2017 ASEM Eco-Innovation Capacity-Building Program

Myanmar

December 2017

ASEM SMEs Eco-Innovation Center

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 Myanmar 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 Myanmar, an ASEM member.

Project Results

The 2017 ASEM Eco-Innovation Capacity-Building Program developed capacity building modules to increase awareness on Eco-Innovation in Myanmar and share experience and knowledge on Eco-Innovation areas. The capacity building module for Myanmar, which was decided through consultations with experts and local demand surveys, includes eco-labeling, clean technology, and eco-design. The 2017 ASEM Eco-Innovation Capacity-Building Program resulted in the 39% increase in Myanmar's Eco-Innovation awareness, that is, from 38% to 77%.

Follow-up Measures

Myanmar can hold seminars and provide training of trainers (ToTs) to educate local consultants on cleaner production and support the establishment of its own voluntary capacity-building system.

Contents

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 though 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 Myanmar to lay the foundation for promoting the idea of Eco-Innovation and building local competencies.

2. Myanmar

Country Overview

<Table 1> Country Overview

Capital	Naypyidaw
Area	677,000km²(3 times Korean Peninsula)
Climate	Tropical Monsoon
Population	52,300,000 ('16)
Ethnicity	Burmese (68%), Shan (9%), Karen (7%), Raken (4%)
Language	Myanmar (Official)
Religion	Buddhism (89%), Christianity (4%), Islam (4%)

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

Economic Indicators

<Table 2> Economic Indicators

GDP	68.3 billion USD ('16)
GDP per capita	1,307 USD ('16)
Economic Growth Rate	7.7% ('16)
Inflation Rate	9.1% ('16)
Currency Unit	Kyat (Kt)
Exchange Rate	US$ 1= 1,222.7 Kt ('16)
Industrial Structure	Services (46%), Agriculture (27%), Manufacturing (27%)
Trade Scale	Exported 1,208,795 thousand USD ; Petroleum products, semiconductors, bronze Imported 335,264 thousand USD; Natural gas, semiconductors, petroleum products ('15)
Major Trading Products	Exports: natural gas, lumber, beans, fish, clothing, jade('15) Imports: textiles, petroleum products, fertilizer, plastics, machinery, transports, construction material, crude oil('15)

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

Definition of SMEs in Myanmar

Myanmar's SMEs are classified into small businesses and medium businesses, and industries are classified into "manufacturing," "labor-intensive manufacturing," "wholesale," "retail," "services," and "others." According to the Parliament's March 2015 decision on SMEs, businesses are qualified as SMEs based on their number of employees, amount of capital, and sales volume.

<Table 3> Definition of SME in Myanmar

Industry		Employees	Capital (Million Kyat)	Sales (Million Kyat)
1. Small Business				
(a)	Manufacturing	Less than 50	More than 500	
(b)	Labor intensive Manufacturing	Less than 300	More than 500	
(c)	Wholesale	Less than 30		Less than 100
(d)	Retail	Less than 30		Less than 50
(e)	Services	Less than 30		Less than 100
(f)	Other	Less than 30		Less than 50
2. Medium Business				
(a)	Manufacturing	51 to 300	500 to 1000	
(b)	Labor intensive Manufacturing	301 to 600	500 to 1000	
(c)	Wholesale	31 to 60		100 to 300
(d)	Retail	31 to 60		50 to 100
(e)	Services	51 to 100		100 to 200
(f)	Other	31 to 60		50 to 100

Current Status of Myanmar's SMEs

As of 2015, approximately 44,000 businesses were registered in Myanmar. Out of this number, around 39,000 were SMEs, accounting for over 87% of all the businesses. Agriculture makes up 38% of Myanmar's gross domestic product (GDP), followed by the services sector at 37% and the manufacturing sector at 24%.

