

Appendix 2. Input from the Japanese Side

2.1 Actual Assignment Record of Short-term Experts

The First Year

	Name	2011					2012			1st Year		
		Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	in Laos	in Japan	
		1st Year										
Work in Laos	Team Leader/Urban Environmental Management	Susumu Shimura	24	28			10	13	25	15	3.03M/M	
	Deputy Team Leader/Waste Intermediate Treatment and Final Disposal	Naofumi Sato	4			30	10	21	15	15	5.37M/M	
	Water Environment Management	Kanehiro Morishita	24	34				17		14	3.00M/M	
	Waste Collection and Transport	Ikuo Mori				17	31	28	5		1.80M/M	
	Community-based Urban Environmental Management (1)/ Environmental Education	Noriko Otsuki	4	23		23	12		10	29	2.00M/M	
	Community-based Urban Environmental Management (2)/ Pilot Projects	-										
	Baseline Survey on Urban Environmental Management	Shinya Kawada	24	7		7	16	10	8		3.83M/M	
	Healthcare Waste Management	Shinnosuke Oda						8	21		1.50M/M	
Total in Laos									20.53M/M			
Work in Japan	Team Leader/Urban Environmental Management	Susumu Shimura	21	23								0.10M/M
	Deputy Team Leader/Waste Intermediate Treatment and Final Disposal	Naofumi Sato	21	23								0.10M/M
	Total in Japan										0.20M/M	
Total									20.53M/M	0.20M/M		
									20.73M/M			

The Second Year

	Position and Work Assigned	Name	2012										2013									2nd Year			
			4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	In Laos	In Japan			
			Year 2																						
Work in Laos	Team Leader/Urban Environmental Management	Susumu Shimura	13	26	27	1			29	21		1	16		2	17			3	12	1	1	5.80M/M		
	Deputy Team Leader/Waste Intermediate Treatment and Final Disposal	Naofumi Sato	10	27	16	9			5	6	4	11	26	24	7	9			14	13			9.60M/M		
	Waste Collection and Transport	Ikuo Mori			17	15																		0.97M/M	
	Community-based Urban Environmental Management (1)/ Environmental Education	Noriko Otsuki	10	29										4	23						22	10		2.00M/M	
	Community-based Urban Environmental Management (2)/ Pilot Projects	Shinnosuke Oda			19	18			15		5	8	23	22	2	12					10			7.70M/M	
	Healthcare Waste survey/Healthcare waste management	Noriko Otsuki					7	26			3	22		10	29		29	17						2.67M/M	
									28.74M/M																
Work in Japan	Training in Japan (1)	Heejung Cho													11	15		7-10	13					0.33M/M	
	Training in Japan (2)	Naofumi Sato													26	29								0.13M/M	
	Training in Japan (3)	Shinnosuke Oda															15	24						0.33M/M	
									0.80M/M																
Total									28.74M/M	0.80M/M															
									29.54M/M																

Work in Laos
Work in Japan

The Third Year

1. Work in Laos

Sector in Charge	Name	2013			2014												Days	M/M		
		10	11	12	1	2	3	4	5	6	7	8	9	10	11	12			1	2
Team Leader/Urban Environmental Management	Susumu SHIMURA	10/30	11/24		2/10	3/15				6/13	8/13	10/4	11/5	12/30	1/24				181	6.03
Deputy Team Leader/Waste Intermediate Treatment and Final Disposal (1)	Naofumi SATO														1/9	2/5			28	0.93
Waste Intermediate Treatment and Final Disposal (2)	Tamotsu SUZUKI	10/30	11/24		2/2	3/7				6/9	7/18		10/19	11/22					135	4.50
Community-based Urban Environmental Management (1)/ Environmental Education	Noriko OTSUKI				2/26	3/17				7/26	8/14				1/21	2/11			62	2.07
Waste Collection and Transport (2)/Community-based Urban Environmental Management (2)/ Pilot Projects	Shinnosuke ODA	10/20	12/7	1/20	3/15			5/19	6/29	8/4	9/2	10/25	12/10	1/2	2/7				260	8.67
Actual																		666	22.20	

2. Work in Japan

Sector in Charge	Name	2015												Days	M/M					
Team Leader/Urban Environmental Management	Susumu SHIMURA											10/1	10/3						3	0.15
Actual																		3	0.15	
Total																		3	22.35	

The Forth Year

1. Work in Laos

Sector in Charge	Name	2015										Days	M/M
		3	4	5	6	7	8	9	10				
Team Leader/Urban Environmental Management	Susumu SHIMURA	10	8	21	6	21	16	16	1			150	5.00
Deputy Team Leader/Waste Intermediate Treatment and Final Disposal (1)	Naofumi SATO	10	7						10	30		50	1.67
Waste Intermediate Treatment and Final Disposal (2)	Tamotsu SUZUKI	8	4				1	30			89	2.97	
Community-based Urban Environmental Management (1)/ Environmental Education	Noriko OTSUKI			3	22		20	8			40	1.33	
Waste Collection and Transport (2)/Community-based Urban Environmental	Shinnosuke ODA	21	8		12	6	27	25			105	3.50	
434											14.47		

2. Work in Japan

Sector in Charge	Name	2015										Days	M/M
		3	4	5	6	7	8	9	10				
Team Leader/Urban Environmental Management	Susumu SHIMURA				15	19	17	12	14		2	10	0.50
Deputy Team Leader/Waste Intermediate Treatment and Final Disposal (1)	Naofumi SATO				15	26						10	0.50
20											1.00		
Total											15.47		

2.2 Facility and Equipment

Office Supply	
Photocopy machine with paper feeder (Canon)	1
Laser printer (Canon)	1
Inkjet color printer (Canon)	1
Facsimile (Canon)	1
Video projector (Canon)	1
Digital camera (Canon)	1
Video camera (Canon)	1
Screen (Stand Ander 70"x70")	1
Laptop personal computer (Toshiba)	2
Microsoft office	2
Windows 7 professional	2
Titanium internet security	2
Lao script	2

Inputs for Pilot Projects				
	VTE	LPB	XYB	Source*
Home composting				
Compost barrels (normal/worm)	58/22	10/43	247/102	
Leaflets of home composting (Normal)	100	50	350	LPPO
On-site compost promotion video		1		
Eco basket				
Eco baskets	3095	1482	2023	
Eco stay				
Compost plant				
Composting workshop (300m2)		1		
Warehouse (6m x 4m = 24m2)		1		
Electrical works (Wiring, outlet)		1		
Water supply works		1		
Electricity poles & wires (single-phase)		200m		
Open drainage and sewage pit		1		
Gravel pavement t=150mm		200m ²		
Pipe drain and gravel pavement		1		
Wood chipping machine		1		
Tools for operation (Wheelbarrow, Sieve, Shovel, Hoe, Writing board, scale)		1 set		
Food waste barrels		120		
Eco bags for tourists		800		
Eco bags for tourists		700		LPPO
Small signboards		50		
Leaflet (1)		2,000		
Leaflet (2)		3,000		
Leaflet (3)		5,450		LPPO
Off-site compost promotion video		1		
School recycling				
Environmental education hand books for waste separation		600 sheets		
School Recycling Storage Sheds		6	3	
Scales for School Recycling		2	2	
Collection improvement				
Waste containers		Large 80	Small 155	
Garbage bin with caster (120L)	70			LPPO

* Financial source was LPPE if not specified.

Collection expansion				
Container manufacturing equipment (Welding machine, Iron cutting machine, Oxygen welding torch, Oxygen cutting torch, 30m Gas horse, Mask, 20m Welding horse 4 Clamp, Oxygen gauge, Acetylene gauge)			1 set	1 set
Container manufacturing material (Steel plates, Iron bars, paints, cut-disc, welding rod, hinge, gases)			For 10 containers	For 10 containers
Disposal site improvement				
Concrete plates (2m x 1m x 0.2m)	200	130	50	
Barricade for truck control	1 set	1 set		
Management of waste pickers				
Jacket	155	32	12	
ID Card	130	30	10	
Boots	155	60	24	
Cloth Mask	300	60	24	
Gloves	300	60	24	
Bulldozer (16-21ton)	1			JICA
Spare parts for bulldozer	1			JICA
Dump truck	2			JICA
Spare tires for wheel loader at KM32	1			JICA
Spare parts for crawler loader at KM32	1			JICA
Hydraulic excavator (Bucket 1m ³)		1		JICA
Spare parts for hydraulic excavator		1		JICA
Dump truck (8ton)		1	1	JICA
Wheel backhoe loader (more than 7ton)			1	JICA
Spare parts for backhoe loader			1	JICA
Site clearing	1	1	1	JICA
Access road	1200m, asphalt	800m	70 m	JICA
Pipe drain (dai600mm L=10.0m)	2 places	3 places		JICA
Buffer zone (3m interval of each planted tree)	200 m]			JICA
Installation of new computer and new software for existing weight bridge	1			JICA
Detailed design	1	1	1	JICA
Earth drain		470 m		JICA
Embankment		400 m		JICA
Weight bridge (incl. platform and control house)		1		JICA
Gate		1	1	JICA
Leachate collection pipe		100 m		JICA
Re-circulation pump and flexible pipe		150 m		JICA
Administration Office			1	JICA
Electricity installation (transformer) 50KVA for administration office			1	JICA
Water well with pumping			1	JICA
Observatory		1		

Sludge treatment facility improvement				
Soil		34.6 m3	12 m3	JICA
Crushed Stone		27.3 m3	8 m3	JICA
Mixed Concrete		30.8 m3	8 m3	JICA
Reinforcing bar		149 bar	74 bar	JICA
Block		110 unit		JICA
Wooden step		28 steps		JICA
Zinc drain			19 m	JICA
Others (wire, form, cement, sand, attachment)		1 set	1 set	JICA
Wall protection (Concrete t= 150mm)	192 m ²	192 m ²		
Open Drainage w= 30 cm	8m	26m		
Receiving tank 3 x 4 m	2	2		
Drain pit 0.6 x 0.6 x 0.7 m	2	1		
Pipe Drain dia.= 300 mm, L=16 m	2	-		
Pipe Drain dia.= 600 mm, L=8 m	1	-		
Embankment W= 5.0m	10m	-		
Gate w= 4.0m	1	1		
Fence H= 1.8m (RC pole & Wire mesh)	136m	196m		
Gravel pavement t= 150 mm	450m ²	250m ²		
Access road (DBST) w= 5.0m	300m	25m		
Pipe Drain dia.= 300 mm			32	
Drainage pit 0.6 x 0.6 x 0.7m			1	
Drainage pit 0.6 x 1.2 x 0.7m			1	
Slope protection			2	
Leveling and Gravel pavement (10x10m)			1	
Repairing Receiving tank			1	
HCW Management				
Waste incinerator for infectious waste	1 (20kg/h)	1 (10 kg/h)		JICA
Containers for HCW collection		10	2	
Flame for container		1 set	1 set	
Spareparts for incinerators				
Photoelectric eyes	1	1		
Ignition electrode	1	1		
Temperature sensor	1	1		
Nozzle (dedicated to First Furnace, 10kg/hour burner)	1	1		
Nozzle (dedicated to Second Furnace, 5kg/hour burner)	1	1		
Solenoid valve	1			
Making HCW separation promotion video		1		
Pickup truck for HCW collection and transportation		1		JICA
Healthcare waste incinerator house with water treatment tank, Fence, Earth work, Installation of Electricity pole, Installation of Sign board	1	1		
Health Care Waste discharge pit /w wall and roof			1	JICA
Gravel and Fuel for HCW pit		1		
Others				
Polo shirts	250	250	250	
Elephant Festival in XYB				
Sign Board			1	LPPE
Banner			5	LPPE
Plastic garbage bin			40	LPPE
Tong			40	LPPE
Community-based sanitation				
Toilets, wastewater collection system, wastewater treatment system consisting of settler, anaerobic baffled reactor and anaerobic filter	1			JICA

2.3 Counterpart Trainings

1. Hanoi, Vietnam

(1) Objectives

Counterpart training was provided in order to learn the lessons of solid waste management and healthcare waste management in Hanoi and its surrounding and to improve healthcare waste management in the pilot three cities.



Nam Son Final Disposal Site, Hanoi



Healthcare Waste Incinerator in Central Hospital No.71, Thanh Hoa



Cau Dien Composting Plant



Participants at URENCO

(2) Training Schedule

No.	Date	Day	Schedule
1	10June	Sun	Leave from Laos to Hanoi by VN930: LPB (17:05) ->Hanoi (18:20) QV312: VTE (15:15) ->Hanoi (16:25)
2	11June	Mon	am: Meeting at JICA office and VEA/MONRE pm: Visit to Cau Dien Composting Plant
3	12June	Tue	Travel from Hanoi to Thanh Hoa Province (170 Km. from Hanoi) Visit Thanh Hoa 71 Central Hospital Meeting with DONRE and DOH
4	13June	Wed	Travel from Thanh Hoa Province back to Hanoi On the way visit Biogas Plant, Ninh Binh province
5	14June	Thu	Visit final disposal site at Nam Son Waste Management Enterprise – URENCO 6
6	15June	Fri	Leave from Hanoi to Laos by VN931: Hanoi (09:50) ->LPB (11:15) VN921: Hanoi (09:55) ->VTE (11:00)

(3) List of Trainees

National Level	
1. Mr.Phengkhamla PHONVISAI	Pollution Control Division, MONRE.
2.Mr.Phouthasenh ARKHAVONG	Deputy-Director of Ministry of Public Work

	and Transportation.
3.Mrs.Vilayvone MANGKHASEUM	Deputy-Director of Department of Hygiene and Prevention Disease, MOH.
4.Mrs.Palina KHOTPHOUTHONE	Technical staff of Department of Pollution Control, MONRE.
VTE	
5.Mr.Nousone MEUNVISETH	Deputy-Director of Vientiane Urban Development and Administration Authority
6.Mr.Hansana RATHAPHASAVANG	Head of Administration building and Environment Division Mahot Hospital
7.Mr.Bouakham PHAKASOUM	Deputy-Director of Solid waste Management KM 7 of VUDAA
8.Mr.Vilavong KENSOULINE	Technical staff of Department of Natural Resources and Environment in Vientiane capital.
LPB	
9.Mr.Chanthavong PHONNACHIT	Deputy-director of department of Natural Resources and Environment of Luang Prabang
10. Mr.Khamsone PHONGSAVATDY	Deputy –Director of Luang Prabang Provincial Hospital
11. Mrs.Kaysone KEOPASEUTH	Head of Solid waste Management in Luang Prabang UDAA
XYB	
12. Mr.Kitsamone PHOTHILACK	Technical staff of Department of Natural Resources and Environment in Xayabouri
13. Mr.Phathanong SONEPHAN	Technical staff of Urban Development and Administration Authority in Xayabouri
Others	
14. Mr. Xayamang NANTHANAVONE	SJET team (JICA)
15. Mr.Naofumi SATO	SJET team (JICA)

2. Phitsanulok, Thailand

(1) Objectives

Counterpart training was provided in Phitsanulok, Thailand, to observe its solid waste management, the business of a private recycling company and 3R activities at the community level and to improve the SWM in the three pilot cities.

(2) Schedule

- 5 Aug. (Sun.) Counterparts from LPB and XYB travel to Vientiane by land transportation
6 Aug. (Mon.) 5:30 a.m. Meet at Patuxay
Take bus from Patuxay to Friendship Bridge
Passing Immigration of Lao and Thai sides at Friendship Bridge
Taking the bus from Friendship Bridge to Phitsanulok province (485 km.).
7 Aug. (Tue.) 9:30 a.m. Visit Phitsanulok Municipality
9:45 a.m. Orientation by Mayor of Phitsanulok Municipality
1:30 p.m. Study tour of waste management in Phitsanulok (collection, transportation and disposal)
8 Aug. (Wed.) 9:00 a.m. Study Tour of Wongpanit Waste Recycling Company
9 Aug. (Thu.) 9:00 a.m. Visit community's activities for waste management (waste bank, home compost, etc.)
12:00 a.m. Observe tourism waste management at Sukhothai Historical Park, Sukhothai Province (60 km.from Phitsanulok province)

- 10 Aug. (Fri.) Travel from Phitsanulok to Nongkhai Passing Immigration of Thai and Lao sides at Friendship Bridge
Taking bus from Friendship Bridge to MONRE
- 11 Aug. (Sat.) Counterparts from LPB and XYB travel to their cities by and transportation



Visit to Wongpanit Waste Recycling Company



Visit to a Waste Transfer Station



Visit to BMT Final Disposal Site



Community-based 3R Activity

(3) List of Trainees

National Level		
1	Mr.Phengkhamla Phonvisai	Chief of Pollution Control Division, Department of Pollution Control, MONRE
2	Mrs.Khamphone Sotapaseuth	DoPC, MONRE
	Mr.Vanhxay Phiomanyvone	Technician, Department of Pollution Control, MONRE
3	Mrs.Palina Khotphouthone	Technician, Department of Pollution Control, MONRE
4	Mr.Noudeng Vongdala	Technician, Department of Pollution Control, MONRE
5	Mr.Surasack Phonthachak	Chief of Planning and Budgeting Division, Department of Housing and Urban Planning, MPWT
Local Level		
1	Mr.VilasakVenpaseuth	Technician, Natural Resources and Environment Department, Vientiane Capital
2	Mr.Sonethavy Phimmasane	Deputy Chief of Housing and Urban Planning Section, VUDAA
3	Mr.Kaysone Chanthalath	Technician, Environmental Unit, VUDAA, Vientiane Capital
4	Mr.Kaisone Vivongsa	Technician, Waste Collection-Transport Division, VUDAA, Vientiane Capital
5	Mr.Thepsackda Boliboun	Technician, Waste Collection-Transport Division, VUDAA, Vientiane Capital
6	Mr.Thavisay Moasomphou	Deputy Chief of Saysettha District, Vientiane Capital
7	Mr.Alounxay Mingbopha	Head of Environment Unit, Saysettha District
8	Mr.Somedy Phonesavath	Deputy Chairman, Urban Development Administration Authority (UDAA), LuangPrabang Province
9	Mr.Sengphone Bounluexay	Deputy Chief of Waste Management Section, UDAA, LuangPrabang Province
10	Mr.Bounkhen Bounthongsy	Technician, Waste Management Division, UDAA, LuangPrabang Province
11	Mr.Sackdaphone Keoprachan	Technician, Natural Resources and Environment Department, LuangPrabang Province
12	Mrs.Khamphiou Phanthavong	Deputy Director, Natural Resources and Environment

		Division, Xayabouly Province
13	Mr.Bounkhong Phongsavanh	Chairman, Urban Development Administration Authority (UDAA), Xayabouly Province
14	Mr.Phonephiphat Thammavong	Head of Environmental Sanitation Unit, Xayabouly Province
15	Mrs.Saysamone Sonephanh	Head of Financial Unit, Xayabouly Province
Others		
1	Mr.Naofumi SATO	Deputy Team Leader, LPPE Project
2	Mr. Precha Chuntakorn	Assistant of the Project
3	Mr.Kongchai Vongtham	Chief of Waste Picker Multi-purpose Center KM. 32
4	Mr.Kongchai Vongtham	Chief of Waste Picker Multi-purpose Center KM. 32
5	Mr.Phonkham	Marketing and Waste Buying Section, Waste Picker Multi-purpose Center KM. 32
6	Mr.Sivilay Chanthavongs	Accounting and Waste Storage Section, Waste Picker Multi-purpose Center KM. 32
7	Mrs.Davone Sinthavong	Technician, Natural Resources and Environment Division, Vientiane Capital
8	Ms.Makiko INAMORI	JICA's Volunteer to Department of Natural Resources and Environment, Vientiane Capital

3. ASEAN Secretary and Surabaya City, Indonesia

(1) Objectives

This training had two objectives. One is to visit the ASEAN Secretariat (Jakarta) to share the updates of LPPE. The other is to observe solid waste management in Surabaya and to learn the its experience, with particular interest in community-based 3R activities.



