cases of Eco-Innovation application (dyeing wastewater management)	
	CT7	Introduction to GreenBiz	

Eco-Innovation for industrial parks	EIC1	Introduction to Eco-Innovation for industrial parks and its status	
	EIC2	Eco-Innovation models for industrial parks	
	EIC3	Benefits of Eco-Innovation models for industrial parks	
Eco-design	ED1	Introduction to eco-design	
	ED2	Procedures to adopt eco-design	
	ED3	Global enterprise's eco-design tools and cases	○
	ED4	Cases of eco-design products	○
	ED5	Eco-design practice	
Eco-labeling	EL1	Introduction to eco-labeling and its need	○
	EL2	Cases of eco-labeling application	○
	EL3	Introduction to Environmental Product Declaration	○
	EL4	Introduction to Green Building Certificate and cases	○
Green marketing	GM1	Introduction to green marketing and its trend	
	GM2	Cases of green marketing	

Capacity-building Seminar Program

Lectures were held on the two-day capacity-building seminar in Cambodia. The first day's subject was building the framework for introducing an eco-labeling scheme in Cambodia, targeting government officials. On the second day, lectures on eco-labeling, eco-design awareness improvement, and capacity-building for adopting cleaner production operations were held for SME representatives from local textiles and food processing businesses.

<Table 12> Day 1 Program

(Day 1) Foundation for introducing eco-labeling in Cambodia					
Time	Module	Module Name	Specifics	Lecturer	Format
0830-0900	Registration				
0900-0910	Opening and MOU Signing Ceremony Welcoming and Cooperation Remarks from ASEIC Opening and Cooperation Remarks by H.E Tin Ponlok, Secretariat-General of National Council for Sustainable Development/MOE Joint Photograph				
0910-0915	Coffee Break				
0915-0930	Introduction to ASEIC			Ms. Kang Younji, Manager, ASEIC	Lecture
0930-1030	EL1	Introduction to eco-labeling and its need	Why is Eco-labeling necessary: Introduction and current status of Korea Eco-label	Mr. Ko Taewon, Chief researcher, KEITI	Lecture
1030-1040	Coffee Break				
1040-1140	EL3	Introduction to Environmental Product Declaration	Korean ecofriendly label certification introduction and forecast	Mr. Lee Joonjae, researcher, KEITI	Lecture
1140-1240	EL4	Introduction to Green Building Certificate and cases	- Green Building in Korea - Growing demands on eco-labeling for export	Mr. Kim Jaehun Researcher, KEITI	Lecture
1240-1350	Luncheon				
1350-1450	EL1	Introduction to eco-labeling and its need	Eco-labeling for export: Criteria to meet the global standards for textile and food processing	Mr. Kim ik, CEO, Smart Eco Inc.	Lecture
1450-1550	EL1	Introduction to eco-labeling and its need	Eco-labeling for export: Criteria to meet the global standards for textile and food processing	Mr. Kim ik, CEO, Smart Eco Inc.	Lecture
1550-1600	Coffee Break				
1600-1700	EL2	Cases of eco-labeling application	Case studies on eco-labeled products	Mr. Kim ik, CEO, Smart Eco Inc.	Lecture