<Table 4> Status of SMEs in Myanmar

	Region	Small	Medium	Large	Regional %
1	Kachin State	1,132	138	46	2.94
2	Kayar State	102	280	16	0.89
3	Kayin State	760	77	100	2.09
4	Chin State	663	7	4	1.51
5	Saging Region	3,046	825	300	9.32
6	Tanintheryi Region	1,130	107	150	3.10
7	Pegu Region	3,433	894	310	10.63
8	Magway Region	2,458	327	166	6.59
9	Mandalay Region	3,978	2376	1181	16.84
10	Mon State	1,903	260	133	5.13
11	Rakhine Sate	1,879	114	61	4.59
12	Yangon Region	1,994	1831	2437	13.99
13	Shan State	2,939	465	216	8.09
14	Ayeyarrwaddy Region	4,774	616	522	13.21
15	Nay Pyi Taw	347	154	98	1.34
Total		30,538	8,471	5,740	-
Percentage		68.24%	18.93%	12.83%	100

SME Support Policy in Myanmar

Cetral Committee for SME Development: According to Myanmar's CEOial Decree No. 11/2013, the heads of the Ministries of Commerce, Finance, Science and Technology, Tourism, and Agriculture, as well as high-level government officials in the Ministries of Energy, Electricity, Education, and Health, are members of this committee. The committee collects, analyzes, and reports data and information to promote SME activity and draft legislation and regulation pertaining to SMEs.

Hunam resources development and training: National Skill Standards Authority (NSSA) provides standardized curriculum for technical exchange with Germany, China, South Korea, and India.

<Table 5> Support Policy for SMEs

Category	Government Agency	Legislation	Action plan/program
SME Promotion	Ministry of Industry (SME Development)	Private Industrial Enterprise Law No.22/1990	Policy of Small and Medium Enterprise Development
		Law Amending the Promotion of Cottage Industries Law No.14/2011	
		SME Development Law No.23/2015	
Banking Sector	Central Bank of Myanmar	Financial Institution of Myanmar Law No.16/1990	
		Myanmar Agricultural and Rural Development Bank Law No.17/1991	
		Savings Banks Law No.5/1992	
		Central Bank of Myanmar Law No.16/2013 (Revised)	

Response to Climate Change

The Myanmar government classified its six areas of concern under the National Adaptation Programmes of Action (NAPA), namely, agriculture, early warning system, forests, public health, water resources, and coastal areas, into three levels based on their order of priority. Priority level 1 includes agriculture, early warning system, and forests. Priority level 2 includes public health and water resources. Priority level 3 includes coastal areas. The Myanmar government has adopted energy efficiency and conservation programs within its energy policy and aims to reduce the country's energy consumption by 5% and 30% by 2020 and 2030 under the Business As Usual (BAU) levels, respectively, as well as improve its final consumption efficiency across all sectors by 16%.

Current Status of Myanmar's Eco-Friendly Market

The Myanmar market currently does not have an eco-labeling system. Any eco-labeled products are produced by foreign manufacturers or export producers. Although some exporters in this country produce eco-labeled products, most producers are not aware of eco-labeling or do not produce nor demand it. The export producers register their product for eco-labeling overseas so that they can expand to new markets. In Myanmar, foreign organizations, such as Earth Check, Green Globe, and Programme for Endorsement of Forest Certification (PEFC), and TCO Development, provide certifications. Moreover, all

processes take place overseas.