Meeting with a Senior Officer of Environment Division, ASEAN Secretariat

The Lao side reported the recent activities of LPPE towards ESC promotion.

- ESC Guidelines were drafted in English, and Lao translation would be due the end of the year.
- From the next year, MONRE intends to apply the ESC Guidelines to all the provincial capitals.
- The pilot three cities has been practicing the ESC Guidelines and are in the stage of pilot project selection.



Briefing of SWM cooperation by JICA Indonesia

The officers in charge of SWM of JICA Indonesia Office explained about the SWM policy of the Indonesian Government and about the JICA's cooperation strategies.



Benowo Final Disposal Site, Surabaya

The observation of the following was useful for the Lao C/Ps.

- Cell management of disposal area and cell closure using cover soil.
- All-year-round accessibility to disposal area.
- Surface compaction after waste dumping.



Bratang Composting Facility

The visit was helpful to the C/Ps for the following.

- Consideration about the off-site composting facility of LPB with a clear image.
- Knowledge about the composting process and characteristics of compost products.



Community-based SWM in Batarajaya village

The visit was helpful to the C/Ps for the following.

- The potential of the community to act for the improvement of the living environment.
- The importance of the institutional system with community participation for the information sharing and awareness raising.



Wrap-up and Q&A with Surabaya City Assistant Mayor

Surabaya City Assistant Mayor outlines the environmental management policy of the city. He mentioned that most of the policy is put into force by the city's own budget. In the implementation, the policy at the city level is interpreted at the sub-district level through the coordination among different sectors. The city is also working with schools to raise environmental awareness.

(2) Schedule

Date	Schedule	
9 Dec. (Sun.)	Counterpart from Luang Prabang and Xayabouri move to Vientiane by land transportation	
10 Dec. (Mon.)	TG 571 (VTE-BKK) 13:50 14:55 GA 869 (BKK-JKT) 17:10 20:35	Fly from Vientiane to Bangkok Fly from Bangkok to Jakarta Check-in hotel (Harris suits fX Hotel) Jl. Jend Sudirman, Pintu Satu Senayan,
11 Dec. (Tue.)	9:00	Ms. Susan Wong, Senior Officer, Environment Division, ASEAN Secretariat Jl. Sisingamangaraja 70A Jakarta
	11:00	JICA Jakarta Office Sentral Senayan II 14 th Floor, Jl. Asia Afrika No. 8 Jakarta
	GA0320 (CGK-SUB) 15:35 17:05	Fly from Jakarta to Surabaya Check-in hotel (favehotel MEX) Jl.Pregolan 1,3,5, Surabaya
12 Dec. (Wed.)	AM	Surabaya city office Visit Final Disposal Site Benowo
	PM	Visit Bratang composting house
13 Dec. (Thu.)	AM	Visit to villages to see home composting
	PM	Discussion
14 Dec. (Fri.)	AM	Free
		Check-out by 11:30
	GA0317 (SUB-CGK) 13:25 14:50	Fly from Surabaya to Jakarta Check-in hotel (Harris suits fX Hotel)
15 Dec. (Sat.)	GA 868 (JKT-BKK) 12:50 16:15 TG 574 (BKK-VTE) 19:50 21:00	Fly from Jakarta to Bangkok Fly from Bangkok to Vientiane
16 Dec. (Sun.)	Counterpart from Luang Prabang and Xayabouri go back to their cities by land transportation	

(3) List of Trainees

National Level		
1	Ms. Khamfong SOTAPASEUTH	Cabinet Office of MONRE
2	Mr. Vanhxay PHIOMANYVONE	DoPC, MONRE
3	Mr. Aphisayadeth INSISIENGMAY	Ministry of Public Work and Transport
Local Level		
4	Mr. Vilavong KENSOULINE	DoNRE of Vientiane
5	Mr. Sonethavy PHIMMASANE	VUDAA
6	Mr. Soulaphon PHILAKOUN	DoNRE in Louangprabang province
7	Ms. Kaysone KEOPASEUTH	UDAA of Louangprabang province
8	Mr. Kitsamone PHOTHILACK	DoNRE in Xayaboury province
9	Mr. Khamlar KONGSAP	UDAA of Xayaboury province
10	Mr. Thavisay MOASOMPHOU	Deputy Head of Saysettha district
Others		
11	Ms. Noriko OTSUKI	JICA Expert
12	Mr. Precha Chuntakorn	Assistant of the Project
13	Ms. Nurdianti Indah Pratiwi	Local Interpreter

4. Training in Japan (1)

(1) Objectives

This training was programmed for the counterparts of LPPE, who are engaged in decision making, to learn about Japanese environmental policy and solid waste management techniques, so that they would be able to assist SWM of local agencies in Laos.

(2) Schedule

No.	Date	Contents	Venue/Place/Site
1	23Mar Sat	Fly from VTE to BKK	Traveling
2	24Mar Sun	Fly to Tokyo	Traveling/ Tokyo International Center of JICA (TIC)
3	25Mar Mon	3-1 Briefing	TIC
		3-2 Program orientation	
4	26Mar Tue	4-1 History and Policy of SWM in Japan	Japan Environmental Sanitation Centre
		4-2 Transfer station of municipal solid waste	Clean association of Tokyo23
		4-3 Health care waste treatment facility	Sincere., Co., Ltd
5	27Mar Wed	5-1 Courtesy call on Mayor of Saitama municipality	Saitama municipality office
		5-2 1) Eastern recycling center 2) Incinerator of Municipal solid waste 3) Final disposal site	Saitama municipality (Solid Waste Management Eastern district)
6	28Mar Thu	6-1 1) Garden waste compost plant 2) Thermal Recycle	Resource and Environmental institute of East Saitama
		6-2 Kitchen waste compost plant	Kuki-Miyashiro Sanitation Institute
7	29Mar Fri	Preparation of discussion	TIC
		Discussion with JICA	
8	30Mar Sat	Fly Tokyo to VTE via BKK	Traveling

(3) List of Trainees

No	Name	Title
Central Government		
1	Mr. Sisavath VITHAXAY	Vice Minister of MONRE
2	Mrs. Keobang A Keola	Director General of Department of Pollution Control of MONRE
Vientiane Capital		
3	Mr. Khampian INTHALUXA	Vice-president of VUDAA
4	Mrs. Dr. Bang On XAYARATH	Deputy Director of DONRE of Vientiane capital
5	Mr. Somphone SENGSILLAVONG	Deputy Director of Foreign Affairs of Vientiane Capital
Luang Prabang		
6	H.E. Mr. Saysamone KHOMTHAVONG	Vice governor of Luang Prabang province
7	Mr. Bounlath LATTANAPHOUBAY	Director of DONRE of Luang Prabang Province
8	Mr. Phoumy OPHETSANE	Director of UDAA of Luang Prabang district
Xayabouri		
9	H.E. Mr. Phongsavanh SHTTHAVONG	Vice governor of Xayabouri province
10	Mr. Pien CHANTHIP	DONRE
11	Mr. Bounkong PHONESAVANH	Director of UDAA of Xayabouri district

5. Training in Japan (2)

(1) Objectives

This training was programmed for the counterparts of LPPE, who are engaged in daily operation, to learn about real practices of Japanese environmental policy and solid waste management, so that they would be able to strengthen SWM by their local agencies.

(2) Schedule

Date	AM	PM	Location
13th(Mon)	Travel from VTE to Bangkok		
14th(The)	Arrive at Narita		Tokyo
15th(Wed)	Briefing about S/T regulation	Program orientation	Tokyo
16th(Thu)	Lecture "SWM History and Policy"	Final disposal site (Site visit)	Tokyo
17th(Fri)	Public awareness raising; To visit the Environmental education	Public awareness raising; To see the environmental education for	Tokyo

	museum	children	
18th(Sat)			Tokyo
19th(Sun)			Tokyo
20th(Mon)	Healthcare waste treatment facility(Site visit)	Transfer station(Site visit)	Tokyo
21th(Tue)	Recycling Center, Itabashi district (Lecture and Site visit)	Waste treatment facility, Itabashi district (Lecture and Site visit)	Tokyo
22th(Wed)	Waste discharge manner and Waste collection (Site visit), Itabashi district office	Travel from Tokyo to Kagoshima city (Flight time 2hours)	Tokyo→Kagoshima
23th(Thu)	<ul style="list-style-type: none"> ▪ Travel to Shibushi city, Kagoshima province ▪ Greeting to Shibushi mayor 	Orientation and Lecture of the Environmental policy of Shibushi city	Tokyo
24th(Fri)	<ul style="list-style-type: none"> ▪ Collection of recyclable waste as a group (Site visit) ▪ Agricultural wastewater treatment facility(Site visit) 		Shibushi
25th(Sat)			Shibushi
26th(Sun)			Shibushi
27th(Mon)	<ul style="list-style-type: none"> ▪ Discharge manner and collection of recyclable waste (Site visit) ▪ Municipal solid waste management landfill(Site visit) 	<ul style="list-style-type: none"> ▪ 'Shochu'(distillery) waste composting plant (Site visit) ▪ Orientation for practical work 	Shibushi
28th(Tue)	Practical work (Collection and transportation for general, recyclable and organic waste)	Private company authorized as waste collection service provider (Site visit)	Shibushi
29th(Wed)	Practical work (Intermediate treatment and composting facility)		Shibushi
30th(Thu)	Travel from Shibushi to Kitakyusyu		
31th(Fri)	Meeting to evaluate	Meeting to evaluate	Kitakyusyu
1st(Sat)	Travel from Fukuoka for VTE		

(3) List of Trainees

No	Name	Title
Central Government		
1	Mr.Phengkhamla PHONVISAI	Director of Legislation and Information Division, Chief of Responsible Team for LPPE Project
2	Mr.Vanhxay PHIOMANYVONE	Acting Director of Pollution Control Division, Department of Pollution Control, a coordinator for LPPE Project
3	Mr.Bounthong KEOHANAM	Director of Planning and Urban Development, Division, Ministry of Public Works and Transport
Vientiane Capital		
4	Mr.Thaweesay MOASOMPHOU	Vice Governor of Saysettha District, Vientiane Capital
5	Ms.Khamlar THAMMAWONG	Chief of Environment Section, Department of Natural Resources and Environment, Vientiane Capital
6	Mr.Sonethavy PHIMMASANE	Chief of Urban Planning Division, Vientiane Urban Development Administration Authority (VUDAA)
7	Ms.Bouavone LUANGKHOTE	Technician, Department of Public Works and Transport,

		Vientiane Capital
Luang Prabang		
8	Mr.Chanthavong PHONNACHIT	Deputy Director of Department of Natural Resources and Environment, Luang Phabang Province
9	Ms.Kaisone KAEWPASEUTH	Chief of Waste Management Section, Urban Development Administration Authority (UDAA) of Luang Phabang District
Xayabouri		
10	Ms.Khamphiew PHANTHAVONG	Deputy Director of Department of Natural Resources and Environment, Xayabouri Province
11	Mr.Thonglanh PHOURPHONE	Vice President of Urban Development Administration Authority, Xayabouri District

Appendix 3. Capacity Assessment

1. Objectives

Project evaluation is generally done by reviewing the level of accomplishment of project outputs and project purpose using the indicators specified in the PDM. The result of project outputs and purposes should be the outcome of what was produced by the capacity that the C/P had obtained as an individual or an organization. Nevertheless, in order to understand the level of developed capacity of the C/P more closely, capacity assessment was conducted. The final assessment was done at the beginning of the 4th project year, so that the activities of the 4th year were carried out taking account of issues found in the assessment.

2. Methodologies

2.1 Capacity to be Assessed

The capacity of the C/P is developed through the project activities. Therefore, types of capacity which were expected to be developed through each project activity were specified, and those were assessed.

In addition, ESC promotion, which LPPE aims at, necessitates the social background. It is, in other words, the capacity of the society which is going to strengthen environmental sustainability. It may include atmosphere of the general public towards the better environment or smooth institutional management of governmental bodies. Due to the original nature of the design of the project activities and inputs, LPPE does not intend to directly strengthen such a type of capacity, but assessment was attempted as a reference.

Consequently, the capacity assessment is twofold, including capacity assessment associated with project activities for each output and capacity assessment regarding ESC promotion.

2.2 Preparation, Distribution and Collection of Questionnaires

As for the capacity assessment associated with project activities for each output, the expected capacities for the national level and the local level are different. Therefore, the six questionnaires were prepared for the C/P of the national and local levels and for the activities of Outputs 1, 2 and 3. The national level C/P includes MONRE and MPWT, while the local level C/P includes DONRE, UDAA, VUDAA, DPWT and others.

As for the capacity assessment regarding ESC promotion, the questionnaire was prepared so as to be answered by the national level C/P with questions about social aspects and institutional conditions.

The questions were designed to be answered by rating 1 to 5, where 5 showed the highest score of capacity.

The first assessment was done during December 2011 and January 2012, which gave a baseline. This was followed by three times of assessment with an interval of approximately one year. Assessment was conducted four times in total.

The member of respondents of those four times of assessment was not the same due to the personnel transfer or other reasons. Therefore, the change of the assessment result over the project period does

not necessarily show the change of capacity. Nevertheless, the capacity development trend can be still found to some extent, because two or more questions were asked to several C/P members for the assessment of particular capacity and an influence by the replacement of specific persons was minimized.

3. Result

3.1 Capacity regarding Output 1

3.1.1 Output 1: National Level

For Output 1, the C/P of the national level is expected to well understand the content of the ESC Guidelines and to instruct and direct the local authorities towards ESC establishment using the ESC Guidelines. With this understanding, questions regarding individual capacity to be developed through Activities 1.1 – 1.6 were asked in Part A, and questions about the necessity of the ESC Guidelines and their manual and the institutional setup for ESC promotion were asked in Part B. The results were summarized below.

The questions regarding Activities 1.7, 1.8 and 1.9 were not asked. Activity 1.7 was planned to be carried out in the 4th project year, and it was considered inappropriate to ask the capacity development through Activity 1.7, which was not yet carried out at the time of assessment. Activities 1.8 and 1.9 were the ESC Guidelines dissemination or introduction to other cities in Laos or overseas. Even though the dissemination target was diversified, the expected capacity is the instruction of ESC Guidelines and it was asked by the questions about Activity 1.6.

Table 3-1: Assessment Results regarding Output 1 (National Level)

Group of Questions		The 1st CA		The 2nd CA		The 3rd CA		The 4th CA	
		Ave.	Stdev.	Ave.	Stdev.	Ave.	Stdev.	Ave.	Stdev.
A.	Individual Capacity	-	-	-	-	-	-	-	-
A11	Data collection and analysis	3.0	1.5	3.4	1.2	4.8	0.4	4.6	0.9
A12	Laws, strategies and action plans	3.8	1.0	3.4	1.3	5.0	0.0	5.0	0.0
A13	Best practices	3.0	1.2	3.3	1.0	4.3	0.6	5.0	0.0
A14	Environment and development vision	3.2	0.4	3.1	0.8	4.3	0.6	5.0	0.0
A15	Formulation of action plan	3.5	0.6	3.1	1.1	4.3	0.6	3.7	1.2
A16	ESC guidelines	3.0	1.0	3.5	1.4	5.0	0.0	5.0	0.0
B.	Organizational Aspects	-	-	-	-	-	-	-	-
B1	Needs of the ESC guidelines and the manual	4.1	0.8	4.2	1.0	4.0	0.0	4.7	0.6
B2	Organization for ESC promotion	3.6	1.2	4.0	0.8	4.5	0.6	4.0	1.2
	Total	3.4	1.0	3.6	1.2	4.5	0.5	4.6	0.8

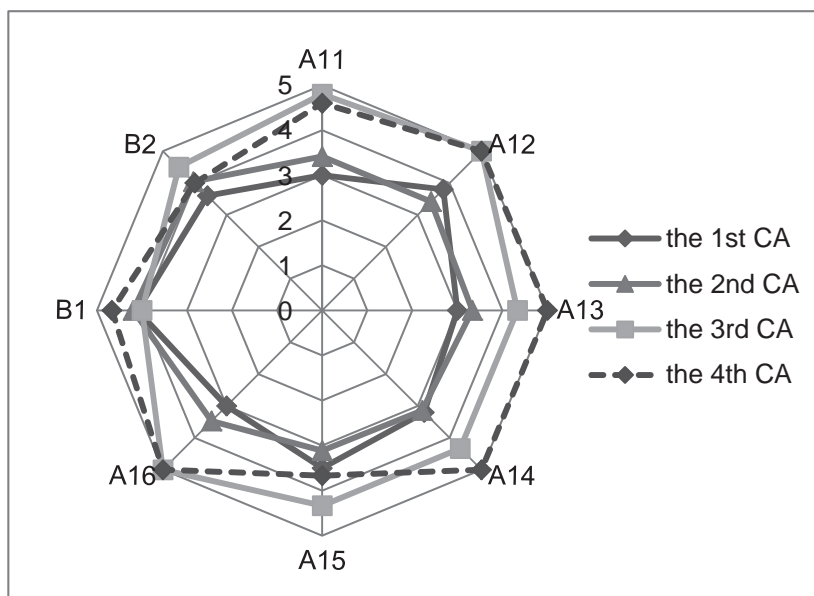


Figure 3-1: Capacity Result regarding Output 1 (National Level)

As shown above, an overall upward trend is found but it is noted that A16 (instruction of ESC Guidelines) has high score while the score of A15 (formulation of action plan) dropped.

The high score of A16 at the 3rd and 4th assessment will be the result of many opportunities for the C/Ps to disseminate and/or introduce the ESC Guidelines to the cities other than pilot cities and Cambodian officials and even at the session of the ESC High Level Seminars.

On the other hand, taking account of the dropped score of A15, the Action Plans of the three cities were revised reflecting the findings from the pilot projects in the 2nd and 3rd project years and SJET explained the revised plans. Also, SJET provided suggestions and advices about the implementation of the Action Plan, so that the C/P understands the plan better. Furthermore, action plan formulation was explained in the manual for the ESC Guidelines.

3.1.2 Output 1: Local Level

For Output 1, the C/P at the local levels (pilot three cities) is expected to understand the urban environmental conditions of the city and promote the construction of ESC with applying the ESC Guidelines. The result of the assessment is shown below.