<Table 13> Day 2 Program

(Day 2) ASEM Eco-Innovation capacity-building for textile, food processing, and artisan products					
Time	Module	Module Name	Specifics	Lecturer	Format
0830-0900	Registration				
0900-0910	Welcoming Remarks by ASEIC Opening Remarks by H.E Tin Ponlok, Secretariat-General of National Council for Sustainable Development/MOE				
0910-0915	What is Eco-Innovation? (watching a video clip)				
0915-0930	Introduction to ASEIC			Ms. Kang Younji, Manager, ASEIC	Lecture
0930-1000	CT5	Eco-Innovation case studies (general)	Introduction to Eco-Innovation and best practices	Ms. Kim Kyeongyeon, Senior Consultant, ECO&PARTNERS	Lecture
1000-1100	CT1	3J5S Operation necessity	Why is workplace improvement necessary: Changes in the business environment	Mr. Song Gildo, Expert Advisor, KMR	Lecture
1100-1120	Coffee Break				
1120-1220	CT3	3J5S Operation cases	5S methodology to achieving workplace efficiency and best practices in the food processing industry	Mr. Song Gildo Expert Advisor KMR	Lecture
1220-1340	Luncheon				
1340-1440	CT3	3J5S Operation cases	Introduction to environmental management and solid waste management based on 3R approach in the textile industry	Mr. Song Gildo, Expert Advisor, KMR	Lecture
1440-1540	ED3	Global enterprise's eco-design tools and cases	Global trends of eco-design: Cases on eco-procurement	Mr. Kim ik, CEO, Smart Eco Inc.	Lecture
1540-1600	Coffee Break				
1600-1700	ED4	Cases of eco-design products	Case studies on eco-designed products in the F&B industry	Mr. Kim ik, CEO, Smart Eco Inc.	Lecture

3.2.4 Seminar Organization Support

The capacity building was held on November 7–8, 2017, at the Himawari Hotel in Phnom Penh. Thirty-one government representatives attended the seminar on the first day, and 76 SME representatives attended on the second day.

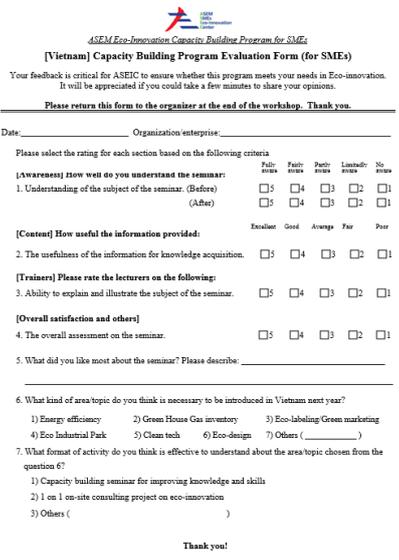


[Figure 4] Capacity-building seminar in Cambodia

3.2.5 Awareness Improvement

To quantitatively identify the effectiveness of the capacity-building project, an evaluation tool was developed to measure the improvement in the participants' awareness on the topics that were discussed and their level of satisfaction with the seminar. The level of understanding before and after the seminar was evaluated on a five-point scale (i.e., fully aware, fairly aware, partly aware, limitedly aware, and not aware). The level of satisfaction on content/lecturer/seminar was similarly evaluated using a five-point scale (i.e., excellent, good, average, fair, and poor).

<Table 14> Survey items and survey sheet

<p style="text-align: center;"><Survey Overview></p> <p>1. [Awareness] Level of awareness before and after seminar - Understanding on seminar topics (before/after)</p> <p>2. [Content] Evaluation of seminar content - Usefulness of lecture material in acquiring subject matter knowledge</p> <p>3. [Lecturer] Evaluation of lecturers - Ability to explain and express content</p> <p>4. [Seminar] Overall evaluation</p>	
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Averages were drawn for each day to calculate an average value in the awareness and satisfaction for the two-day seminar, and the results were likewise averaged. This process was done so that each day of the seminar can be given an equal weight even though their number of participants were different.