Green Procurement in Myanmar

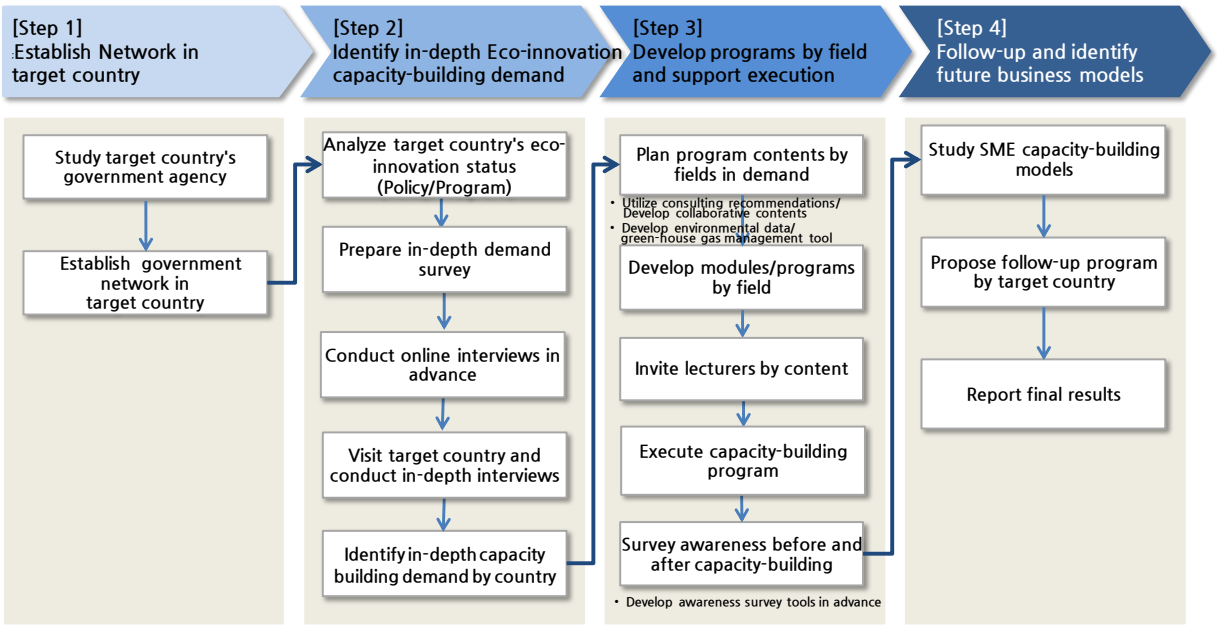
In Myanmar, the private sector does not have access to the government's income and expenditure records. In the absence of a public disclosure system or information disclosure legislation, government procurement is undertaken by the lowest bidder, and green purchasing is not taken into account.

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

SME Development Center and Ministry of Industry

[Figure 3] SME Development center

The SME Development Center was established by the current Myanmar government to create new SMEs and develop the current SMEs to realize sustainable industrial growth. It aims to promote an environment where all businesses, including Myanmar SMEs, can grow, survive, and prosper. The Center operates under the principle of society, economy, and environmental development. It is also responsible for supporting and developing human resources and technology, promoting innovation, and providing financial support.

3.2.2 Identifying Demand

Request for Proposal

Myanmar is interested in the seven areas, namely, eco-friendly products and technologies, green marketing and eco-labeling, waste management, energy efficiency model, EIC model, one-on-one business matching, and market mechanism, with textile and food and beverage industries as the targets. The purpose of this program is to attain knowledge and expertise on Eco-Innovation and share related experiences.

Related Legislation/Program

Myanmar supports training on production technologies, quality assurance, finance, management, and marketing to enhance the SMEs' capability. According to Myanmar's policy, it shall undertake workshops, seminars, management-/production-related training, job training, and technical training in cooperation with local and foreign agencies. Accordingly, the "cluster development training" took place in 15 regions in cooperation

with United Nations Industrial Development Organization (UNIDO), and workshops for 70 local SMEs in cooperation with agencies from the Netherlands took place, with the active cooperation of foreign institutions present to enhance SMEs' capabilities

Online Demand Survey

Surveys showed the need for capacity-building in waste management to adequately manage wastes of Myanmar's key textile industry, as well as eco-labeling and green marketing to promote the exportation of Myanmar's products.

<Table 6> Online Demand Survey

ASEM Eco-Innovation Preliminary Demand Interview

- Date(s): May 26, 2017, 17:00
- Method: Conference call
- Interview hosts: Hankyung Lee, Kyeong yeon Kim (Consultants from ECO&PARTNERS)
- Interviewees: Ms. Kyi Lin Khine

Visit Demand Survey

As of 2013, the Myanmar Garment Manufacturers Association has 273 members, and in 2011, the textile-garment industry reached export sales of USD 635 million. Textile and sewing is the nation's largest manufacturing sector. However, because of solid waste and dye wastewater created by textile factories, Myanmar's natural environment has been seriously damaged, resulting in the need for capacity-building in waste management. The Ministry of Industry has thus requested a capacity-building seminar on waste management with a special focus for the textile industry, along with knowledge transfer on eco-labeling to promote exports. The target industries were textiles, artisan products, and agricultural products.