Table 3-2: Assessment Result regarding Output 1 (Local Level)

Group of Questions		The 1st CA		The 2nd CA		The 3rd CA		The 4th CA	
		Ave	Stdev.	Ave	Stdev.	Ave	Stdev.	Ave	Stdev.
A.	Individual Capacity	-	-	-	-	-	-	-	-
A11	Data collection and analysis	3.6	0.9	3.4	0.8	4.3	0.6	4.8	0.4
A12	Laws, strategies and action plans	3.8	0.7	3.5	0.8	4.3	0.7	4.6	0.5
A13	Best practices	3.5	1.1	3.5	0.8	3.8	0.8	4.5	0.5
A14	Environment and development vision	3.8	0.6	3.2	0.8	4.5	0.5	5.0	0.0
A15	Formulation of action plan	3.2	0.9	3.4	0.9	4.3	0.7	4.6	0.5
A16	ESC guidelines	3.4	1.1	3.5	0.9	4.3	0.5	5.0	0.0

B.	Organizational Aspects	-	-	-	-	-	-	-	-
B1	Needs of the ESC guidelines and the manual	3.9	1.3	3.7	0.9	4.4	0.5	4.8	0.4
B2	Organization for ESC promotion	3.7	1.0	3.5	0.8	4.1	0.7	4.9	0.3
	Total	3.5	1.0	3.5	0.8	4.2	0.6	4.5	1.2

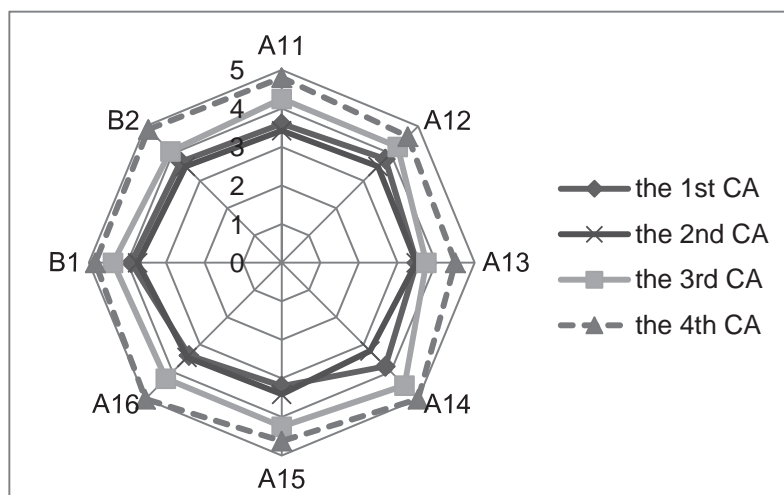


Figure 3-2: Assessment Result regarding Output 1 (Local Level)

The capacity seemed to be developed at all the aspects and is scored nearly 5 at the 4th assessment. The C/P of the three cities repeatedly listened to the presentations by MONRE of ESC Guidelines through Activities 1.8 and 1.9 and had several chances to show their own practices of ESC Guidelines application. Such experiences supposedly lead to the high score shown above.

3.2 Capacity regarding Output 2

3.2.1 Output 2: National Level

Output 2 aims at the capacity development of governmental authorities in solid waste management sector. It was considered that the activities for Output 2 included not only Activities 2.1-2.4 but also Activities 1.1, 1.3, 1.4 and 1.5, which were related to urban environmental management, where solid waste management was one of the sectors. The capacity development through these activities was asked in Part A, while in Part B, organizational aspect regarding solid waste management was asked. The respondents were at the national level and the questions assumed that their role was to give instructions and support to the local authorities directly responsible for solid waste management.

Table 3-3: Assessment Result regarding Output 2 (National Level)

Group of Questions		The 1st CA		The 2nd CA		The 3rd CA		The 4th CA	
		Ave	Stdev.	Ave	Stdev.	Ave	Stdev.	Ave	Stdev.
A	Individual Capacity	-	-	-	-	-	-	-	-
A11	Data collection and analysis	3.6	0.9	3.3	1.2	3.9	0.7	4.5	0.8
A13	Best practices	3.0	1.1	3.5	0.9	3.9	0.7	4.1	0.9
A14	Environment and development vision	2.9	0.6	3.3	1.3	3.8	0.9	4.2	0.9

A15	Formulation of action plan	3.0	0.5	3.2	1.2	3.9	0.9	4.1	1.0
A21	Selection of pilot projects	3.6	0.7	3.8	1.0	4.3	0.7	4.4	0.7
A22	Planning of pilot projects	3.2	0.6	3.6	1.2	3.8	0.9	4.0	1.0
A23	Implementation of pilot projects	3.1	1.1	3.6	1.2	3.9	0.9	4.3	0.9
A24	Reporting of results of pilot projects	3.1	0.9	4.3	1.0	4.5	0.5	4.5	0.5
B	Organization Aspects	-	-	-	-	-	-	-	-
B1	Organization for improving SWM	3.5	1.4	4.2	1.0	4.1	0.7	3.9	1.2
	Total	3.2	0.9	3.6	1.2	4.0	0.8	4.2	0.9

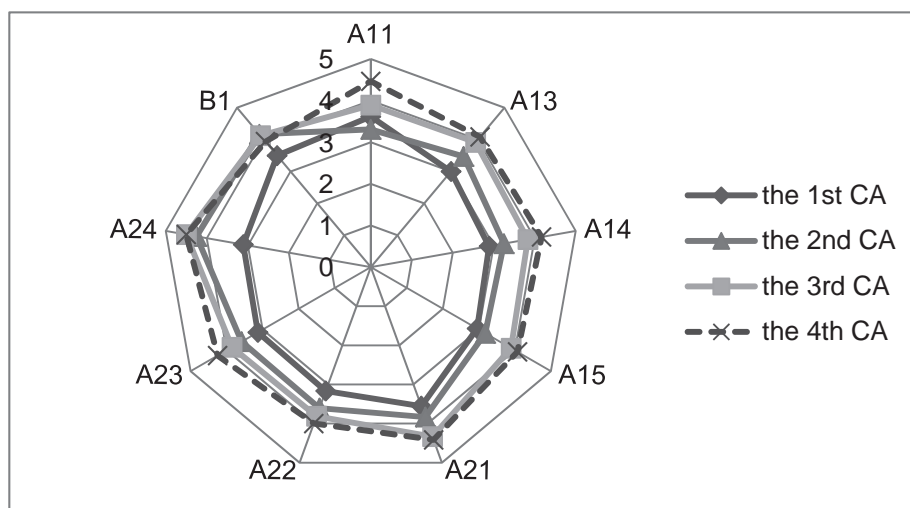


Figure 3-3: Assessment Result regarding Output 2 (National Level)

Gradual improvement can be found over years, but more improvement may need for A22 and B1. A22 is about the capacity of pilot project planning through Activity 2.2 and B1 is about the clear placement of responsibility of solid waste management and organizational coordination for solid waste management. With understanding of such issues, SJET and the C/P reviewed and revised the action plan and discussed continuation and expansion of the pilot projects even after the LPPE and responsibilities of each relevant organization. By doing so, the capacity of project planning and recognition of organizational arrangement was considered to be improved.

3.2.2 Output 2: Local Level

Similar to the assessment at the national level, the questions asked the capacity development through Activities 1.1, 1.3, 1.4, 1.5 and 2.1-2.4 and organizational capacity. As the respondents were the members of local C/P, their implementation responsibility and management ability at the filed level of solid waste management were the focus of the questions.

Table 3-4: Assessment Result regarding Output 2 (Local Level)

Group of Questions		The 1st CA		The 2nd CA		The 3rd CA		The 4th CA	
		Ave	Stdev.	Ave	Stdev.	Ave	Stdev.	Ave	Stdev.
A	Individual Capacity	-	-	-	-	-	-	-	-
A11	Data collection and analysis	3.2	1.1	3.2	0.9	3.9	0.9	4.0	0.7
A13	Best practices	2.7	1.0	3.4	1.2	3.9	0.9	4.1	0.8

A14	Environment and development vision	2.9	1.0	3.5	0.8	4.0	0.6	4.1	0.6
A15	Formulation of action plan	3.0	0.9	3.3	0.8	3.7	0.8	4.0	0.8
A21	Selection of pilot projects	2.8	1.1	3.6	1.2	3.8	0.8	3.9	0.8
A22	Planning of pilot projects	2.6	0.8	3.1	1.1	3.8	0.6	4.0	0.7
A23	Implementation of pilot projects	2.6	1.1	2.8	0.9	3.5	0.8	3.9	0.8
A24	Reporting of results of pilot projects	2.9	0.9	3.3	1.0	3.8	0.7	3.9	0.8
B	Organization Aspects	-	-	-	-	-	-	-	-
B1	Organization for improving SWM	3.5	1.2	3.6	1.0	4.2	0.8	4.1	0.9
	Total	2.9	1.1	3.3	1.0	3.8	0.8	4.0	0.8

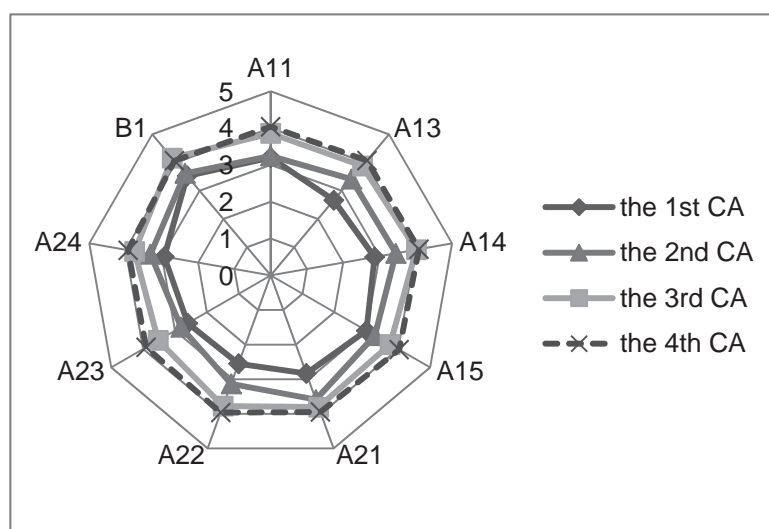


Figure 3-4: Assessment Result regarding Output 2 (Local Level)

There is an increasing trend of capacity, but the pace was slowed particularly from the time of the 3rd assessment to the 4th assessment. The score at the 4th assessment was around 3.9 – 4.1, which could have been higher considering that the pilot projects had been carried out almost two years. In fact, the C/Ps have been taking initiative in pilot project implementation since the 3rd project year and it is deemed that they have acquired experience and knowledge necessary for waste management improvement to a certain extent. As the projects progress, however, it is natural that new issues may arise such as continuous monitoring and expansion to other areas. Because of this, the C/Ps may become severe in capacity assessment.

With such understanding, in the 4th project year, discussion was held on the remaining issues with pilot projects at the pilot project workshop among C/Ps of three cities and SJET. Based on the recognition of the status of the pilot projects, the action plans of the three cities were revised. Further, operation plans were prepared and technically instructed to the C/P in regard to the waste management facilities including final disposal sites, septic tank sludge treatment facilities, off-site composting facility and healthcare waste incinerators.

3.3 Capacity regarding Output 3

3.3.1 Output 3: National Level

Output 3 is aiming at the promotion of community participation in solid waste management. For this, the local authorities are required to directly encourage the communities to change their daily behavior, while the national authorities to assist and support the local authorities. Since this is related to the environmental education and awareness raising, the questionnaires were delivered only to MONRE excluding MPWT. The result of the answers from MONRE is shown below.

The result of the 4th assessment showed high scores for almost all areas of questions. This result may be come from the fact that MONRE started pilot project monitoring from the 3rd project year. Through the monitoring works, MONRE came to directly listen to the voice of the participating residents and tried to respond them by revising manuals and giving advices. Accordingly, MONRE’s recognition about community participation into solid waste management seemed to be enhanced.

On the other hand, the answer to the questions of Part B was relatively low. Part B asked about the organizational capacity regarding awareness raising in solid waste management. Under the current legislative environment in Laos where solid waste management is not legally stipulated, the responsibilities and roles of the residents are not clearly defined. As a result, it may be difficult for the authorities to develop their organizations so as to facilitate community participation.

Table 3-5: Assessment Result regarding Output 3 (National Level)

Group of Questions		The 1st CA		The 2nd CA		The 3rd CA		The 4th CA	
		Ave	Stdev	Ave	Stdev	Ave	Stdev	Ave	Stdev
A	Individual Capacity	-	-	-	-	-	-	-	-
A31	Community-based UEM in Laos	2.7	1.2	3.3	0.9	4.3	0.6	4.7	0.6
A32	Community-based UEM in ASEAN	2.8	0.8	3.4	0.8	4.0	0.9	4.2	0.8
A33	Formulation of EEA program	3.1	1.2	3.1	1.1	3.4	0.7	4.0	0.9
A34	Planning of EEA program	2.9	1.1	3.3	1.1	3.3	0.9	4.0	0.9
A35	Development of EEA tools	2.9	0.9	3.1	1.0	3.2	0.7	4.0	0.9
A36	Implementation of EEA pilot projects	3.3	0.5	3.2	1.1	3.0	0.9	4.0	0.9
A38	Reporting of results of pilot projects	3.0	0.9	3.8	0.9	3.4	0.7	4.1	0.8
B	Organizational Aspects	-	-	-	-	-	-	-	-
B1	Organization for EEA for SWM	3.1	1.5	3.6	0.8	3.0	0.9	3.9	1.7
	Total	3.0	1.0	3.3	1.0	3.3	0.8	4.0	1.0

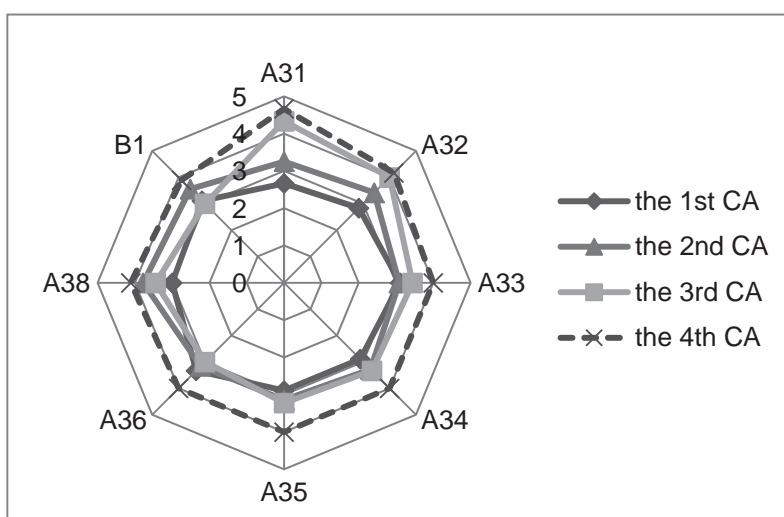


Figure 3-5: Assessment Result regarding Output 3 (National Level)

3.3.2 Output 3: Local Level

The local authorities are supposed to regularly encourage community participation in such opportunities as the application of waste discharge rules for collection improvement and the promotion of 3Rs by home composting and the use of eco-baskets. The result of the assessment is shown below.

The result has a similarity to that of Output 2 for the local level, in that, the upward trend is getting less and the result of the final assessment remains around 4. The C/P may come to feel the difficulty even stronger than in the case of Output 2, since awareness raising can require prolonged activities and may not present visible effect in people's behavior in a short term. On the other hand, the awareness raising activity by the C/P has diversified including educational activities for school recycling projects that started in the 3rd project year. The various application of the environmental education and awareness programs is expected to positively influence the capacity of the C/Ps.

In the 4th project year, the pilot project workshop gave an opportunity of opinion exchange regarding the continuous awareness raising even after LPPE and SJET showed the suggestions for the post-project activities to be carried out by the C/P.

Table 3-6: Assessment Result regarding Output 3 (Local Level)

Group of Questions		The 1st CA		The 2nd CA		The 3rd CA		The 4th CA	
		Ave	Stdev	Ave	Stdev	Ave	Stdev	Ave	Stdev
A	Individual Capacity	-	-	-	-	-	-	-	-
A31	Community-based UEM in Laos	3.4	1.0	3.7	0.8	4.1	0.6	3.9	1.0
A32	Community-based UEM in ASEAN	2.8	1.0	3.4	0.8	3.6	0.8	4.0	0.8
A33	Formulation of EEA program	3.3	0.8	3.8	0.6	4.1	0.6	4.3	0.7
A34	Planning of EEA program	3.4	0.8	3.5	0.9	4.0	0.8	4.2	0.9
A35	Development of EEA tools	2.8	0.9	3.6	0.8	3.7	0.5	3.9	1.0
A36	Implementation of EEA pilot projects	3.1	1.0	3.6	0.9	3.8	0.8	4.1	1.0
A38	Reporting of results of pilot projects	3.2	0.6	2.6	0.8	3.7	0.6	3.9	0.9
B	Organizational Aspects	-	-	-	-	-	-	-	-
B1	Organization for EEA for SWM	3.0	0.8	3.7	1.0	3.9	0.6	4.2	1.0
	Total	3.1	0.9	3.5	0.9	3.8	0.7	4.1	0.9

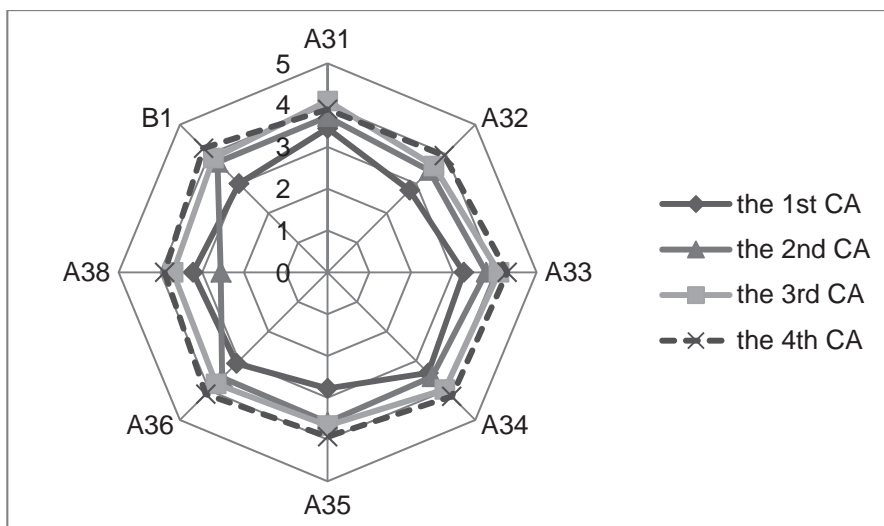


Figure 3-6: Assessment Result regarding Output 3 (Local Level)

3.4 Capacity Assessment for ESC Promotion

Capacity assessment for ESC promotion asked 65 questions that were divided into four part; (A) social aspects of the environmental consciousness of both the general public and the private sector, (B) institutional aspect of environmental management, (C) organizational aspects of MONRE and MPWT in terms of management, communication, human resources, work environment, work execution and intellectual asset, and (D) personal issues of the awareness of ESC promotion. The result is as shown below.