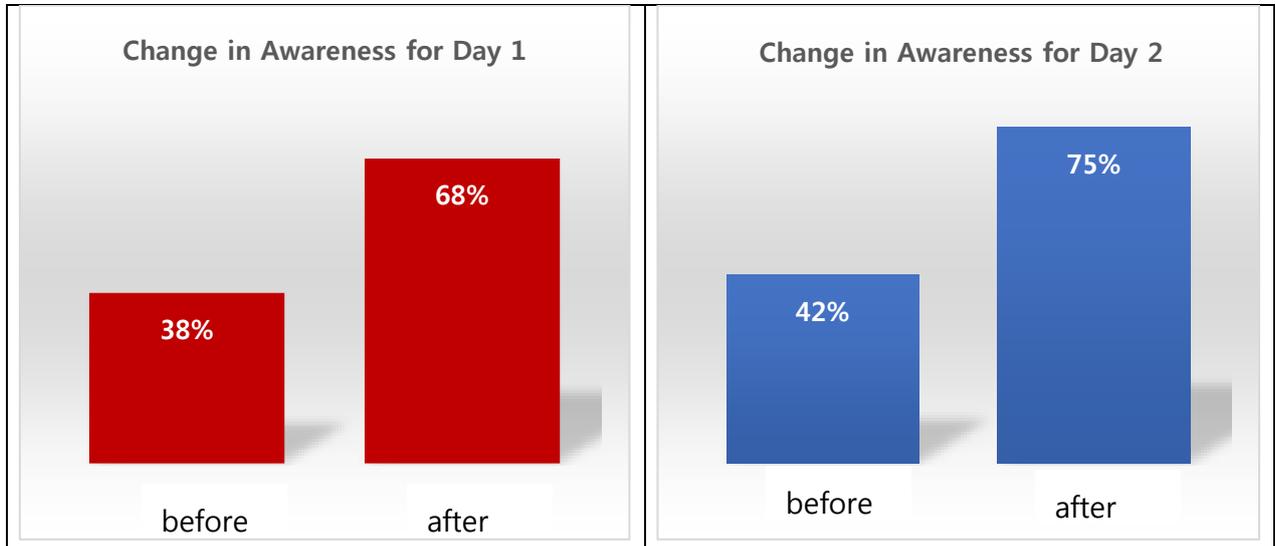
The five-point scale was converted to 0%–100%, as shown in the following figure, to analyze the change in awareness. A paired sample t-test was conducted to compare the difference between before and after the capacity building in a single group to test the change in value. If the *p*-value of the t-test is less than 0.05, then the change can be considered significant. However, if it is greater than 0.05, it is not significant because, this indicates that there was no actual change although the average may have improved.

<Table 15> 100% conversion table for 5-point scale

No aware	Limitedly aware	Partly aware	Fairly aware	Fully aware
0%	25%	50%	75%	100%

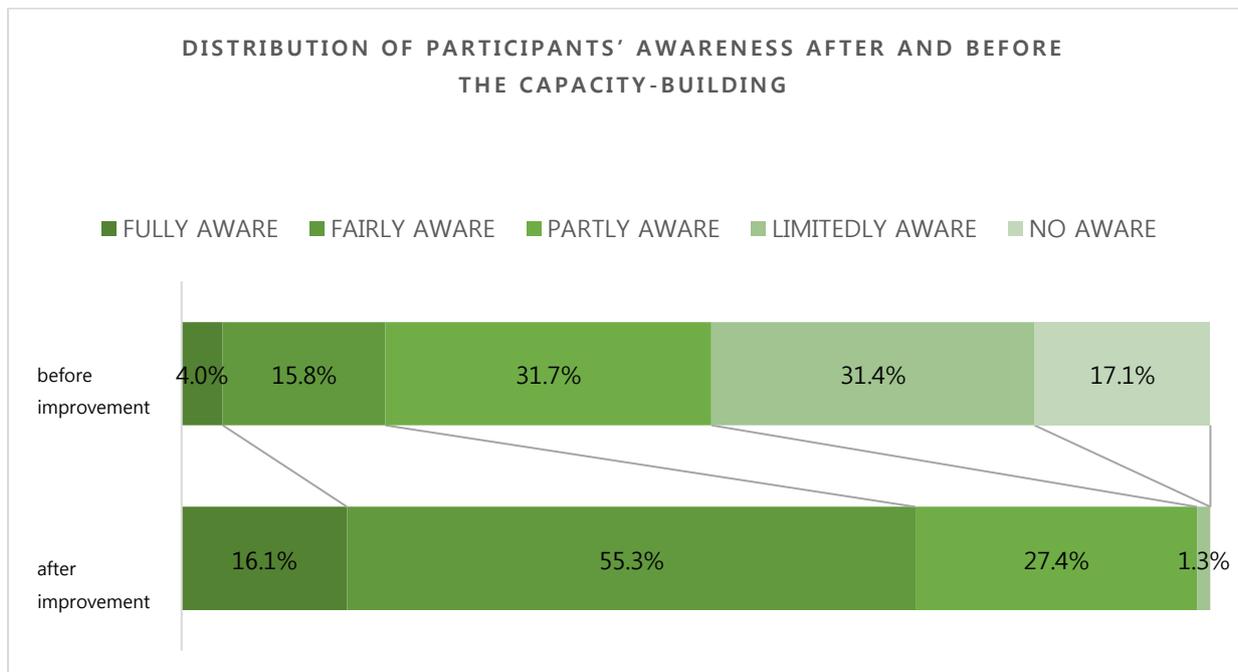
After the first day of the seminar, the participants' awareness increased from 38% to 68%, with a 30 percentage point change and after the second day, the participants' awareness increased from 42% to 75%, with a 33 percentage point change. The paired sample t-test