<Table 7> Visit Demand Survey

Date	June 15th, 2017 09:30AM
Project	ASEIC Eco-Innovation local Capacity-Building program module development and identifying underlying demand
Location	MOI (Ministry of Industry) Energy efficiency center, Yangon

Korean Participant	ASEIC : Kang Yoon Ji PM ECO&PARTNERS : Lim Dae Woong Principal Partner, Kim Kyeong Yeon Senior Consultant
Myanmar Participant	• **MOI** - Daw San (Director of Policy and International Affairs Unit) - Mu Aye (Deputy director) - Kyi Lin Khine (Researcher) • **SMEs Associations** - UTUN (Managing director of TUN Plastic industries) - Kyaw Min (Managing director of Interact International Col, Ltd) - 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	• **Demand for Capacity-building : Eco-Labeling and Waste Management** - Eco-labeling to promote export of artisan products - Address discharge of untreated waste water at textile factories - Adopt eco-design in agricultural product processing • **Target Industry** - Textiles, artisan products, agricultural processing • **Capacity-building format** - Day 1: Ecolabeling seminar for government personnel - Day 2: Ecolabeling/ecodesign/cleaner production seminar for SME personnel
Picture	 

3.2.3 Program Development

Overview of the Capacity-Building Seminar

For Myanmar, a two-day capacity-building seminar was held on eco-labeling, eco-design, and cleaner production. The first day of the seminar dealt with establishing the necessary

infrastructure for adopting eco-labeling in Myanmar. The second day consisted of a lecture on eco-design for product development and clean management of facilities for SME participants.

<Table 8> Myanmar visit program

구분	Day 1	Day 2
Date	Oct 18th (Wed)	Oct 19th (Thu)
Subject	on eco-labeling, eco-design, and cleaner production	
Participants	Government	SME
Target Industry	-	Textiles, artisan products, agricultural processing
Subject	Foundation for eco-labeling in Myanmar	Eco-Innovation capacity-building for Textiles, artisan products, agricultural processing
Format	Lecture (100 people)	Lecture (100 people)

Lecturers

Myanmar has a variety of requirements for capacity-building, and it stresses the importance of efficient delivery of knowledge during the two-day seminar. Experts in the relevant fields were invited 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 project was present; for eco-design, a representative from Smart Eco Inc. 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.

- **Seung-hwan Jeon, Senior Researcher, Environmental Certification Strategy Office, KEITI**

Mr. Jeon is the senior researcher for the Certification Evaluation Strategy Office of the KEITI, in charge of the Institute's activities related to national standards and cooperation, environmental labelling planning, and relevant legislation and regulations.

- **Eun-ah Hong, Researcher, Environmental Declaration Office, Korea Environmental Industry and Technology Institute**

Ms. Hong is responsible for responding to certification testing for environmental standards, carbon neutral program, and international cooperation on environmental labeling.

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

Mr. Kim has contributed to introducing and promoting eco-labeling and carbon labeling as the present CEO of Smart Eco Inc. Inc. 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, KMR**

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.

- **Hae–myung Ok, Chief, ECO&PARTNERS**

Mr. Ok is the Chief of the Strategic Business Division of Eco&Partners, with 13 years of experience in formulating sustainable management strategies and reporting for major businesses such as Mirae Asset Securities and GS Construction. He has many years of experience in cleaner production consulting for Korean industrial complexes and has contributed to establishing the environmental management system for SMEs.

Capacity-building Seminar Module Overview

In the "EL1" module, the need and overview of eco-labeling were given. "EL2" shared practices of eco-labeling in Korea and other countries. "EL3" shared examples and overview of environmental product declaration.

The "CT1" module for SME personnel explained how to identify and analyze problems. "CT2" introduced ways for increasing productivity. "CT3" analyzed a theory and practice for

operational waste management. "CT5" and "CT6" shared the best practices for cleaner production and dye wastewater treatment with a special focus on the textile industry. The "ED3" module on eco-design analyzed global eco-friendly market trends. "ED4" shared eco-design in food and beverage industries.

<Table 9> Modules used in Myanmar 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	
Clean 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 Myanmar, with day 1 for government officials and day 2 for participants from SMEs.