Table 3-7: Assessment Result regarding ESC Promotion

		The 1st CA		The 2nd CA		The 3rd CA		The 4th CA	
		Ave.	Stdev.	Ave.	Stdev.	Ave.	Stdev.	Ave.	Stdev.
A	Social aspects								
A1	General public in urban area	2.9	0.84	3.82	1.35	3.4	0.99	3.6	0.83
A2	Business sectors	2.9	0.29	3.83	1.59	3.3	0.89	3.5	0.69
B	Institutional aspects	2.7	0.72	3.53	1.10	3.9	0.90	3.8	0.68
C	Organizational aspects								
C1	Management	3.3	0.86	4.31	0.87	3.6	1.26	3.9	0.93
C2	Communication	3.2	0.88	4.15	1.04	3.9	0.85	4.2	0.67
C3	Human resources	3.3	0.95	3.81	1.17	3.8	0.98	3.8	0.75
C4	Work environment	2.6	0.76	3.94	0.72	3.3	0.92	3.6	0.80
C5	Work execution	2.5	0.52	4.00	0.95	3.7	1.37	3.7	1.15
C6	Intellectual asset	2.8	0.45	4.00	1.08	3.7	0.67	3.8	0.87
D	Individual aspects	3.6	0.68	4.55	0.60	4.3	0.72	4.4	0.59
	Overall	2.98	0.80	3.88	1.12	3.7	0.98	3.8	0.80

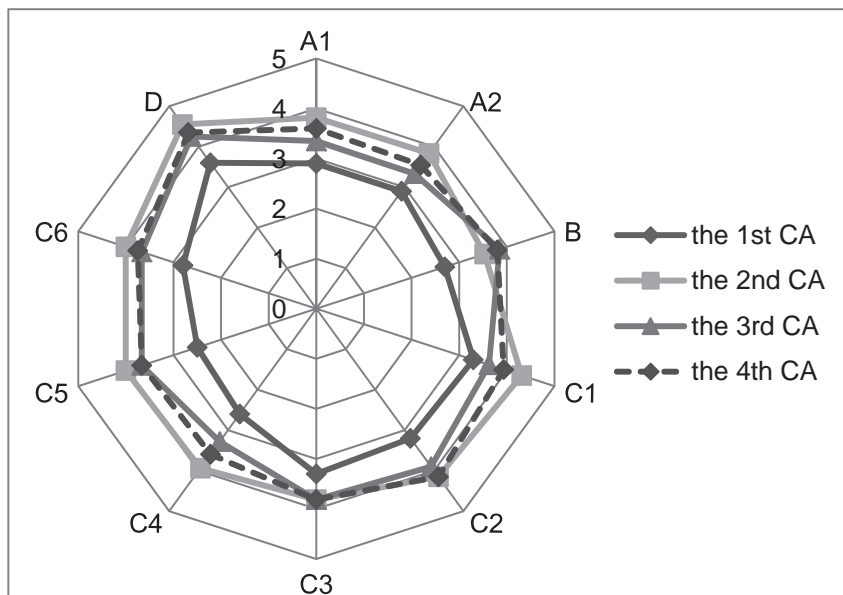
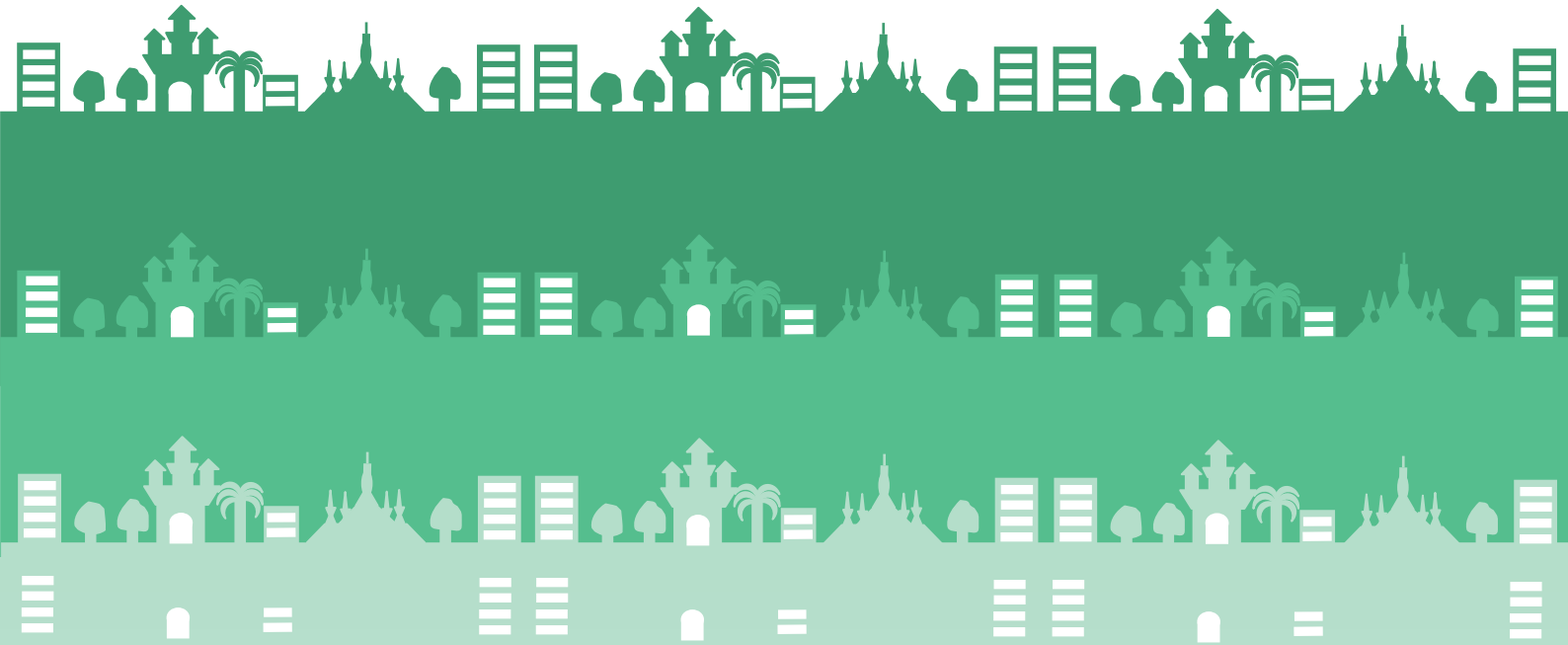


Figure 3-7: Assessment Result regarding ESC Promotion

Overall, the score was improved from the 1st assessment to the 2nd assessment. After that, no particular upward trend can be seen. In fact, the capacity for the ESC promotion, or other words contextual background to foster the ESC initiatives, will need to be looked at in a long term because time is an inevitable factor for the change of organization or society. It may be still noted, however, that the questionnaire respondents (C/Ps of MONRE and MPTW) have become sensitive to the tendency of environmental consciousness of the society and begun to consider the organizational coordination after their involvement in LPPE.

Guidelines for Environmentally Sustainable Cities of Lao PDR



Clean, Green, Beautiful Laos for Future Generations

**Ministry of Natural Resources and Environment, Pollution Control Department
September 2015**

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INTRODUCTION

Socio - Economic Development is the fundamental solution of poverty alleviation. Socio-Economic Development, however, could give an impact on the environment and people's life as it uses natural resources. Actually, how to maintain and protect the environment and how to use natural resources with minimum impact is a global environmental concern. Lao PDR executes socio economic development in parallel with environmental protection in order to make Lao PDR to be **Green, Clean** and **Beautiful**. One of its attempts was the tripartite project between Lao PDR, ASEAN secretariat and JICA to narrow the development gap for ASEAN integration. The project especially focused on the improvement of solid waste management, which is one of the actions to reduce pollution and impacts on the environment and climate change.

At the moment, in Lao PDR, the garbage amount is increasing quickly as the population increases. It relates with the mass consumption of the society.

Ministry of Natural Resources and Environment (MONRE) has a clear policy to carry on natural resource management adequately and sustainable in order to mitigate emission and garbage generation.

Therefore, the appropriate policies, suitable implementation and all people's participation are required to handle the current situation in Lao PDR.

The Objective of this guideline is to formulated organize for urban environment management, identifies urban environment issue by using three cities model.

I hope the Guidelines for Environmental Sustainable City (ESC_GL) of Lao PDR has lesson learn from three pilot cities would be a good reference to use for the sustainable implementation of urban environmental management particularly for waste and wastewater management that appropriate to other city.

I would like to express my great thanks to the government of Japan through JICA representative to Lao PDR for technical and financial support to the implementation of this project and to technical team of Pollution Control Department, MONRE, as well as to all local sectoral organizations concerned for facilitating and co-implementing the project successfully.

**Director General of
Pollution Control Department**



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Abbreviation

DOES:	Department of Education and Sport
DONRE:	Department of Natural Resources and Environment
MICT:	Ministry of Information, Culture and Tourism
MOAF:	Ministry of Agriculture and Forestry
MOES:	Ministry of Education and Sport
MOEM:	Ministry of Energy and Mine
MOH:	Ministry of Health
MOHA:	Ministry of Home Affairs
MOIC:	Ministry of Industry and Commerce
MONRE:	Ministry of Natural Resources and Environment
MOPS:	Ministry of Public Security.
MPWT:	Ministry of Public Work and Transport
MPI:	Ministry of Planning and Investment
NPPN:	NamPaPa Nakhonluang (Water Treatment Plant)
NREO:	Natural Resource and Environmental Office
PWTO:	Public Work and Transport Office
PWTI:	Public Work and Transport Institute.
UDAA:	Urban Development and Administration Authority
VUDAA:	Vientiane Urban Development and Administration Authority

1 Introduction

1.1. Objectives of the Guidelines

This document presents the guidelines for environmentally sustainable cities (ESC). The objective of MONRE to publicize the guidelines is:

To encourage the cities in Laos to be **clean, green and beautiful** so that they become environmentally sustainable without compromising the quality of living of the next generation.

In this context, “**clean**” means clean air, clean water and clean land without any harm to the human health and eco-system, “**green**” means rich fauna and flora that provide joy of living, and “**beautiful**” means “clean and green” that bring happiness and comfort to the urban lives.

The cities, or urbanized area at any levels of local administration, have been threatened by the adverse effects caused by their nature as cities. Ensuring environmental sustainability is a challenge to urbanization, which is an ever-steadily visible worldwide trend. However, it is also believed to be a challenge that has to be started regardless of when, by whom or how. The guidelines aim to facilitate a solid, however small, step forward to this challenge.

What the guidelines show is the only fundamental framework that is regarded as a widely applicable standard. Their application, however, can be flexible and lax according to the local physical, institutional and economic circumstances. The main concern lies in starting with something, keeping going and expanding it. The guidelines will serve as a momentum to make this happen.

1.2. How It Was Produced

The Guidelines (draft) were produced as an outcome of the first year activities of “Laos Pilot Program for Narrowing the Development Gap – Environmental Management Component (LPPE)”, which was implemented by MONRE in association with MPWT and with assistance by the Japan International Cooperation Agency (JICA) from 2011 to 2015.

The overarching goal of LPP is “*Clean, Green, Beautiful Laos*”. Under this, the LPPE aims to promote ESC in three model cities including Vientiane Capital, Luang Prabang District and Xayabouri District and a range of practical activities are to be implemented from April 2012. The drafted Guidelines were reviewed when necessary and finalized in October 2015 by modifying the ESC promotion procedure applied in LPPE so as to be applicable to all the local authorities in the country and by incorporating important and useful tips and lessons learnt in the LPPE.

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1.3. Background: Why We Need the ESC Guidelines?

The importance of ESC can be highlighted in the two ways as shown in the figure below in a national context and an ASEAN context.

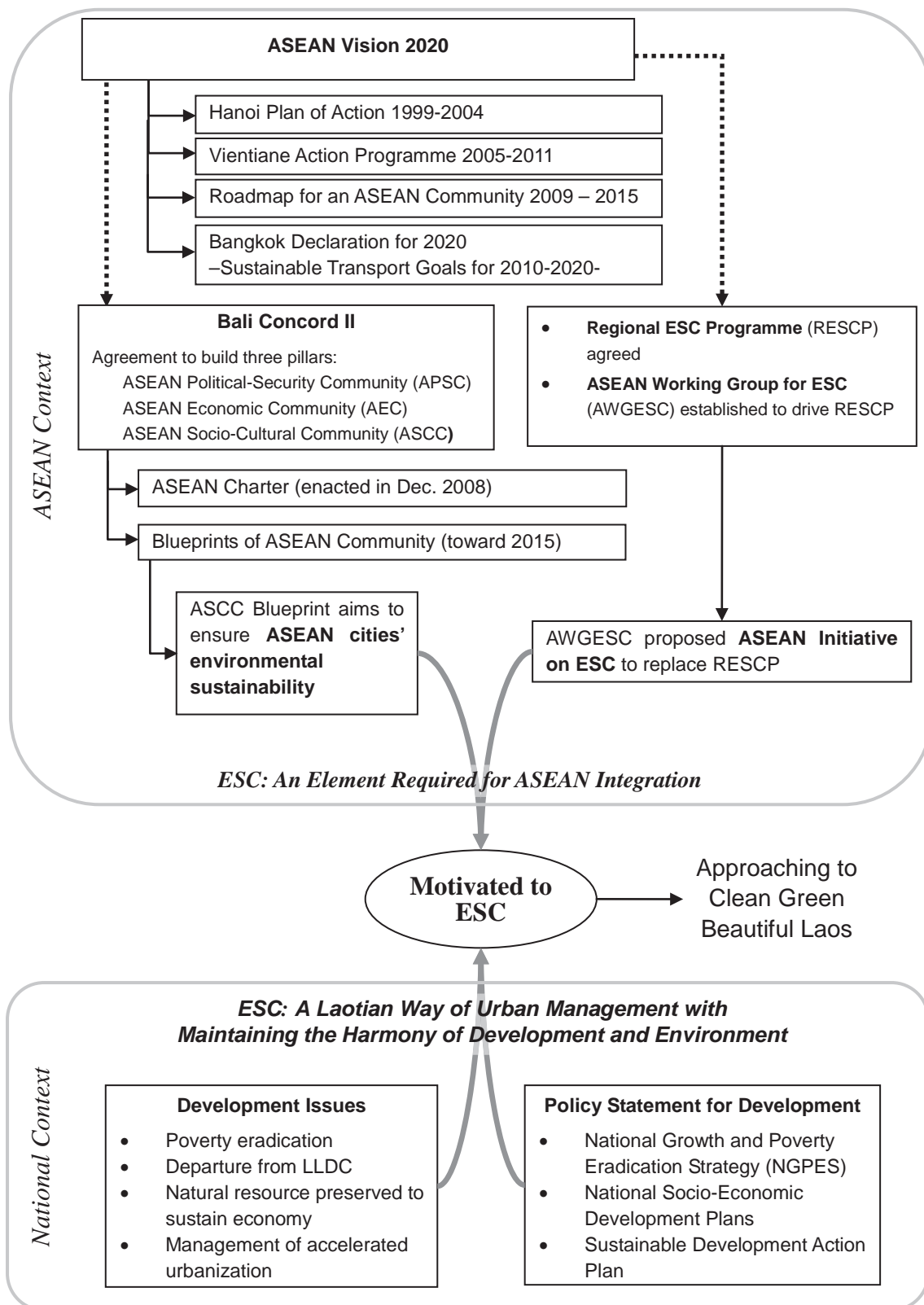


Figure 1: Significance of ESC in Laos

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1.3.1. ESC in National Context

Historically, the Lao economy has been heavily relied on the natural resources. The symbiotic relation with the nature is a backbone of its economy and the relatively high economic growth observed in recent years in the country has been achieved while preserving a balance between development and the environment. Such a balanced correlation, however, should be considered as a simple consequence of the fact that the asset of water and land resources of Laos was abundant while population, as well as human-borne adverse impact on the environment, has been fairly dispersed over the country.

The urbanization in Laos, which has been gentle enough to contribute to the environmental sustainability, however, is gradually presenting an important change. Accelerated urbanization along with economic growth starts to demonstrate a risk to the balance with the environment.

It is particularly to be noted that the shift of population from rural to urban has a significant implication, that the poverty eradication is becoming not just an issue in rural areas but also one of the major urban problems. The poor are those who unwillingly contribute to the degradation of urban environment due to low affordability to prepare appropriate sanitation facility or to use well-maintained, non-exhausting motorbikes. They are, at the same time, those who are most vulnerable to the degraded urban environment as they are easily exposed to such risks as unsafe water and uncollected solid waste.

Meanwhile, the Government of Laos has set a national goal of the departure from LLDC by 2020, and it is commonly in a heart of all the policy papers such as the National Growth and Poverty Eradication Strategy and the 5-Year National Socio-Economic Development Plans. The commitment of the Government of Laos to lead the country to a new status is also seen its formulation of Sustainable Development Action Plan.

The necessity for the country to manage the newly appeared changes due to urbanization and in parallel to step ahead of the LLDC status inevitably urges the country to seek for an innovative approach of city management that is not a simple replication of other proceeding countries. Here is the rationale for ESC promotion.

It is highly required to acknowledge the unique and fundamental character of Laos that has been constructing environmentally harmonized socio-economy in its history, and to aim at Lao-oriented urbanization, or Lao-oriented environmental sustainability in cities.

1.3.2. ESC in ASEAN Context

ASEAN's commitment to sustainable development was expressed as early as 1997 in the ASEAN Vision 2020, which advocates a pursuit of "a clean and green ASEAN with fully established mechanisms for sustainable development to ensure the protection of the region's environment, the sustainability of natural resources and the high quality of life of its peoples".

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After the adoption of Bali Concord II in 2003, the pace for ASEAN integration was accelerated to realize ASEAN Community by 2015, leading to the creation of blueprints from 2009 to 2015 for three pillars of the Community; the ASEAN Political-Security Community, the ASEAN Economic Community and the ASEAN Socio-Cultural Community (ASCC).

In the ASCC blueprint, Section D is entitled as “Ensuring Environmental Sustainability”, stipulating that “ASEAN shall work towards achieving sustainable development as well as promoting clean and green environment”. Further, Section D.5 “Promoting quality living standards in ASEAN cities/urban areas” has set an objective as “Ensure cities/urban areas in ASEAN are environmentally sustainable, while meeting the social and economic needs of the people”.

Such development of a political framework has endorsed by institutionalization of ASEAN Senior Officials on the Environment (ASOEN, 1989) and six working groups under the ASOEN. One of them is ASEAN Working Group for Environmentally Sustainable Cities (AWGESC), which is to develop strategies and action plans to drive the ASEAN Initiative for ESC under the framework of ASCC Blueprint.

Consequently, the ESC promotion is considered to be one of the elements that require every effort to all the ASEAN countries in a view of ASEAN integration.

1.4. Operation of the ESC Guidelines

1.4.1. ESC Guidelines in the Environmental Policy of Laos

The Lao government first promulgated Environmental Protection Law in 1999. It has been serving a fundamental framework for all the environmental policies in the country and other relevant environmental laws and regulations have been emerged from the Law.

At the country level, there are National Environmental Strategy and National Environmental Action Plan. The current publication of the former is targeting the year of 2020, while the latter uses the same time frame with National Socio-Economic Development Plan, which is currently in the stage of 2011-2015. Each arm of the local authorities, both local departments under the line ministries and offices of local administrations, in turn develop their Action Plans in their jurisdiction.

The ESC Guidelines will be used to integrate all the policies in the Action Plans relevant to the urban environment and put them in order of sub-sectors. For example, an issue of solid waste management (SWM) may appear in both the Action Plans of Environmental Management and of Public Works and Transport. The application of the ESC Guidelines will refurbish those Action Plans from a distinct view point of SWM and to create an independent SWM plan. Furthermore, the ESC Guidelines will facilitate the appointment of responsibilities, consensus building, and practical implementation of even a small step forward.

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1.4.2. Responsible Agencies to Put the Guidelines into Force

MONRE is the primary agency that is responsible to put the guidelines into force. Pollution Control Department (PCD) is the focal point.

PCD will build an effective network at the national level involving relevant agencies, among which Department of Housing and Urban Planning, Ministry of Public Works and Transport will be the most relevant.