yielded p -values of 9.2×10^{-12} – 4.5×10^{-6} for the two days, which are less than the statistically significant level of 0.05, signaling an actual improvement in awareness.



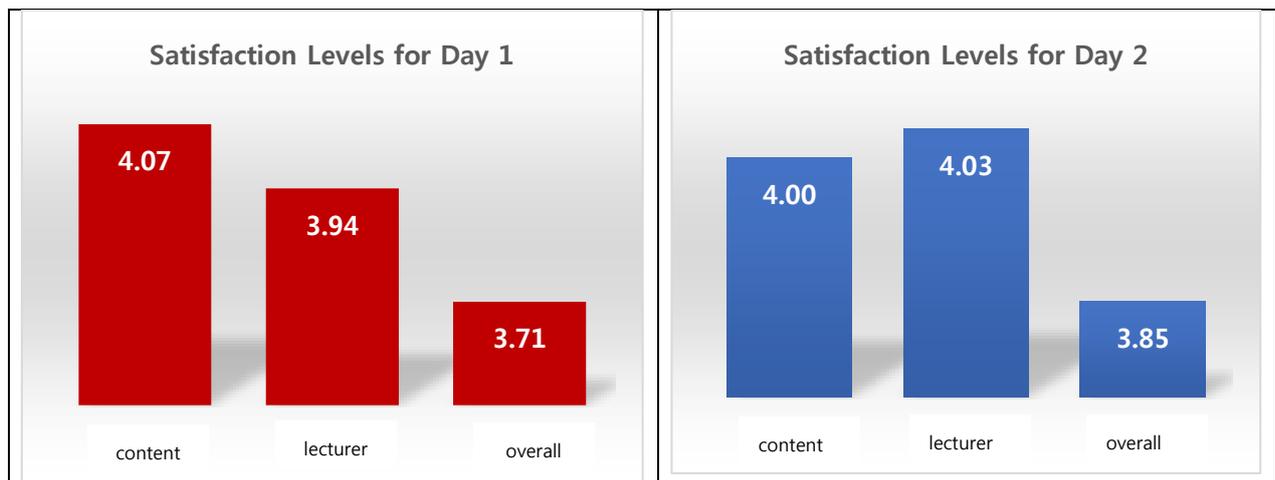
[Figure 5] Changes in awareness for day 1 and day 2 of the seminar

From 19.8% of participants that responded with fully aware / fairly aware before the seminar, the number increased to 71.4% after the seminar, yielding a 51.6 percentage point increase.



[Figure 6] Distribution of participants' awareness before and after the capacity-building

For Day 1, the recorded satisfaction levels were 4.07 and 3.94 for the contents lecturers, respectively, which are equivalent to 3.71 overall satisfaction. For Day 2, the recorded satisfaction levels were 4.0 and 4.0 for contents and lecturers, respectively, which gave an overall satisfaction of 3.85.