<Table 10> Day 1 Program

(Day 1) Foundation for introducing eco-labeling in Myanmar					
Time	Module	Module Name	Specifics	Lecturer	Format
0800-0830	Registration				
0830-0845	Welcome Remarks from MOI Opening Remarks from ASEIC				
0845-0900	MOU Signing Ceremony between ASEIC & MOI				
0900-0905	What is Eco-Innovation? (watching a video clip)				
0905-0915	Introduction to ASEIC			Ms. Kang younji, Manager, ASEIC	Lecture
0915-1030	EL1	Introduction to eco-labeling and its need	Why is Eco-labeling necessary: Introduction and current status of Korea Eco-label	Mr. Jeong Seunghwan, Team head, KEITI	Lecture
1030-1045	Coffee Break				
1110-1200	EL3	Introduction to Environmental	Overall status and prospects of environmental product declaration	Ms. Hong Eunah, Associate	Lecture

		Product Declaration	in Korea	Researcher, KEITI	
1200-1300	Luncheon				
1300-1350	EL1	Introduction to eco-labeling and its need	Growing demands on eco-labeling for export	Mr. Kim ik, CEO, Smart Eco Inc.	Lecture
1350-1440	EL1	Introduction to eco-labeling and its need	Eco-labeling for export: Criteria to meet the global standards for textile, food processing and plastic products	Mr. Kim ik, CEO, Smart Eco Inc.	Lecture
1440-1500	Coffee Break				
1500-1550	EL2	Cases of eco-labeling application	Case studies on eco-labeled products	Mr. Kim ik, CEO, Smart Eco Inc.	Lecture

<Table 11> Day 2 Program

(Day 2) ASEM Eco-Innovation Capacity-Building for textile, food processing, and artisan products					
Time	Module	Module Name	Specifics	Lecturer	Format
0800-0830	Registration				
0830-0845	Welcome Remarks from MOI Opening Remarks from ASEIC				
0845-0850	What is Eco-Innovation? (watching a video clip)				
0850-0900	Introduction to ASEIC			Ms. Kang younji, Manager, ASEIC	Lecture
0930-1020	CT1	The need of 3J5S in workplace	Why is workplace improvement necessary: Changes in the business environment	Mr. Song Gildo, Expert Advisor, KMR	Lecture
1020-1030	Coffee Break				
1030-1120	CT3	Cases of 3J5S application	5S methodology to achieving workplace efficiency and best practices in the food processing industry	Mr. Song Gildo, Expert Advisor, KMR	Lecture

1120-1210	CT2	3J5S Methodology	Introduction to environmental management and solid waste management based on 3R approach in the textile industry	Mr. Song Gildo, Expert Advisor, KMR	Lecture
1210-1330	Luncheon				
1330-1420	CT5	Cases of Eco-Innovation application (general)	Case studies on clean tech in the textile industry	Mr. Ok Haemyung, Chief, ECO&PARTNERS	Lecture
1420-1510	CT6	Cases of Eco-Innovation application (dyeing wastewater management)	Introduction to wastewater management and case studies on the textile industry	Mr. Ok Haemyung, Chief, ECO&PARTNERS	Lecture
1510-1520	Coffee Break				
1520-1610	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
1610-1700	ED4	Introduction to Green Building Certificate and cases	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 seminar was held on October 18–19, 2017, at the Novotel Yangon Max. Sixty government officials participated on the first day, and 70 SME representatives attended on the second day.

[Figure 4] Capacity-building seminar in Myanmar

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 12> Survey items and survey sheet

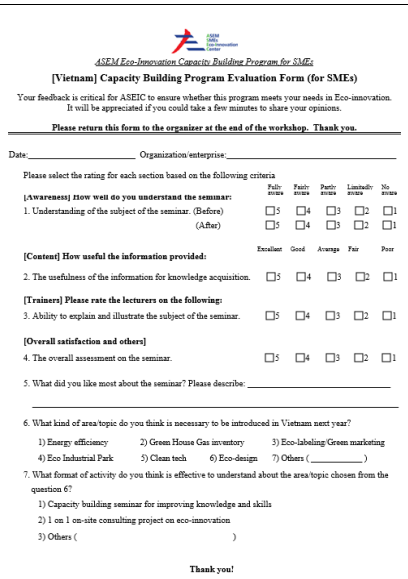
<Survey Overview>

1. [Awareness] Level of awareness before and after seminar
   - Understanding on seminar topics (before/after)

2. [Content] Evaluation of seminar content
   - Usefulness of lecture material in acquiring subject matter knowledge

3. [Lecturer] Evaluation of lecturers
   - Ability to explain and express content

4. [Seminar] Overall evaluation



ASEM Eco-Innovation Capacity Building Program for SMEs

[Vietnam] Capacity Building Program Evaluation Form (for SMEs)

Your feedback is critical for ASEIC to ensure whether this program meets your needs in Eco-innovation.
It will be appreciated if you could take a few minutes to share your opinions.