1.4.3. How the Guidelines are Used

PCD of MONRE applies the guidelines as a policy tool for Clean Green Beautiful Laos, in directing local authorities to take step-by-step actions. PCD gives an initial momentum to the local authorities, assists their attempts to be on a right track, and elaborates the guidelines to be more applicable and usable.

The local authorities can be referred to various organizations related to city environment and development. The guidelines, however, assume that the following agencies are to play roles to lead other agencies in a concerted manner by using the guidelines.

- Department of Natural Resources and Environment (DONRE) and Natural Resources and Environment Office (NREO)
- Department of Public Works and Transport (DPWT) and Public Works and Transport Office (PWTO)
- Urban Development Administration Authority (UDAA and VUDAA)

1.4.4. Implementation Structure of the Guidelines

The Guidelines has been put into force in the following approach.

- PCD of MONRE bore the primary responsibility of dissemination and amendment of the Guidelines (draft).
- PCD intended to apply the Guidelines (draft) to promote the implementation of the process flow shown in
- Figure 2 from A to C, up to “the Formulation of Vision for ESC”, in all the provinces over the country by 2015, and to promote the implementation of the rest part of the process flow by 2020.
- PCD reviewed the performance of three pilot cities of LPPE and other local authorities to which the Guidelines (draft) were applied as mentioned above and assessed the practicability of the Guidelines (draft).
- PCD amended the Guidelines (draft) and finalized it by the target year 2015.

- MONRE intends to endorse the finalized Guidelines by issuing an official regulatory document so that the Guidelines are utilized most effectively.

1.4.5. Basic Concept of ESC

Chapter 2 presents the step-by-step procedure of ESC promotion. In going through the procedure, the following basic concept should be taken into consideration.

❖ Proactive Approach

Environmental negative loads must be reduced and diverted at closest to their sources as possible and every effort should be made to prevent their generation in the first place. End-of-pipe approaches are more costly than preventive approaches.

Most of the developed countries and newly developing countries, which experienced heavy burden in tackling environmental issues, have been making a dramatic shift to the environmental-load-less society. Taking account of the difference between the social, economic and cultural conditions of those countries and those of this country, Laos should be in a position to pursue a totally proactive approach, which can preserve and nourish the value of our environment on the course of economic growth.

❖ Ecological Harmony

Population and economic activities are less concentrated in cities in Laos than cities in many other countries. The rural areas and urbanized areas are adjacent, or even intermingled, and that enriches the urban lives in Laos. This further implies that urbanization with greenery in Lao cities has enjoyed the benefit of ecological services, such as purification, dilution, decomposition, generation and renewal. Ecological harmony in cities is the strength of Laos and should be a great potential for environmentally sustainable development.

❖ Coordination

The attempts to ESC will be enhanced by the economic and social activities which are coordinated in a common direction to the environmental sustainability. Such coordination should be the result of mutual understanding by stakeholders, transparent decision making and equity of participation opportunities. It should be also associated with objective examination of cost and benefit, which is only possible when all the stakeholders seriously take the real condition of the environment.

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2 Process Flow of ESC

The process flow for ESC that the guidelines show is largely divided into two stages and six steps.

Stage 1: : Formulation of Vision for ESC

- A) Preparatory Stage: Establishment of Organizational System for ESC Promotion
- B) Study of the Current Status of Urban Environmental Management (UEM)
- C) Formulation of Vision for ESC

Stage 2: Implementation of ESC Vision

- D) Formulation of Action Plan
- E) Implementation of PDCA (Plan-Do-Check-Action) Cycle
- F) Application of Experiences and Lessons to Other Activities and Other Sub-Sectors

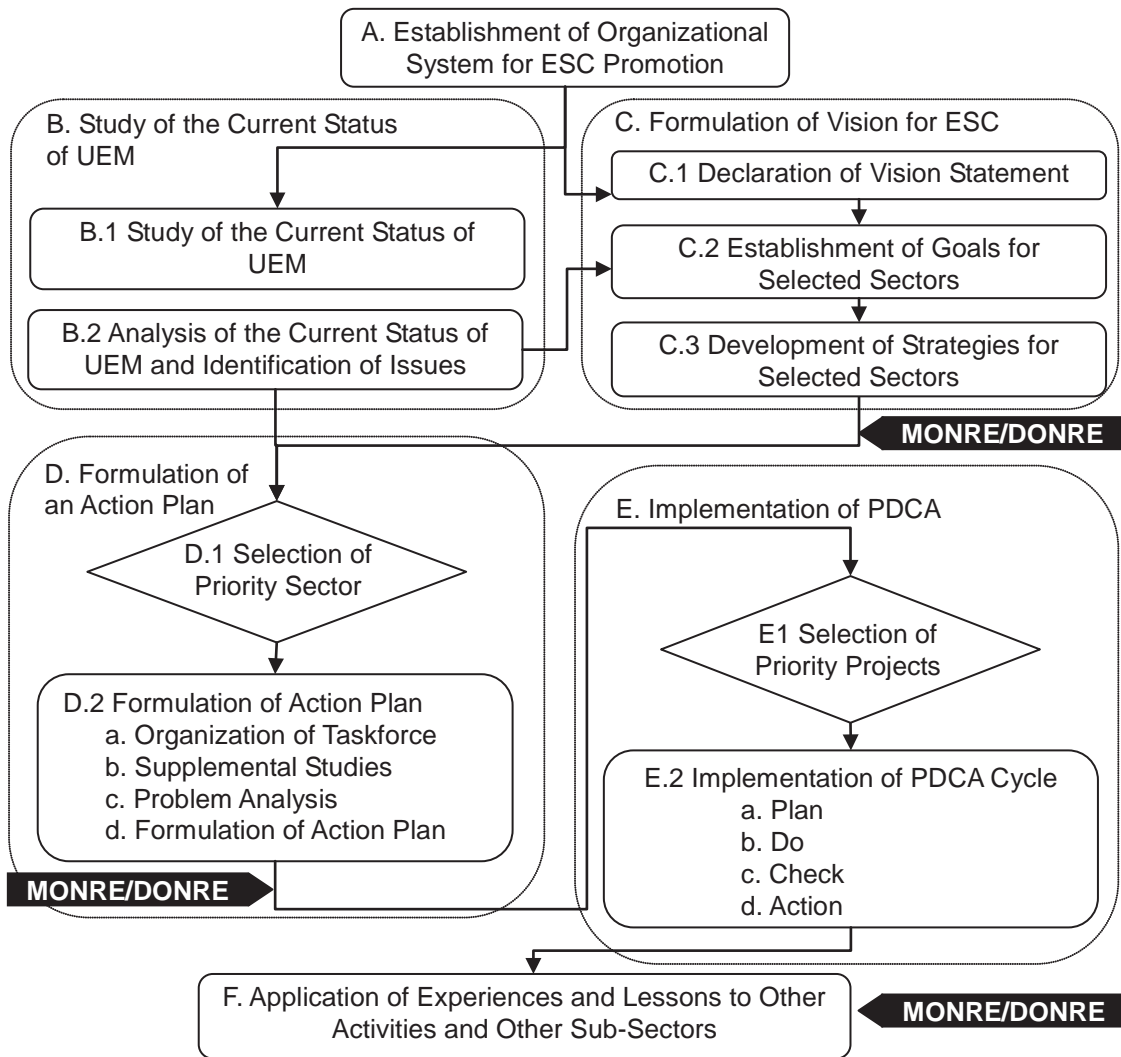
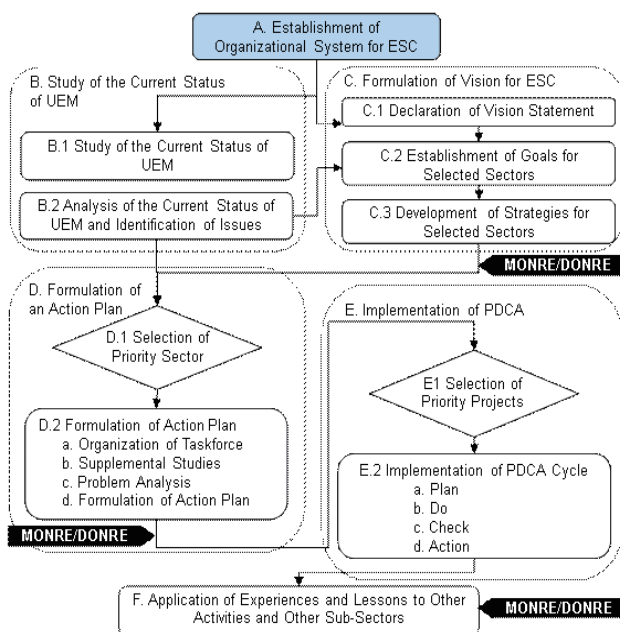


Figure 2: Process Flow for ESC

A. Establishment of Organizational System for ESC Promotion



ESC promotion necessitates the establishment of an organizational system for urban environmental management (UEM) of a city. UEM covers a wide range of environmental sub-sectors including natural resources preservation, pollution control and the management of socio-cultural activities, hence various governmental agencies and other stakeholders are concerned. ESC can not be promoted until a cooperative relationship is established among those concerned agencies and stakeholders.

In order to arrange such an organizational system for ESC promotion, it is advised to set up an ESC Unit under the DONRE of the city as a focal driver for ESC promotion at the provincial level. The ESC Unit of the DONRE will then develop a cooperative relationship between the concerned agencies and stakeholders and proceed the ESC promotion with their cooperation. There can be an ESC Unit in NREO (Natural Resources and Environment Office) as well in order to respond site specific issues at the district level. The figure below shows an expected organizational system for ESC promotion with the ESC Unit in the center.

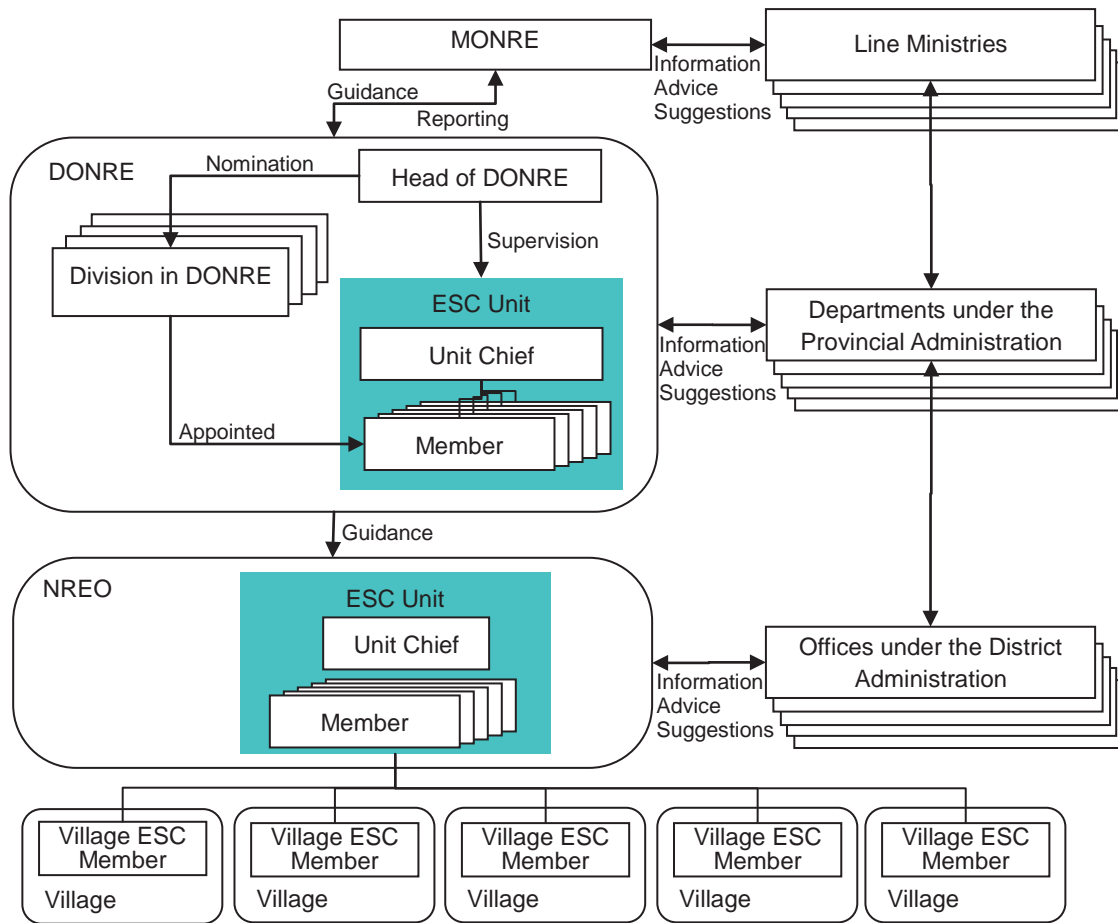


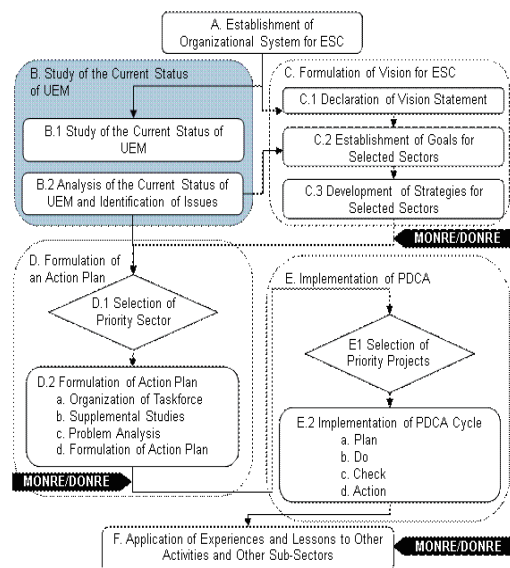
Figure 3: Organizational System for ESC Promotion

B. Study of the Current Status

B.1. Study of the Current Status of Urban Environmental Management (UEM)

Following the establishment of the organizational system, the current status of UEM will be studied.

Environmental sub-sectors to be studied are proposed as shown in the left column of Table 2-1. These sub-sectors are the integration of those used in the National Environmental Strategies of Laos and those that are used by JICA to



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understand environmental conditions in an area of a certain development project prior to the environmental impact assessment. The UEM are divided into three areas namely social environment, natural environment and socio-living environment, and these are further divided into 12, 7 and 10 sub-sectors respectively, or 29 sub-sectors in total. Any environmental sub-sectors can be defined according to the local circumstances, but they should be wide enough at this early stage to get an appropriate and overall picture of the city.

The middle column of Table 2-1 shows types of information and data that are considered necessary in this study. Newly acquiring all these information and data can require heavy work force and high cost. Instead, the existing information and data possessed by different organizations should be collected and compiles as much as possible. The right column of Table 2-1 lists organizations that can be asked for information.

Table 2-1: Types of Information of UEM and Organizations to be asked for Information

Sub-sectors		Types of Information/Data	Organization
Social environment			
1	Local economy	<ol style="list-style-type: none"> 1. Financial and economic index (GRDP (Gross regional domestic product), Budgets of local authorities) 2. Population (including migration) 3. Unemployment rate 	MPI/ MICT
2	Land use	<ol style="list-style-type: none"> 1. Current land use 2. Land use plan 3. Change of land use 	MONRE/ DONRE
3	Traffic and road condition	<ol style="list-style-type: none"> 1. Road network map 2. Road pavement rate 3. Traffic jam data 4. Route map of bus transportation 	MPWT/MOPS
4	UEM policy implementation	<ol style="list-style-type: none"> 1. 5-year environmental management action plan 2. Environmental management annual report 3. Implementation status of EIA 	MONRE/ MPWT/ UDAA
5	Poverty	<ol style="list-style-type: none"> 1. Poverty eradication strategy 2. Population /Household /Village in poverty 	MPI
6	Ethnic people	<ol style="list-style-type: none"> 1. Population/Rate of ethnic people by Village /District 	MPI/MOES
7	Landscape	<ol style="list-style-type: none"> 1. Landscape protection system 2. Landscape protection legislation 	MOHA/MONRE/MPWT
8	Gender	<ol style="list-style-type: none"> 1. Gender on education/job 	Women's Union
9	Children's right	<ol style="list-style-type: none"> 1. School enrollment ratio 	MOES
10	Cultural heritage	<ol style="list-style-type: none"> 1. Site, location and characteristics 	MICT
11	Health	<ol style="list-style-type: none"> 1. Location and types of medical institutions 2. Health indexes (under-five mortality rate, etc.) 	MOH
12	Environmental awareness	<ol style="list-style-type: none"> 1. Public opinion survey report 	MONRE/MOES/MPWT

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Natural environment			
1	Storm-water management	1. Records and reports of disasters caused by heavy rainfalls such as landslides, floods, etc.	MONRE/MPWT
2	Biodiversity	1. Flora, fauna (mammal, fish, bird, reptile, amphibian)	MONRE/ MOAF
3	Forest Resources	1. Conservation Forest/ Protection Forest/ Production Forest	MONRE/MOAF
4	Urban Green Area	1. Location, Area, Attraction	MONRE/MPWT/UDAA
5	Nature reserve	1. Value of protected area	MONRE/ MOAF/ MPWT
6	Global warming	1. Activities related to climate change	MONRE
7	Mineral resources development	1. Mining development records	MONRE/MOEM
Socio-living environment			
1	Air quality	1. Qualitative or quantitative monitoring data 2. Monitoring point 3. Public complaints 4. Results of vehicle emission inspection	MONRE/MOIC/ MPWT
2	Water quality	1. Qualitative or quantitative monitoring data 2. Monitoring point 3. Public complaints 4. Odor from water bodies 5. Stagnation in waterways	MONRE/MOIC/ MPWT
3	Safe drinking water	1. Service cover rate/area 2. Water purification facility	MOH/MPWT/NPPN
4	Sanitation	1. Percentage of population with adequate sanitation facility	MOH
5	Soil contamination	1. Measured result of chemical/ fertilizer	MOAF /MONRE
6	Solid waste management	1. Collection system 2. Collection service cover rate 3. Recycling system and activities 4. Treatment system (if exist) 5. Final disposal system 6. Hazardous waste management	UDAA/ MONRE
7	Noise/Vibration	1. Complaints from villagers 2. Result of measurement	MONRE/ MPWT/MOIC
8	Land subsidence	1. Groundwater utilization	MONRE/MPWT
9	Odor	1. Complaints from citizens	MONRE/MOIC
10	Accident	1. Number of cases/seriousness	MOPS/MPWT

B.2 Analysis of the Current Status of UEM and Identification of Issues

Using the basic information and data collected, the current status of UEM is analyzed and issues

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are identified. A checklist shown below will be a useful reference in finding issues.