[Figure 7] Satisfaction levels for day 1 and day 2 of the seminar

4. Follow-Up Measures

4.1 Need for a Voluntary Follow-Up System

The target countries' continuous engagement in Eco-Innovation activities following the conclusion of this project is important. Therefore, the target countries must possess the necessary capabilities to enable them to respond to environmental problems autonomously. These capabilities can be developed through a long-term capacity-building program. A permanent capacity-building program of which purpose is to identify country-specific environmental problems that reflect local demand should be established. The target countries can participate in the capacity-building program to build their own abilities to respond to the changes in the environment actively.

4.2 Identifying Country-Specific Eco-Innovation Model and Feasibility

A survey for the seminar participants was undertaken to reflect the local demand and identify future Eco-Innovation project models. The survey results indicated that most of the participating countries have demand for the areas of capacity-building that are equal to or more specific but similar to those having been covered in the seminar. Based on the survey results, we conducted interviews with partners from each country and identified that the followings are the particularly necessary to build their capabilities towards Eco-Innovation.

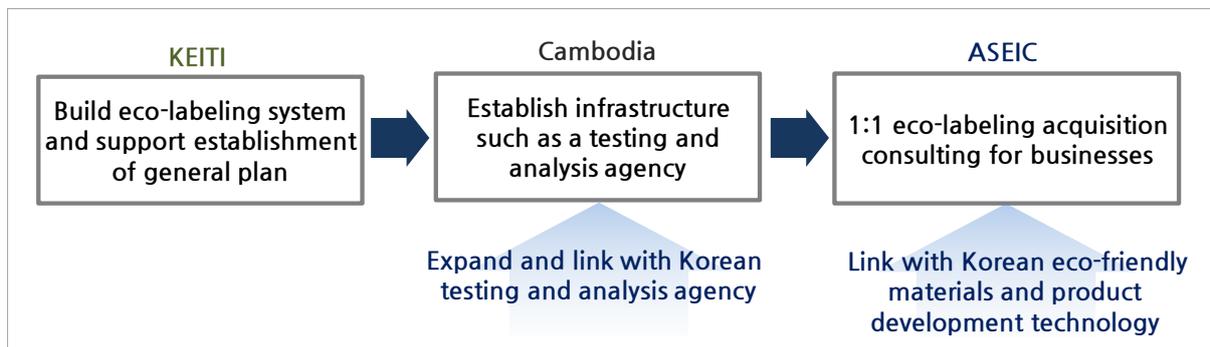
<Table 16> Next year project demand survey

Country	Survey Results		Partner Institute Interview Results
	Demand Area	Capacity-building Format	
Cambodia	1.Eco-labeling (28) 2.Energy efficiency (19)	1.Seminar (34) 2. 1:1 Consulting (22)	Green SCP local research and eco-design seminar

According to the demand survey for the upcoming year, eco-labeling scored the highest. The MOE has requested support from relevant agencies in Europe and Korea so that it can adopt a local eco-labeling system. However, because of the lack of existing infrastructure (Database on basic information in the environmental market, as well as a

testing and analysis agency), adopting an eco-labeling system at this moment is difficult. It can be proposed to introduce a support program on a phase-in basis to adopt an eco-labeling system for a target country in cooperation with the KEITI and the MOE. Once a base plan is formulated, a testing and analysis agency should be set up to enforce the eco-labeling system; this process requires the participation of Korean testing and analysis institutions.

Once an eco-labeling system is introduced in Cambodia, the ASEM SMEs Eco-Innovation Center (ASEIC) can carry out 1:1 eco-labeling acquisition consulting projects for local SMEs. To implement eco-labeling at businesses, various product development technologies using environmentally friendly materials are necessary. In this process, Korean businesses and technologies can participate in the Cambodian market, which would ultimately result in the enhancement of the environmental competitiveness of Cambodian SMEs.



[Figure 8] Eco-Innovation model suitable for to Cambodia's condition

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