Please return this form to the organizer at the end of the workshop. Thank you.

Date:_____ Organization/enterprise:_____

Please select the rating for each section based on the following criteria

	Fully aware	Fairly aware	Partly aware	Limitedly aware	No aware
[Awareness] How well do you understand the seminar:					
1. Understanding of the subject of the seminar. (Before)	☐5	☐4	☐3	☐2	☐1
(After)	☐5	☐4	☐3	☐2	☐1

	Excellent	Good	Average	Fair	Poor
[Content] How useful the information provided:					
2. The usefulness of the information for knowledge acquisition.	☐5	☐4	☐3	☐2	☐1
[Trainers] Please rate the lecturers on the following:					
3. Ability to explain and illustrate the subject of the seminar.	☐5	☐4	☐3	☐2	☐1
[Overall satisfaction and others]					
4. The overall assessment on the seminar.	☐5	☐4	☐3	☐2	☐1

5. What did you like most about the seminar? Please describe: _____

6. What kind of area/topic do you think is necessary to be introduced in Vietnam next year?
   1) Energy efficiency 2) Green House Gas inventory 3) Eco-labeling/Green marketing
   4) Eco Industrial Park 5) Clean tech 6) Eco-design 7) Others (_____)

7. What format of activity do you think is effective to understand about the area/topic chosen from the question 6?
   1) Capacity building seminar for improving knowledge and skills
   2) 1 on 1 on-site consulting project on eco-innovation
   3) Others ( )

Thank you!

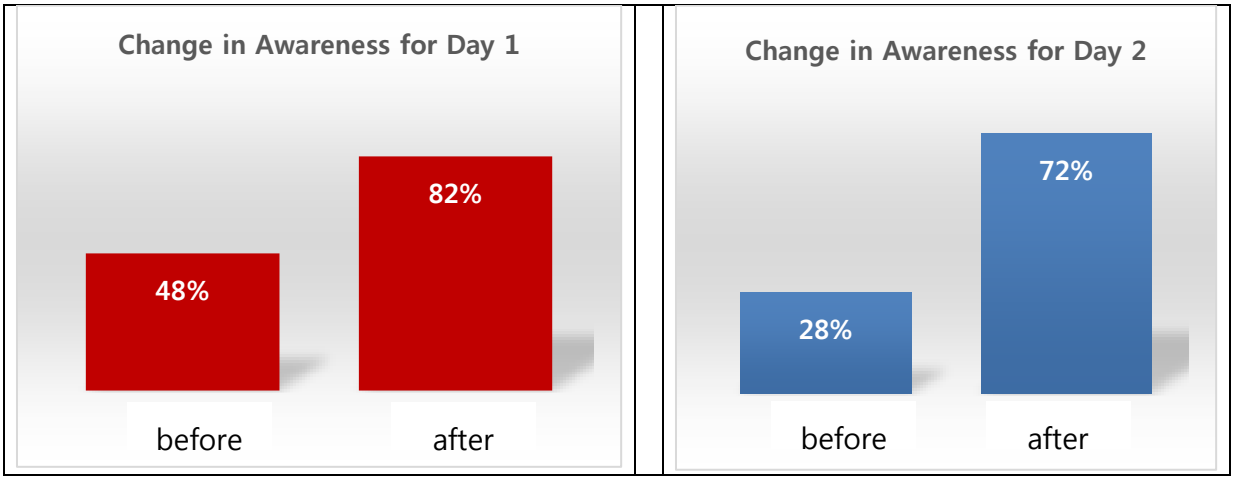
Averages were drawn for each day to calculate an average value in the awareness and satisfaction for the two-day seminar, and the results were likewise averaged. This process was done so that each day of the seminar can be given an equal weight even though their number of participants were different.