Table 2-2: Checklist for Finding Issues

Sub-sectors		Checklist	Reference
Social environment			
1	Local economy	<ol style="list-style-type: none"> 1. Is the financial/ economic situation of the district or province (GRDP per capita, deficit of the budget, etc.) worse than the others? 2. Is the unemployment rate of the district or province worse than the others? 3. Is the population concentration in the urban area serious? 4. Is the population increasing? 	<ol style="list-style-type: none"> 1. Target GDP per capita in 2015: 1,700 US\$ at 2011 price in 7th NSEDP¹ 2. Less than 2 % in Laos in 7th NSEDP
2	Land use	<ol style="list-style-type: none"> 1. Is there a land use plan? 2. Is the land use regulated? 3. Is there illegally constructed building? 4. Are the green area and wetland decreasing? 	
3	Traffic and road condition	<ol style="list-style-type: none"> 1. Is the traffic seriously congested? 2. To what extent are the roads paved? 3. Do the main roads have safe sidewalks? 4. Is public transportation service adequately provided? 	
4	UEM policy implementation	<ol style="list-style-type: none"> 1. Is the implementation of the 5-year environmental management action plan properly monitored? 2. Is the achievement of environmental policy annually reported to the organizations at the higher level or governor? 3. Is the information on environmental conditions and environmental policy implementation available to the public? 4. Is the environmental impact assessment system adequately functioning? 	
5	Poverty	<ol style="list-style-type: none"> 1. What is the poverty indicator (road access, health care, education, income, or else)? 2. How many villages, households and people under the poverty line are there? 3. How is the prospect of solution? 4. Is the gap between the rich and the poor serious? 	2. MDG ² of Proportion of people under the poverty line in Laos: 24 % in 2015
6	Ethnic people	<ol style="list-style-type: none"> 1. What is the ethnic composition? 2. Is there a race problem? 3. Are there any educational issues related to the race problem? 	

¹ The Seventh National Socio-Economic Development Plan 2011-2015, Lao People's Democratic Republic, 2011

² 2015 target of the "Accelerating Progress Towards the MDGs, 15 September 2010" (MDGs)

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		4. How is the prospect of solution?	
7	Landscape	<ol style="list-style-type: none"> 1. Is the system (legislation, administrative system, etc.) to preserve the landscape established? 2. Is there consciousness among the people on landscape preservation? 3. Is the preservation of landscape addressed in strategies/action plans of the local authority? 4. Is an impact on landscape taken account of in development/construction projects? 5. Is there any built structure that affects landscape? 	
8	Gender	<ol style="list-style-type: none"> 1. Is there any gender discrimination concerned with literacy and education? 2. Are the activities of Women's Union effective? 3. What is the portion of women among the government staff? 	1. MDG of number of girls per 100 boys enrolled in all the levels of education: 100 in 2015
9	Children's right	<ol style="list-style-type: none"> 1. Can children go to school even in a remote area? 2. What is the percentage of children who cannot attend school? 	2. MDG of net primary enrolment rate: 98% in 2015
10	Cultural heritage	<ol style="list-style-type: none"> 1. Has the cultural heritage been conserved properly? 2. Is there an opportunity for a developer to consult with authorities about the conditions for development projects? 3. Is the communication between MPWT and MICT well developed? 	
11	Health	<ol style="list-style-type: none"> 1. What is the percentage of local population who has good access to primary health care? 2. Is the under-five mortality rate (per 1,000 live births) high? 3. How much is the measles immunization coverage among one-year-olds? 4. Is there a local action plan to improve the situation? 	<ol style="list-style-type: none"> 2. MDG of under-five mortality rate: 55 in 2015 3. MDG of proportion of one-year-old children immunized against measles: 90% in 2015
12	Environmental awareness	<ol style="list-style-type: none"> 1. Is the environment preservation consciousness spread in people? 2. Are the communities paying attention to the maintenance of neighboring canals/waterways? 3. Are the open space/roadsides/other public places often subject to littering? 	
Natural Environment			
1	Storm water management	<ol style="list-style-type: none"> 1. Is there an area of slope failure or landslide? 2. What is the problem with rainwater drainage? 3. How often does flooding or submergence occur? 	
2	Biodiversity	<ol style="list-style-type: none"> 1. Are there any areas to be protected for the conservation of biodiversity? 2. Are there any areas to be paid attention prior to development? 	

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		3. How are important flora and fauna distributed and protected?	
3	Forest resources	1. Where are the Conservation Forest, Protection Forest and Production Forest designated at the national, provincial and district levels located? 2. Are they managed and monitored properly?	
4	Urban green area	1. Where are the areas of urban greenery? 2. How large are they? 3. Is the area large enough for the population?	Park area in Vientiane: 0.26m ² per person ³
5	Nature reserve	1. Where are the nature reserves? 2. How large are they? 3. How are they valued? 4. Are they managed and monitored properly?	
6	Global warming	1. Are there any impacts given by climate change such as abnormal draught and flood? 2. Is the significance of the climate change issue properly recognized? 3. Is the influence to climate change given by activities such as open waste dumping and forestry deterioration well understood? 4. Is a local action plan prepared and implemented?	
7	Mineral resources development	1. Are the mineral resources development projects properly registered? 2. Is the implementation of the environmental conservation activities such as acid wastewater treatment and mining residual disposal by the project proponents adequately monitored?	
Socio-living environment			
1	Air quality	1. Is air pollution serious? 2. Is air quality legally regulated? 3. Is air quality monitoring conducted in accordance with environmental standards? 4. Is the responsibility of air quality management clearly allocated? 5. Is there a plan for air quality improvement? 6. Is vehicle emission inspected? How is the result? 7. Are there many public complaints about air quality?	Agreement on national environmental standards No.2734 /PMO.WREA, 7 Dec 2009.
2	Water quality	1. Is water pollution serious? 2. Is water quality legally regulated? 3. Is water quality monitoring conducted in accordance with environmental standards? 4. Is the responsibility of water quality management clearly allocated? 5. Is there a plan for water quality improvement?	Agreement on national environmental standards No.2734 /PMO.WREA, 7 Dec 2009

³ The Final Report of “[the project for urban development master plan study in Vientiane Capital](#)”, JICA, 2011

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		<ol style="list-style-type: none"> 6. Are there many public complaints about water quality? 7. Is water stagnated in some part of canals? 	
3	Safe drinking water	<ol style="list-style-type: none"> 1. What is the percentage of population covered by water supply system? 2. How is the quality of tap water? 3. How is the quality of drinking water in remote areas? 4. What is the percentage of population without access to safe drinking water? 	<p>4. Proportion of population using an improved drinking water source in 2010⁴:</p> <p>Urban: 77%</p> <p>Rural: 62%</p>
4	Sanitation	<ol style="list-style-type: none"> 1. What is the percentage of population with adequate sanitation facility? 2. Is the installation of septic tanks or other domestic wastewater treatment facilities regulated in urban areas? 3. Are the physical structures of those facilities regulated? 4. Do people remove septage regularly from their septic tanks? 	<p>1. Proportion of population using an improved sanitation facility in 2010:</p> <p>Urban: 89%</p> <p>Rural: 50%</p>
5	Soil contamination	<ol style="list-style-type: none"> 1. Is the import of pesticide and chemical fertilizer properly controlled? 2. Is the proper use of pesticide instructed by the local authority? 3. Are the residual pesticides analyzed? 4. Are there any cases of influences to public health reported? 	
6	Solid waste management	<ol style="list-style-type: none"> 1. What is the percentage of population covered by waste collection service? 2. How much is the waste recycled? 3. Is the boundary of final disposal site designated? 4. Is waste covered by earth after disposed of? 5. How is the infectious health care waste treated? 6. How is the septage treated? 	<p>1. Waste collection coverage rate in area with collection service (population basis)⁵:</p> <p>VTE: 38%</p> <p>LPB: 92%</p> <p>XYB: 39%</p>
7	Noise/vibration	<ol style="list-style-type: none"> 1. Is noise/vibration causing a serious problem? 2. Is noise/vibration legally regulated? 3. Is noise/vibration monitoring conducted in accordance with environmental standards? 4. Is the responsibility of noise/vibration control clearly allocated? 	<p>Agreement on national environmental standards No.2734 /PMO.WREA, 7 Dec 2009</p>
8	Land subsidence	<ol style="list-style-type: none"> 1. Is the groundwater pumped at a large scale causing land subsidence? 2. Are there complains about land subsidence raised by the local people? 	
9	Odor	<ol style="list-style-type: none"> 1. Are there many public complaints about odor 	

⁴ "Progress on Drinking Water and Sanitation, 2012 Updates" by UNICEF and WHO

⁵ Survey on waste collection service by LPPE in 2011

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		problems? 2. Are there any factories emitting offensive odor?	
10	Accident	1. Is there statistics record of traffic accident? 2. Is traffic safety awareness campaign regularly carried out? 3. Are any countermeasures to reduce traffic accidents carried out? 4. Are there any other security problems than traffic accidents?	

Based on the table above, the issues of the UEM are identified and the important environmental sub-sectors that need to be improved are selected. An example of this operation is shown in Table 2-3.

Table 2-3: Identification of Issues and Selection of Important Environmental Sub-Sectors
(Example in the Case of Vientiane Capital)

Sub-sectors			Description of Issues to be Concerned
Social environment			
1	Local economy	✓	Increase of population should be controlled.
2	Land use	✓	Land use should be appropriately monitored and controlled according to instruction of DPWT, DONRE
3	Traffic and road condition	✓	Environmentally sustainable transport should be promoted.
4	UEM policy implementation	✓	The capacity development of staff concerned with UEM is necessary although local decision-making institution have been changed for better in accordance with the government policy.
5	Poverty	✓	Poverty eradication should be promoted according to National Growth and Poverty Eradication Strategy.
6	Ethnic people	-	In VTE Capital, ethnic group, Lao, dominates with about 93% of the total population and there is little problem specifically concerned with ethnic people.
7	Landscape	✓	Urban landscape should be maintained for citizens. Beautiful landscape like water fall should be conserved for urban environment.
8	Gender	-	Awareness activity for gender has been conducted nationwide by Women's Union
9	Children's right	-	Children's right is guaranteed by law and most of all children can go to primary school.
10	Cultural heritage	✓	Cultural heritage should be surveyed prior to alteration of the land preserved for cultural and

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			historical resources.
11	Health	✓	Among nine districts, three districts from the western area, have a higher patient rate between 40% and 50% for the children who are under 5 years of age.
12	Environmental awareness	✓	Waste littering can be found in public areas. People do not have sufficient information and knowledge about the cause and effect of environmental problems.
Natural Environment			
1	Storm-water management	✓	The drainage condition shows improvement year by year, but there are still problems of water clogging and stagnation.
2	Biodiversity	✓	National, Provincial and District Biodiversity Conservation Area should be monitored regularly by relevant agency not to be developed haphazardly.
3	Forest resources	✓	Conservation forest and protection forest should be monitored so that illegal logging cannot be conducted.
4	Urban green area	✓	Urban green area like parks should be increased and conserved for citizens in VTE Capital.
5	Nature reserve	✓	That Luang Marsh is the largest wetland in VTE Capital. It is precious natural resources and also provides local people with economic benefits of aquatic resources, drainage system, flood protection and purification of wastewater. However, it is under increasing threat of loss and deterioration. Conservation should be considered.
6	Global warming	✓	Activity giving impact on global warming is required to be reduced.
7	Mineral resources development	✓	All mineral resources development should be well monitor properly in accordance with the policies and regulation such as National Environmental standard(NES)
Socio-Living Environment			
1	Air Quality	✓	Air pollution is not yet very serious, but negative effect given by mobile sources (vehicles) is emerging. Air quality monitoring and vehicle emission inspection are not insufficiently done.
2	Water Quality	✓	The water quality of canals which flow through the urban area is getting worse. Water quality monitoring is not sufficient in terms of both hardware (equipment and facility) and software (human resources and institutional system).

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3	Safe Drinking Water	–	According to the national policy for water supply, service ratio will be 100% in urban area and 90% in rural area by 2015, and moreover the whole area of VTE Capital will be covered with water supply service by 2020.
4	Sanitation	✓	Wastewater is discharged to natural water body without adequate treatment.
5	Soil Contamination	✓	Chemical fertilizer and pesticide should be managed in accordance with the Regulation.
6	Solid Waste Management	✓	Sanitary landfill and 3R (Reduce, Reuse and Recycle) should be promoted.
7	Noise/Vibration	✓	Noise problem is not yet serious but problems due to vehicles are emerging in some limited area in the urban area. The noise monitoring system should be established.
8	Land Subsidence	✓	To monitor the mineral exploitation which's cause of land subsidence especially potassium mining project.
9	Odor	✓	To monitor all factories whose produce bad smell as affect surrounding communities such as slaughterhouse, animal farm, beer sludge treatment facility and so on.
10	Accident	✓	Traffic accidents have been increasing year by year according to increase of vehicles and motorcycles.

✓: Selected sub-sectors considered important for the improvement of urban environment

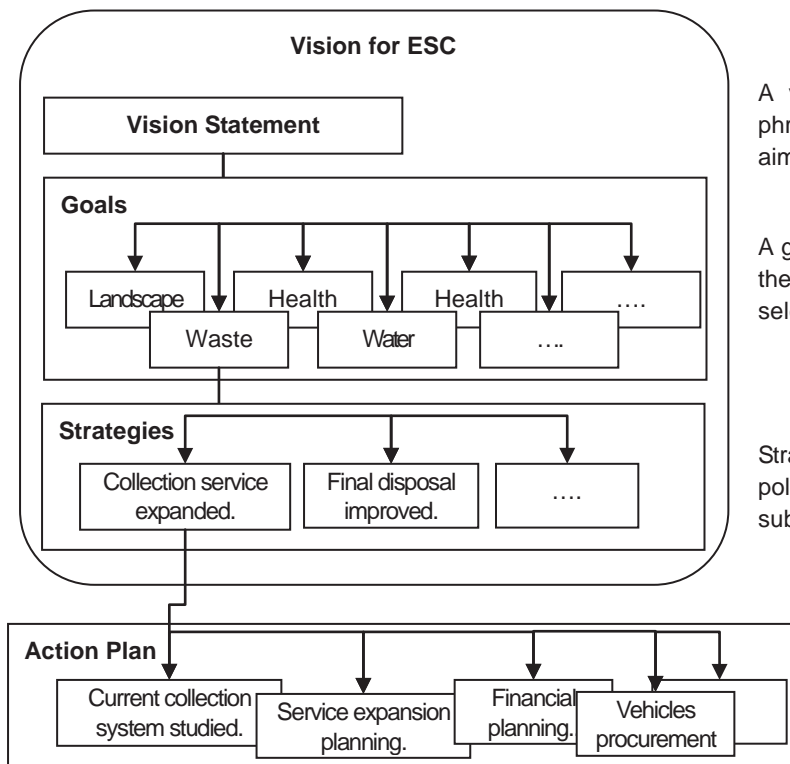
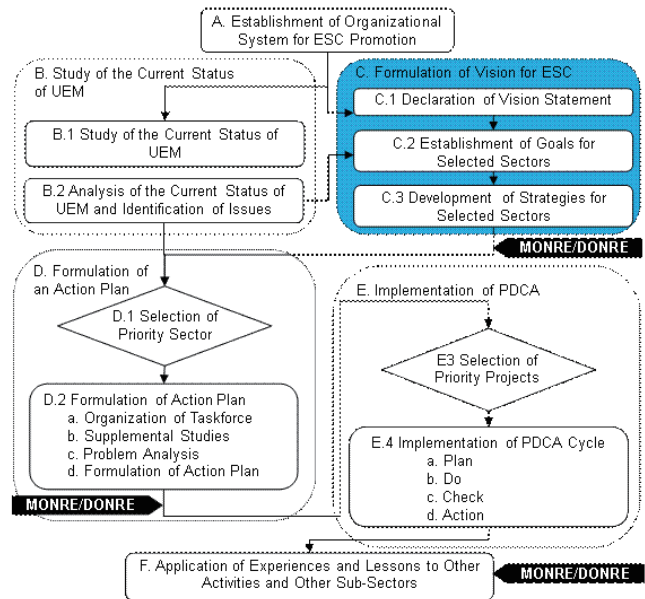
C. Formulation of Vision for ESC

The process of vision formulation includes three steps: setting a vision statement, setting goals towards the vision statement, or expected future status, for each of the important environmental sub-sectors and further setting strategies to achieve the goals for the sub-sectors.

The relationship between the vision statement, goals, and strategies is illustrated in the figure below. The figure

also shows the relationship between the strategies and action plans, which are to

be described in Section D.



A vision statement is a short phrase that shows what the city aims at as an ESC.

A goal is a kind of the vision for the improved sub-sector. Each selected sub-sector has its goal.

Strategies are the improvement policies to realize each sub-sector's goal.

An action plan is made according to the strategies and contains a detail of what to be done by whom and when.

Figure 4: Relationship between Vision for ESC and Action Plan

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C.1 Declaration of Vision Statement

A vision is a simple and clear message to express an ultimate goal as an ESC. It must fully reflect the fundamental characteristics, advantages and disadvantages of the city and must be understood and agreed by as many stakeholders as possible.

Accordingly, this process of vision setting should invite maximum stakeholders for building consensus. The vision for development and the environment of Luang Prabang is shown below as an example.

Example: The Vision for Environmentally Sustainable Luang Prabang

Develop Luang Prabang to be green, clean, and prosperous living harmony with environment preservation and world heritage sustainability forever.

C.2 Establishment of Goals for Selected Sectors

The city can approach to the vision by improving each of the environmental sub-sectors in such a way as to go along with the vision. It is therefore necessary to set a goal of improvement for each of the important environmental sub-sectors towards the vision. This process follows the steps below.

1. Using the result of the study on the current status of UEM, issues are found for all the environmental sub-sectors, and important sub-sectors to be improved are selected.
2. The target year of the improvement is defined. It will be 5-10 years ahead the present.
3. Based on the issues found, a goal of improvement by the target year is determined for each of the important sub-sectors. The goals of the sub-sectors should express the expected condition to be realized by the target year and support the vision that has been set.

The goal of the solid waste management sector of Luang Prabang is shown below as an example.

Example: The goal of the solid waste management sector of Luang Prabang toward the vision

A sound solid waste management system is established in harmony with the city environment.

C.3 Development of Strategies for Selected Sectors

The achievement of the goals of the sub-sectors cannot be straightforward as each sub-sector contains a number of components with different causes and symptoms. Therefore, it requires a set of several strategies according to the problem components. The strategies to be set at this stage will be rather simple and general since they are based on the findings of existing data and information obtained in the UEM study. But they should be set to cover all the basic requirements just enough to achieve the goal. It is recommended to clarify what the goal implies, to develop images of expected future conditions and to rephrase the goal using several practical terms.

The strategies for solid waste management improvement of Luang Prabang are shown below as an example.

Example: The strategies for solid waste management improvement of Luang Prabang

- In order to lighten the load of solid waste collection and final disposal and to protect the environment, "3Rs" are promoted at generation sources.
- Waste collection system is improved through the strengthening of collection service capacity and enhancement of public cooperation.
- Final disposal system is improved to mitigate adverse impacts on the surrounding areas.
- Healthcare waste management is improved.
- The governmental agencies, the private sector, the waste business operators and the local citizens evenly bear the responsibility.

When the Vision containing a vision statement, sectoral goals and strategies were concluded, the ESC unit should consult MONRE/DONRE. PCD makes sure that the Vision is in consistent with its policy direction to Clean, Green, Beautiful Laos.

D. Formulation of Action Plan

An action plan is formulated to practically describe the strategy set out in the previous section. It contains the following elements.

1. Approach: It shows the methodology to materialize the strategy which aims at the sub-sectorial goal. It is, therefore, said to be a detailed strategy.