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 13> 100% conversion table for 5-point scale

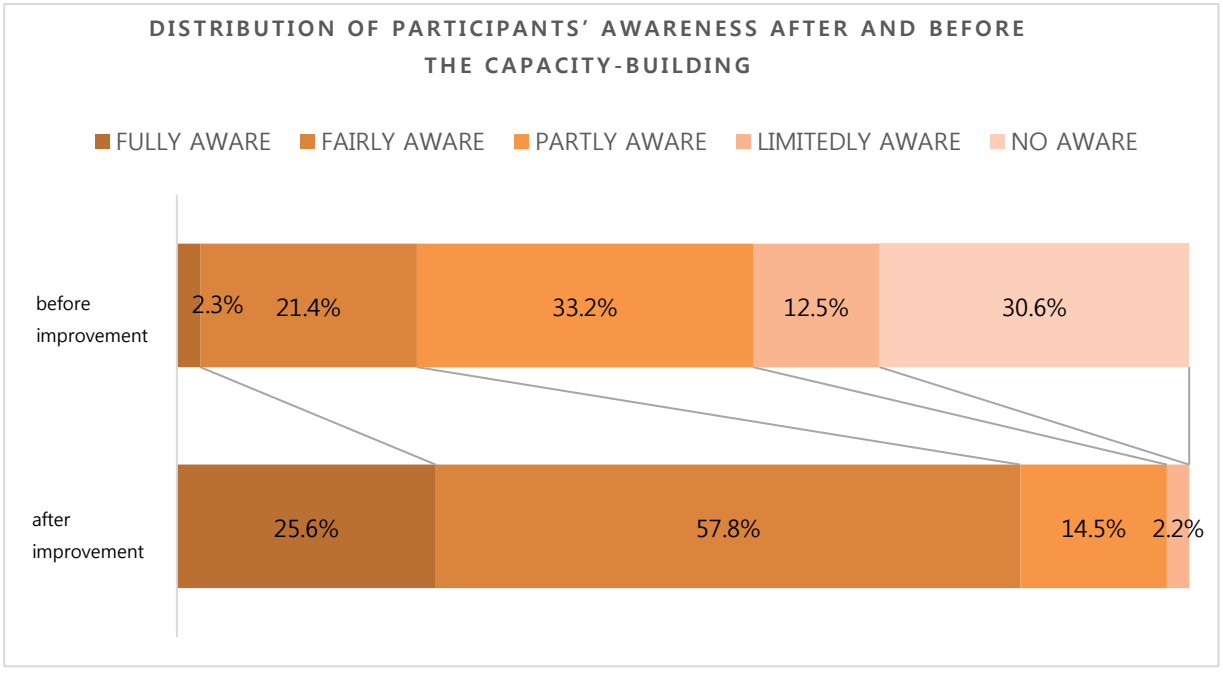
No aware	Limitedly aware	Partly aware	Fairly aware	Fully aware
0%	25%	50%	75%	100%

After the first day of the seminar, the participants' awareness increased from 48% to 82%, with 34 percentage point change and after the second day, the participants' awareness increased from 28% to 72%, with 44 percentage point change. The paired sample t-test yielded *p*-values of 4.6×10^{-17}~9.6×10^{-14} for the two days, which are less than the statistically significant level of 0.05, signaling an actual improvement in awareness.



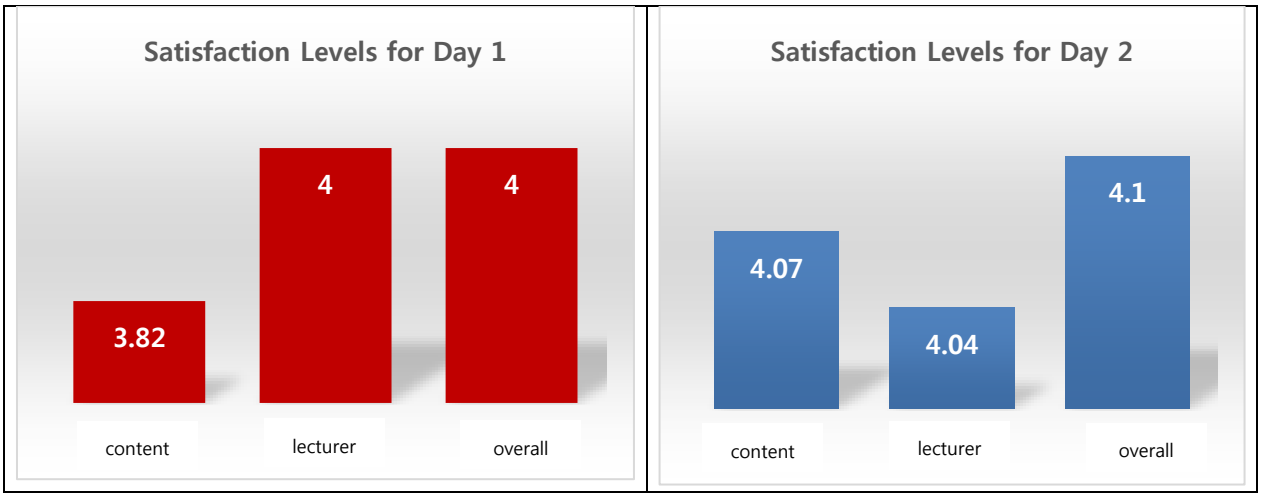
[Figure 5] Changes in awareness for day 1 and day 2 of the seminar