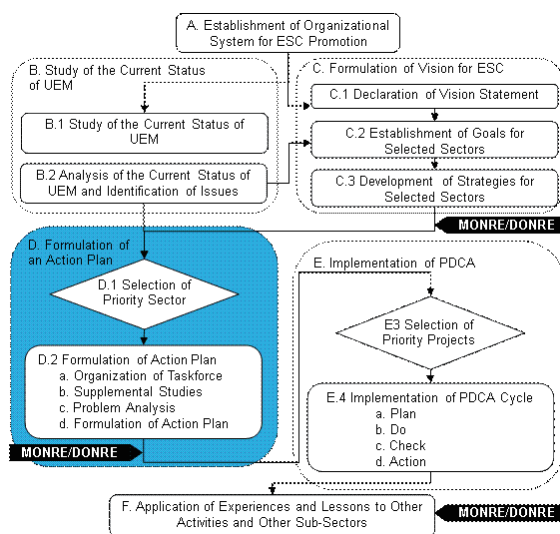
2. Project: It shows what to be done to take the aforementioned approach. It contains specific projects necessary to actually implement the detailed strategy.

3. Activity: It shows what kinds of specific actions to be done to take the project. Each project contains specific activities.

4. Allocation of roles: For every activity, an organization responsible for implementation, another organization that assists implementation and other organizations to be collaborated in implementation are specified and their roles are defined.

5. Time schedule: A time schedule of each activity will be drawn.

6. Cost estimation: Cost required to implement each activity will be approximated and which financial sources are available and how to approach them will be shown.



D.1 Selection of Priority Sector

As the content of the action plan shows as above, action plan formulation requires technical knowledge and judgment of a certain level. This means that if a city does not have such experts but is to pursue the ESC, it is advised to recruit experts with sufficient qualification.

Also, action plan formulation will require in-depth understanding of the current situation in each of the sub-sectors concerned. This is because the goals and strategies set out up to this stage were based only on the UEM study and analysis conducted in Section B, which mostly relied on existing but limited data and information. The city, therefore, will need to prepare budget for necessary supplemental studies.

Accordingly, action plan formulation of each of the sub-sectors entails a certain amount of time and input. Due to the restriction of time and input available to the cities, the ESC Unit under the

DONRE is advised to prioritize the sub-sectors for which action plans are to be formulated taking the Vision for ESC of the city into consideration. The ESC Unit will then need to organize a selection committee that consists of representatives from organizations relevant to UEM and select priority sub-sector(s).

D.2 Formulation of Action Plan

D.2.1. Organization of Taskforce

The action plan of the priority sub-sector must clarify which organizations carry out which implementation activities from when and how. Such task must start with detailed understanding of current conditions and important issues of the sub-sector through supplemental studies. Therefore, prior to action plan formulation, the ESC Unit is recommended to organize a taskforce for action plan formulation, which consists of representatives of organizations relevant to the sub-sector and experts.

D.2.2. Implementation of Supplemental Studies

The first question for the taskforce is whether the supplemental studies are needed for action plan formulation. Then if the answer is yes, an implementation organization, methodology and time schedule must be determined. The taskforce further has to secure the necessary input (cost and manpower), and the studies are to be carried out. Examples of the types of supplemental studies are shown below.

Example: The types of supplemental studies required for sub-sectors.

Sub-sector	Types of Supplemental Studies
Landscape	Study of current land use, study of land use transition
Solid waste management	Waste amount and composition study, final disposal amount study
Water quality	Study of water quality, study of pollution loads

D.2.3. Problem Analysis

Result of the supplemental studies will be analyzed to identify the current problems and their structures. Proper understanding of the problems is significantly effective to construct an appropriate and feasible plan for improvement. Also, the strategies, which were set out based on the existing data and information available at the time of the UEM study, may need to be modified by using the results of the supplemental studies.

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In the case of Luang Prabang, specific problems related to Strategy 1 were identified in the supplemental study. They are shown below.

Problems related to Strategy 1 for Luang Prabang, which were found in the results of waste amount and composition survey, and recycling system and collection coverage study:

- Small recycling rate: Only 4.4% of the total waste generation is recycled. The waste recycled at households is only 1.5%.
- Large portion of kitchen and garden waste: Kitchen waste and garden waste, both of which are organic and compostable, account for as much as 69% of waste generated at households.
- Insufficient coverage of waste collection service: As much as 29% of waste is disposed of by households (self-disposal). This indicates insufficient coverage of waste collection service. However, the areas with high self-disposal rate are mostly located in the remote suburban area with poor access. Therefore, the collection service for those areas will be more costly than other areas already receiving collection service.

In addition, similar problems in water environment of Vientiane Capital are summarized below.

Problems related to one of the Strategy for establishment of step-wise wastewater improvement plan in Vientiane Capital, which were found in the results of “the study on improvement of water environment in Vientiane city.”

- Combined open sewer systems: Existing system of conveying the wastewater is two major canal networks, namely Hong Xeng and Hong Ke. They are so-called combined open sewer systems, which convey mainly wastewater in the dry season, and convey rainwater and wastewater together in the wet season.
- Domestic wastewater as a dominant source of water pollution: In the canal system, pollution loads of domestic water use origin are dominant sources, which account for more than 50 % of total pollution loads.
- Surviving aquatic lives in the river system including canal network: In the rainy season, various fishes could be found even in the canal water.
- Issues of modern centralized sewerage network: If a modern centralized sewerage system is adopted for installation with pipe network, the existing canal will be dried up in the entire year only excluding the raining period in the wet due to no natural watersheds in most of the canal systems.

- How harmonize engineering intervention with surviving natural environment: Possibilities to restore the damaged water environment have been getting less and less as time passes. Water quality of surface water in the canal system has been getting worse so far as well as environment of canal system itself such as accumulation of sludge on the canal bed and offensive odor from the canal.

D.2.4. Formulation of Action Plan

It should be also noted that in action plan formulation, some kinds of improvement projects require further detailed studies, or often called “feasibility studies (F/S)” for planning. While the supplemental study covers sector-wide issues, the scope of the F/S is, in general, limited to the development of a specific facility and/or infrastructure. The following is an example of the F/S and its content.

Example: F/S for water environment improvement works in the canal systems of Vientiane Capital

The F/S will include:

- Formulation of water environment improvement plan in the existing drainage canal networks through selection of appropriate countermeasures in accordance with particular conditions of individual canal.
- Preparation of preliminary drawings of the proposed countermeasures and their cost estimation.
- Formulation of step-wise implementation plan of the proposed plan.
- The examination of economic viability of the proposed plan.
- Environmental impact assessment for the proposed plan.

Taking all the findings and analysis into consideration, an action plan is formulated for each of the strategies of the priority sub-sector.

Examples of the action plans for Strategy 1 for solid waste management (SWM) in Luang Prabang and Strategy 4 for water environment management (WEM) in Vientiane Capital are shown below.

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Table 2-4: Action Plan (An Example in Case of Strategy 1 for SWM in Luang Prabang)

Items	Content			
Strategy	In order to lighten the load of solid waste collection and final disposal and to protect the environment, "3Rs" are promoted.			
Problems identified	<ul style="list-style-type: none"> • Only 4.4% of the total waste generation is recycled. The waste recycled at households is only 1.5%. • Kitchen waste and garden waste, both of which are organic and compostable, account for as much as 69% of waste generated at households. • As much as 29% of waste is disposed of by households (self-disposal), but providing collection services to the areas with high self-disposal rate is costly. 			
Approach	1.1 "3Rs" are promoted at on-site to reduce waste generation amount.			1.2 Recycling is promoted at off-site by composting
Projects	1.1.1. Reduction of kitchen waste and garden waste at households	1.1.2. Recyclable waste separation at generation sources. (Note 1)	1.1.3 Avoidance of the use of excess packages such as plastic shopping bags. (Note 2)	1.2.1. Reduction of kitchen waste from hotels and restaurants
Activities	Act 1. Project Planning Act 2. Planning of Pilot Project (PP) Act 3. Implementation of PP Act 4. Dissemination of PP	Act 1. Project Planning Act 2. Planning of Pilot Project (PP) Act 3. Implementation of PP Act 4. Dissemination of PP	Act 1. Project Planning Act 2. Planning of Pilot Project (PP) Act 3. Implementation of PP Act 4. Dissemination of PP	Act 1. Project Planning Act 2. Planning of Pilot Project (PP) Act 3. Implementation of PP Act 4. Dissemination of PP
Allocation of roles	Act 1. DONRE, UDAA Act 2. DONRE, UDAA Act 3. DONRE, UDAA Act 4. DONRE, UDAA	Act 1. DONRE, UDAA Act 2. DONRE, UDAA Act 3. DONRE, UDAA Act 4. DONRE, UDAA	Act 1. DONRE, UDAA Act 2. DONRE, UDAA Act 3. DONRE, UDAA Act 4. DONRE, UDAA	Act 1. DONRE, UDAA Act 2. DONRE, UDAA Act 3. DONRE, UDAA Act 4. DONRE, UDAA
Time schedule	Act 1. By June 2012 Act 2. By June 2013 Act 3. By October 2015 Act 4. November 2015 to 2020	Act 1. By July 2014 Act 2. By September 2014 Act 3. By October 2015 Act 4. November 2015 to 2020	Act 1. By June 2012 Act 2. By June 2013 Act 3. By October 2015 Act 4. November 2015 to 2020	Act 1. By June 2012 Act 2. By October 2013 Act 3. By October 2015 Act 4. November 2015 to 2020
Cost	<ul style="list-style-type: none"> • Investment cost born by LPPE • Part of education & monitoring cost born by DONRE & UDAA 	<ul style="list-style-type: none"> • Investment cost born by LPPE • Part of education & monitoring cost born by DONRE & UDAA 	<ul style="list-style-type: none"> • Investment cost born by LPPE • Part of education & monitoring cost born by DONRE & UDAA 	<ul style="list-style-type: none"> • Investment cost born by LPPE • Part of education & monitoring cost born by DONRE & UDAA • Operation cost born by UDAA

Note 1: "Recyclable waste separation at generation sources" PP is divided into two PPs, i.e. "Waste separation project" and "School recycling project". "Waste separation project" is integrated in the "Primary Collection System Project" of Strategy 2.

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Note 2: “Avoidance of the use of excess packages such as plastic shopping bags.” PP is divided into two PPs, i.e. “Eco-basket project” and “Eco-bag project”. In this table as for the Activities and Allocation of Roles both PPs are the same. But for the Time Schedule only “Eco-basket project” is presented.

Table 2-5: Action Plan (An Example in Case of Strategy 4 for WEM in Vientiane Capital)

Items	Content		
Strategy	Step-wise wastewater improvement plan is established and implemented in accordance with characteristics of pollution sources.		
Problems identified	<ul style="list-style-type: none"> • Existing system of conveying the wastewater is two major canal networks, namely Hong Xeng and Hong Ke. They are so-called combined open sewer systems, which convey mainly wastewater in the dry season, and convey rainwater and wastewater together in the wet season. • In the canal system, pollution loads of domestic water use origin are dominant sources, which account for more than 50 % of total pollution loads. • In the rainy season, various fishes could be found even in the canal water. • If a modern centralized sewerage system is adopted for installation with pipe network, the existing canal will be dried up in the entire year only excluding the raining period in the wet due to no natural watersheds in most of the canal systems. • Possibilities to restore the damaged water environment have been getting less and less as time passes. Water quality of surface water in the canal system has been getting worse so far as well as environment of canal system itself such as accumulation of sludge on the canal bed and offensive odor from the canal. 		
Approach	Water environmental improvement works is implemented in the existing drainage networks so as to provide resting places to the citizens by means of restoration of the environmentally-sound water front, preparation of habitats of aquatic lives, and construction of green corridors.		
Projects	1. Formulation of water environment improvement plan.	2. Detailed designing and construction of the facilities, and enhancement of people’s awareness on water environment.	3. Evaluation of improvement effects of the facilities
Activities	<ul style="list-style-type: none"> • Study on present conditions of the existing canal network and selection of appropriate countermeasures against water quality deterioration. • Step-wise implementation plan following the above overall improvement plan 	<ul style="list-style-type: none"> • Detailed design of the proposed facilities aiming at construction of the facilities. • Construction of the facilities for water environment improvement. • Conducting the participatory workshops and activities for water environment improvement. 	<ul style="list-style-type: none"> • Sampling and testing water quality along the canal network. • Examination of the improvement effects of the facilities in water quality.

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Allocation of roles	<ul style="list-style-type: none"> Plan formulation: MPWT/ PTI/DPWT, MONRE/ DONRE 	<ul style="list-style-type: none"> Facility designing and construction works: MPWT/PTI/DPWT Environmental education and awareness: PTI and DONRE 	<ul style="list-style-type: none"> Sampling and testing: MONRE Evaluation: MPWT/ PTI/DPWT, MONRE/DONRE
Time frame with target indicator	<ul style="list-style-type: none"> BOD of surface water in the canal network shall be below 10-12 mg/l even in the dry season by the year 2017. 		
Cost	<ul style="list-style-type: none"> Total cost: 18 million US\$ 		

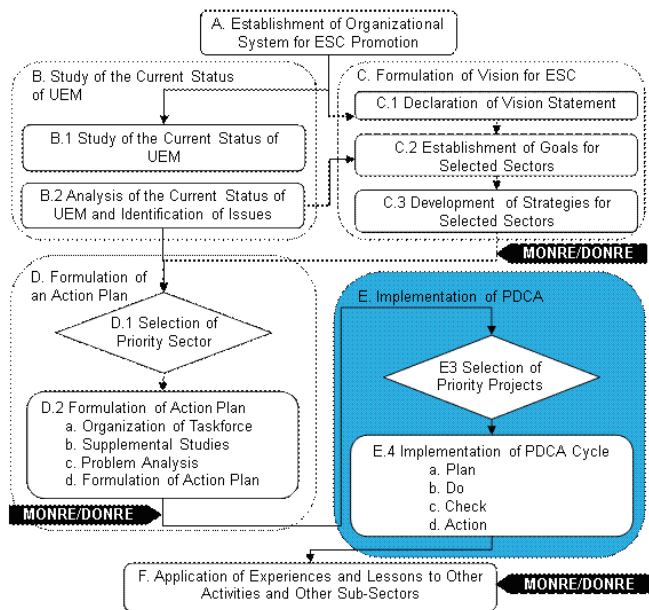
When the Action Plan was developed, the ESC unit should consult Pollution Control Department, MONRE. PCD makes sure that the Action Plan support the materializaion of the Vision in practical and realistic manner.

E. Implementation of PDCA Cycle

E.1 Selection of Priority Projects

As can be seen from the example above, the action plan tells that a wide range of activities should be carried out to achieve the goal of the sub-sector. Also, it shows that each of the activities necessitates appropriate role execution of different parties and allocation of required budget. Consequently, it can be very difficult to carry out all the activities in parallel.

The taskforce should therefore discuss to prioritize the activities in the action plan and select one or some of them to be “priority project(s)”. The fundamental criteria to select priority projects will be whether the input (such as time, manpower, and budget) necessary for their implementation is secured.



E.2 Implementation of PDCA Cycle

E.2.1. Plan

A plan of the project implementation will include following components:

1. Target indicators (e.g. the rate of households who compost their organic waste at the target year) and timing of their monitoring.
2. Activities to be carried out and their sequential order
3. Allocation of roles: Name of appointed organization
4. Time schedule

The plan should be presented in such a format as to facilitate the implementation, monitoring and modification of the plan. The chart shown below is an example of the plan presentation in the case of a priority project of Strategy 1: 3Rs Promotion, Project of Reduction of kitchen waste and garden waste at households in Luang Prabang.

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Planning Chart of the Priority Project							
"Reduction of kitchen waste and garden waste at households"							
Plan execution body: DONRE and UDAA							
Target Indicators	The plan of the project is shown in the table below and the activities up to 2015 of LPPE are considered to be a pilot project (PP).						
	Area of PP:	B. Vat Thaat, B. Pong Vane, B. Pakham (38 households, estimated 210 people)					
	Target of PP:	The rate of the households that continue on-site compost to all the households that started on-site compost in all the pilot villages is 50%.					
After the completion of the PP by LPPE, DONRE and UDAA shall disseminate the PP to other area of LPB based on the lessons learned from the PP.							
Activities	Detailed Activities	Allocation of Roles	Time Schedule				
			2012	2013	2014	2015	2020
Project Planning	Set up project management system	DONRE, UDAA, SJET	■				
	Set up concept	DONRE, UDAA, SJET	■				
Planning of PP	Study and selection of pilot area	DONRE, UDAA, SJET	■				
	Study of composting method	SJET		■			
	Procurement of equipment	SJET		■			
	Preparation of education tools	DONRE, UDAA, SJET		■			
Implementation of PP	Delivery of equipment and instruction of method	DONRE, UDAA, SJET		■			
	Monitoring and awareness raising	DONRE, UDAA, SJET			■	■	■
	Evaluation of the PP	DONRE, UDAA, SJET				■	
	Suggestion for dissemination	SJET				■	
Dissemination of PP	Planning of dissemination	DONRE, UDAA					■
	Dissemination to other area	DONRE, UDAA					■

Figure 5: Example of Planning Chart

E.2.2. Do

Referring to the planning chart, organizations appointed to each activities execute their works. The plan execution body should supervise and coordinate all the works and all the stakeholders involved according to the planning chart.

E.2.3. Check

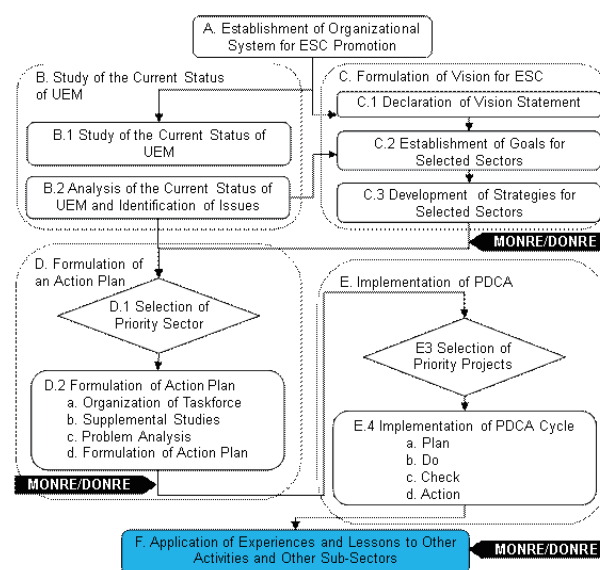
The plan execution body carries out the monitoring of target indicators at the time scheduled in the planning chart. It also needs to recognize the difficulties that are appearing as the project progresses. The causes of the obstacles or difficulties must be well understood in cooperation with relevant stakeholders to find out necessary measures to be taken.

E.2.4. Action

The taskforce, in collaboration with the plan execution body, examines the causes and countermeasures and modify the plan of the priority project. The modification may be required for the action plan if the priority project has to be drastically changed or even cancelled.

F. Application of Experiences and Lessons to Other Activities and Other Environmental Sub-sectors

The experience and lessons derived from the implementation of priority projects up to Process E should be applied to other new projects by (i) ESC Unit of DONRE and (ii) PCD. The application of experience and lessons by the ESC Unit of DONRE is to (i-1) other priority projects of the same sub-sector and (i-2) priority projects of other sub-sectors. The application of experience and lessons by PCD is practiced in (ii-1) the dissemination of ESC_GL and (ii-2) sharing good examples for the promotion of ESC in Lao PDR.



Contents of each application activity are as described below.

F.1. Application of Experiences and Lessons By ESC Unit of DONRE

The ESC Unit of DONRE applies the experiences and lessons obtained from the implementation of the priority project to the development of another priority project, which can be of the same sub-sector or other sub-sectors, by referring to the result of prioritization process carried out in D.1 and D.2.