From 23.7% of participants that responded with fully aware / fairly aware before the seminar, the number increased to 83.4% after the seminar, yielding a 59.7 percentage point increase.



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

For Day 1, the recorded satisfaction levels were 3.82 and 4.00 for the contents lecturers, respectively, which are equivalent to 4.00 overall satisfaction. For Day 2, the recorded satisfaction levels were 4.07 and 4.04 for contents and lecturers, respectively, which gave an overall satisfaction of 4.1.



[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.

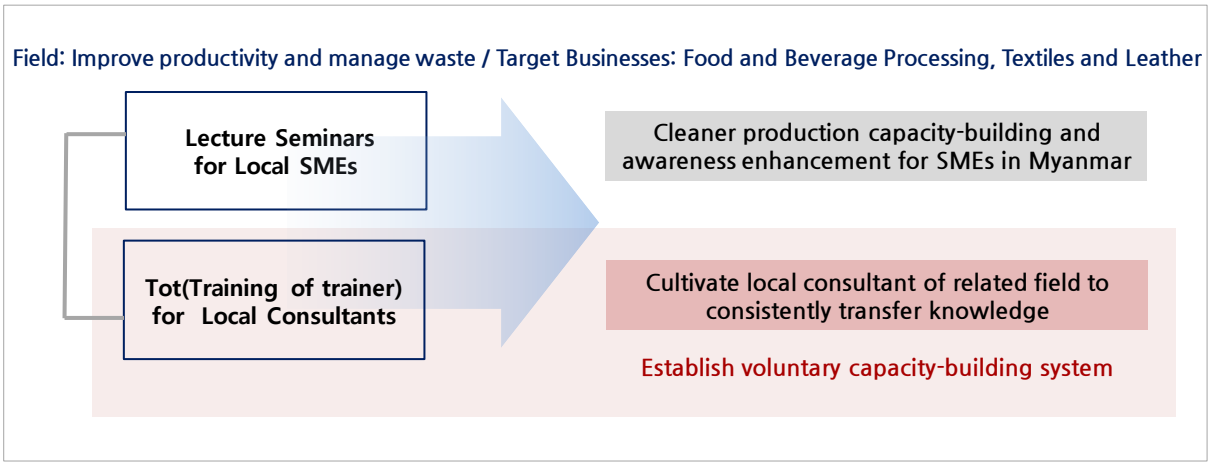
<Table 14> Next year project demand survey

Country	**Survey Results**		**Partner Institute Interview Results**
	Demand Area	Capacity-building Format	
Myanmar	1. Energy Efficiency (32) 2. Eco labeling (31)	1. Seminar (70) 2. 1:1 Consulting (35)	Productivity increase, waste management consulting seminar

According to the survey on the projected demand for next year, energy efficiency and eco-labeling are the top priorities. Interviews with capacity-building seminar participants show that productivity increase and waste management lectures (particularly operational

management knowledge and cases) were beneficial to local SMEs. Accordingly, Myanmar's Ministry of Industry has requested an advanced capacity-building seminar on productivity increase and waste management primarily for SMEs in the food and beverage processing industries, as well as the textile and leather processing industries.

The ToT program in Vietnam this year increased the capacity of local consultants that act as transferors of knowledge to create voluntary capacity-building abilities. In Myanmar next year, in addition to the advance productivity improvement and waste management seminars, a two-track ToT project can be operated to educate local consultants to enable them to deliver knowledge continuously. This project is expected to yield the same results as in Vietnam.



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