F.1.1 Application to other priority projects of the same sub-sector

1. The priority projects implemented are evaluated.
2. From the results of the evaluation, the issues and problems of the sub-sector are

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examined and proposals are made for the improvement of the issues and problems.

3. Based on the proposals, the A/P is revised and priority projects are selected.
4. Through Process E, the priority projects are selected, planned and implemented.

F.1.2 Application to other sub-sectors

1. Another priority sub-sector is selected.
2. From the results of the evaluation of the priority projects implemented, the applicable lessons to the newly selected sub-sector are examined and proposals are made for the improvement of the selected sub-sector.
3. Based on the proposals the A/P of the selected sub-sector is formulated.
4. Through Process E, priority projects are selected, planned and implemented.

F.2. Application of Experiences and Lessons By PCD

F.2.1 Dissemination of ESC_GL

The lessons learnt by the ESC Unit should be shared with PCD as the ESC Guidelines are alive, requiring feedbacks and reviews as follows.

1. During the application of the ESC_GL, the ESC Unit may find some issues such as unclear points and difficulties.
2. Those issues associated with ESC_GL application are reported to PCD.
3. PCD takes account of those issues in its activities of ESC_GL dissemination to promote the understanding by the local authorities.
4. If necessary, the ESC_GL is modified to be more useful and easy-to-understand.

F.2.2 Sharing good examples for promotion of ESC

Considering the current limitation of resources available for the local authorities, it is important for PCD to support them to promote ESC. One of the most important supporting works is to provide technical information useful for the promotion of ESC. The PCD acts as technical information hub, which collects and delivers technical information when it is required by the local authorities.

The technical information necessary for the local authorities to promote ESC is as follows:

1. Information on overall ESC promotion:
This includes such information as the experiences of ESC unit formation and examples of visions for ESC. It will be useful for the local authorities in the initiation stage.
2. Information on the improvement of sub-sectors:
This includes, for example, procedures and methodologies of priority project selection of different sub-sectors and outputs produced through project implementation. It will be of help for the local authorities to conduct similar projects.

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In case of LPPE, a lot of pilot projects have been implemented as priority projects of the SWM sector and produced the following important tools and examples as shown in the table below.

Table 2-6: Tools and Examples Collaborated by LPPE

Priority Projects	Tools and Examples
Strategy 1: 3Rs Promotion	
1.1 Reduction of kitchen waste and garden waste at households (On-site Composting)	<ul style="list-style-type: none"> • On-site composting leaflet • Worm composting dissemination video
1.2 Recyclable waste separation project at households	<ul style="list-style-type: none"> • Primary collection leaflet
1.3 School recycling project	<ul style="list-style-type: none"> • School recycling leaflet • School recycling dissemination video
1.4 Avoidance of the use of excess packages, Eco-basket project	<ul style="list-style-type: none"> • Eco-basket leaflet
1.5 Avoidance of the use of excess packages, Eco-bag project	<ul style="list-style-type: none"> • Eco-bag leaflet
1.6 Reduction of kitchen waste from hotels and restaurants	<ul style="list-style-type: none"> • Off-site composting education leaflet • Off-site composting dissemination video
Strategy 2: Collection System Improvement	
2.1 Improvement of existing collection and discharge system, Primary collection system project	<ul style="list-style-type: none"> • Primary collection education leaflet
2.2 Waste collection service expansion	<ul style="list-style-type: none"> • Standard contract agreement of collection service
2.3 Waste collection service expansion by using 5m3 containers	<ul style="list-style-type: none"> • Contract agreement of collection service
Strategy 3: Final Disposal System Improvement	
3.1 Proper management of existing final disposal site	<ul style="list-style-type: none"> • Rules and penalty of KM32 disposal site users in VTE Capital • Rules of KM9 disposal site in XYB district
3.2 Proper management of waste pickers and improvement of their working conditions	<ul style="list-style-type: none"> • Rules of and penalty of KM32 disposal site waste pickers in VTE Capital • Rules of KM8 disposal site in LPB district • Rules of KM9 disposal site in XYB district
Strategy 4: HCWM Improvement	
4.1 HCW collection system establishment	<ul style="list-style-type: none"> • Contract agreement of separate collection service with MIs VUDAA in VTE Capital, UDAA in LPB district and in XYB district • Video for the proper HCW management
4.2 HCW treatment and disposal system establishment	

Appendix 5.

Draft Manual for the Use of National Guidelines for Environmentally Sustainable Cities (ESC_GL) of Lao PDR

1. Introduction

This manual was prepared by PCD of MONRE in cooperation with JICA as an output of LPPE in order for PCD and DONRE to disseminate the ESC_GL and assist the local authorities (LAs) to step forward to ESC by using the ESC_GL. The user of the manual, in other words, the disseminator of the ESC_GL, is therefore mainly PCD and DONRE of each province.

In order for PCD and DONRE to pursue the purpose, the manual is prepared in the form of Power Point Presentation (PPT). The PPT consists of the screens and notes. The user will show the screens to the LAs and explain them the contents of the guidelines by referring to the notes of the PPT.

Contents of the Manual

The contents of the manual are as follows:

1. Introduction
 - 1.1 Objectives of the Guidelines
 - 1.2 Background
 - 1.3 Integration of all policies in the Action Plans
 - 1.4 How the guidelines are used?
 - 1.5 Basic concept of ESC
 - 1.6 Effects of ESC_GL application
2. Basic Structure of ESC_GL
3. Guidelines for ESC
 - 3.1 A) Establishment of Organizational System for ESC Promotions
 - 3.2 B) Study of the Current Status of UEM
 - 3.3 C) Formulation of Vision for ESC
 - 3.4 D) Formulation of Action Plan
 - 3.5 E) Implementation of PDCA (Plan-Do-Check-Action) Cycle
 - 3.6 F) Application of Experiences and Lessons to Other Activities and Other Sub-Sectors

Status of the Manual

The manual was first drafted in the beginning of August 2015. Since the ESC_GL was finalized on September 22 and the manual has to fully reflect the ESC_GL, 2015, it is not finalized yet as of the end of September. In addition PCD intends to carefully check the contents of the manual because the manual is very important tool for them to disseminate the ESC_GL to all the country. This manual is, therefore, still in the draft status.

Manual for Use of Guidelines for Environmental Sustainable City (ESC_GL) of Lao PDR

September, 2015

**Pollution Control Department (PCD)
Ministry of Natural Resources and
Environment (MONRE), Lao PDR**

1

This manual has been prepared by PCD of MONRE in cooperation with LPPE/JICA in order for local administrations to step forward to ESC by using the guidelines.

MONRE is the primary agency that is responsible to put the guidelines into force. Pollution Control Department (PCD) is the focal point.

Contents

1. Introduction

- 1.1 Objectives of the Guidelines
- 1.2 Background
- 1.3 Integration of all policies in the Action Plans
- 1.4 How the guidelines are used?
- 1.5 Basic concept of ESC
- 1.6 Effects of ESC_GL application

2. Basic Structure of ESC_GL

3. Guidelines for ESC

- 3.1 A) Establishment of Organizational System for ESC Promotions
- 3.2 B) Study of the Current Status of UEM
- 3.3 C) Formulation of Vision for ESC
- 3.4 D) Formulation of Action Plan
- 3.5 E) Implementation of PDCA (Plan-Do Check-Action) Cycle
- 3.6 F) Application of Experiences and Lessons to
Other Activities and Other Sub-Sectors

2

1. Introduction (1)

1.1 Objectives of the Guidelines => Policy of MONRE => Promotion of ESC in Lao PDR

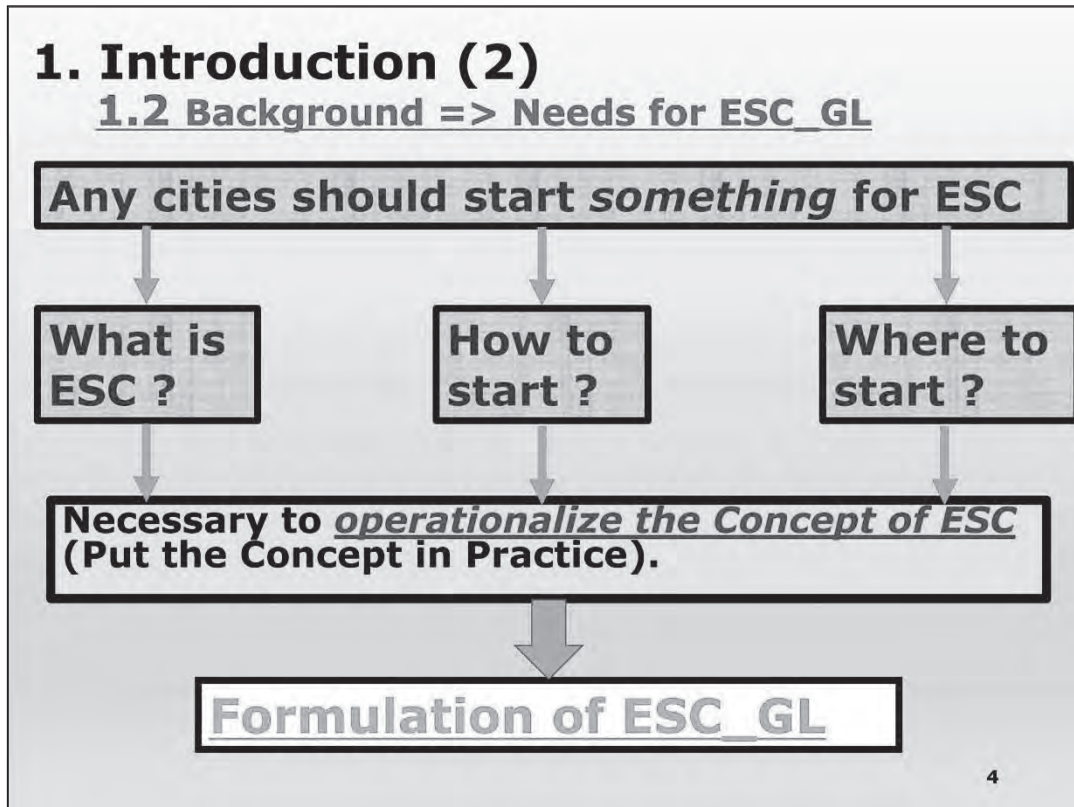


3

The objective of MONRE to publicize the guidelines is:

[To encourage the cities in Laos to be **clean, green and beautiful** so that they become environmentally sustainable without compromising the quality of living of the next generation.]

In this context, "**clean**" means clean air, clean water and clean land without any harm to the human health and eco-system, "**green**" means rich fauna and flora that provide joy of living, and "**beautiful**" means "clean and green" that bring happiness and comfort to the urban lives.

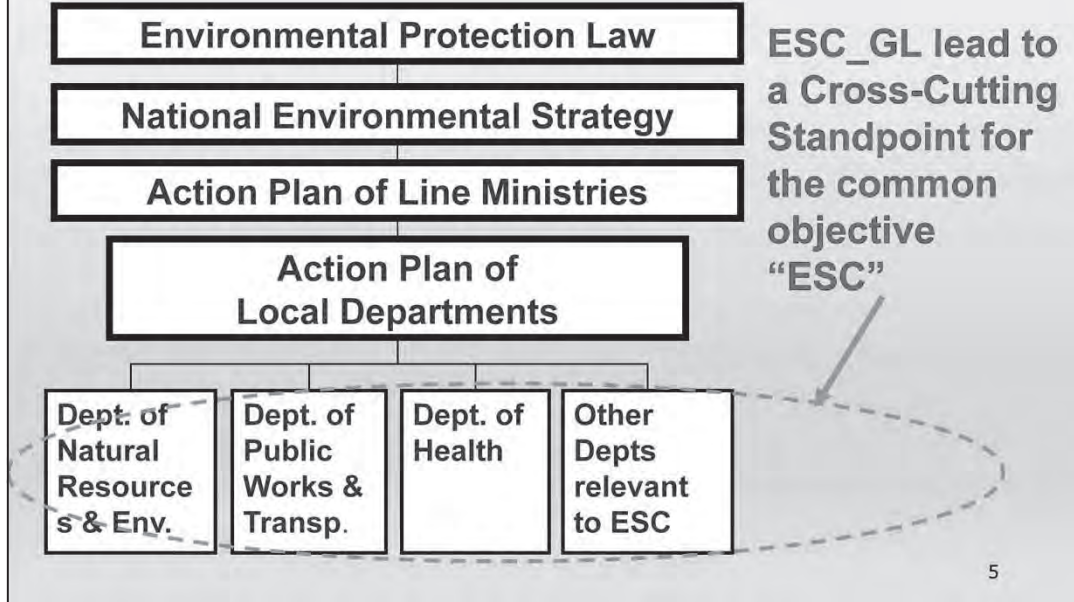


The cities, or urbanized area at any levels of local administration, have been threatened by the adverse effects caused by their nature as cities. Ensuring environmental sustainability is a challenge to urbanization, which is an ever-steadily visible worldwide trend. However, it is also believed to be a challenge that has to be started regardless of when, by whom or how. The guidelines aim to facilitate a solid, however small, step forward to this challenge.

What the guidelines show is the only fundamental framework that is regarded as a widely applicable standard. Their application, however, can be flexible and lax according to the local physical, institutional and economic circumstances. The main concern lies in starting with something, keeping going and expanding it. The guidelines will serve as a momentum to make this happen.

1. Introduction (3)

1.3 Integration of all policies in the Action Plans



The Lao government first promulgated Environmental Protection Law in 1999. It has been serving a fundamental framework for all the environmental policies in the country and other relevant environmental laws and regulations have been emerged from the Law.

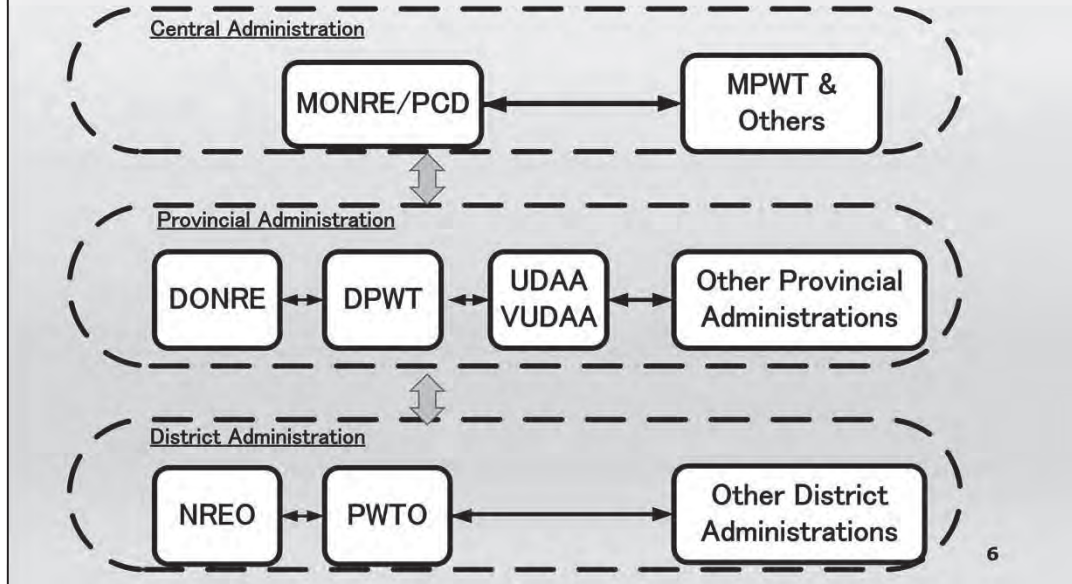
At the country level, there are National Environmental Strategy and National Environmental Action Plan. The current publication of the former is targeting the year of 2020, while the latter uses the same time frame with National Socio- Economic Development Plan, which is currently in the stage of 2011-2015. Each arm of the local authorities, both local departments under the line ministries and offices of local administrations, in turn develop their Action Plans in their jurisdiction.

The ESC Guidelines will be used to integrate all the policies in the Action Plans relevant to the urban environment and put them in order of sub-sectors. For example, an issue of solid waste management (SWM) may appear in both the Action Plans of Environmental Management and of Public Works and Transport. The application of the ESC Guidelines will refurbish those Action Plans from a distinct view point of SWM and to create an independent SWM plan.

Furthermore, the ESC Guidelines will facilitate the appointment of responsibilities, consensus building, and practical implementation of even a small step forward.

1. Introduction (4)

1.4 How the Guidelines are Used?



MONRE is the primary agency that is responsible to put the guidelines into force. Pollution Control Department (PCD) is the focal point.

PCD will build an effective network at the national level involving relevant agencies, among which Department of Housing and Urban Planning, Ministry of Public Works and Transport will be the most relevant.

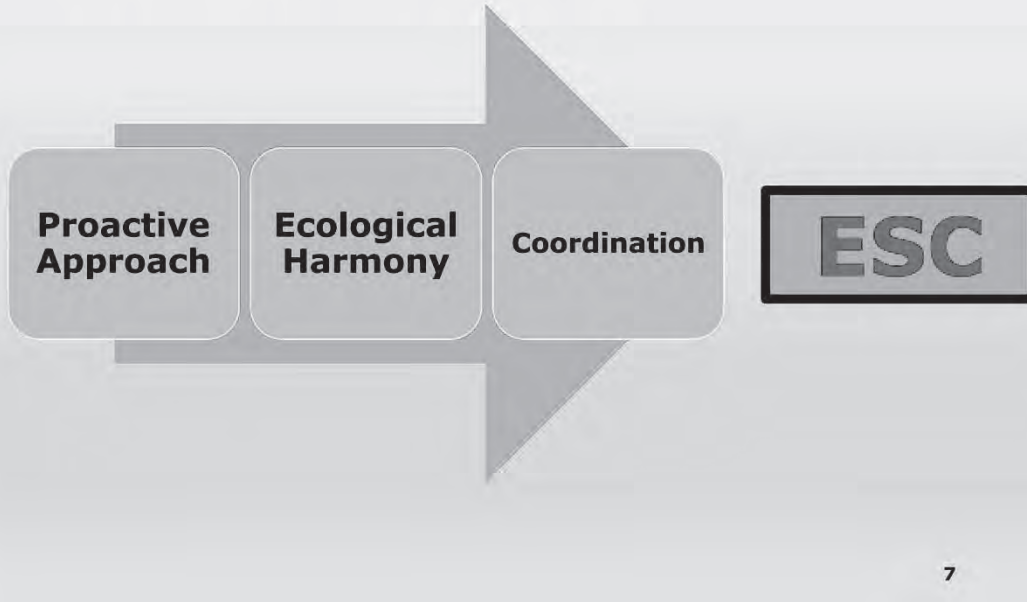
PCD of MONRE applies the guidelines as a policy tool for Clean Green Beautiful Laos, in directing local authorities to take step-by-step actions. PCD gives an initial momentum to the local authorities, assists their attempts to be on a right track, and elaborates the guidelines to be more applicable and usable.

The local authorities can be referred to various organizations related to city environment and development. The guidelines, however, assume that the following agencies are to play roles to lead other agencies in a concerted manner by using the guidelines.

- Department of Natural Resources and Environment (DONRE) and Natural Resources and Environment Office (NREO)
- Department of Public Works and Transport (DPWT) and Public Works and Transport Office (PWTO)
- Urban Development Administration Authority (UDAA and VUDAA)

1. Introduction (5)

1.5 Basic Concept of ESC



Proactive Approach

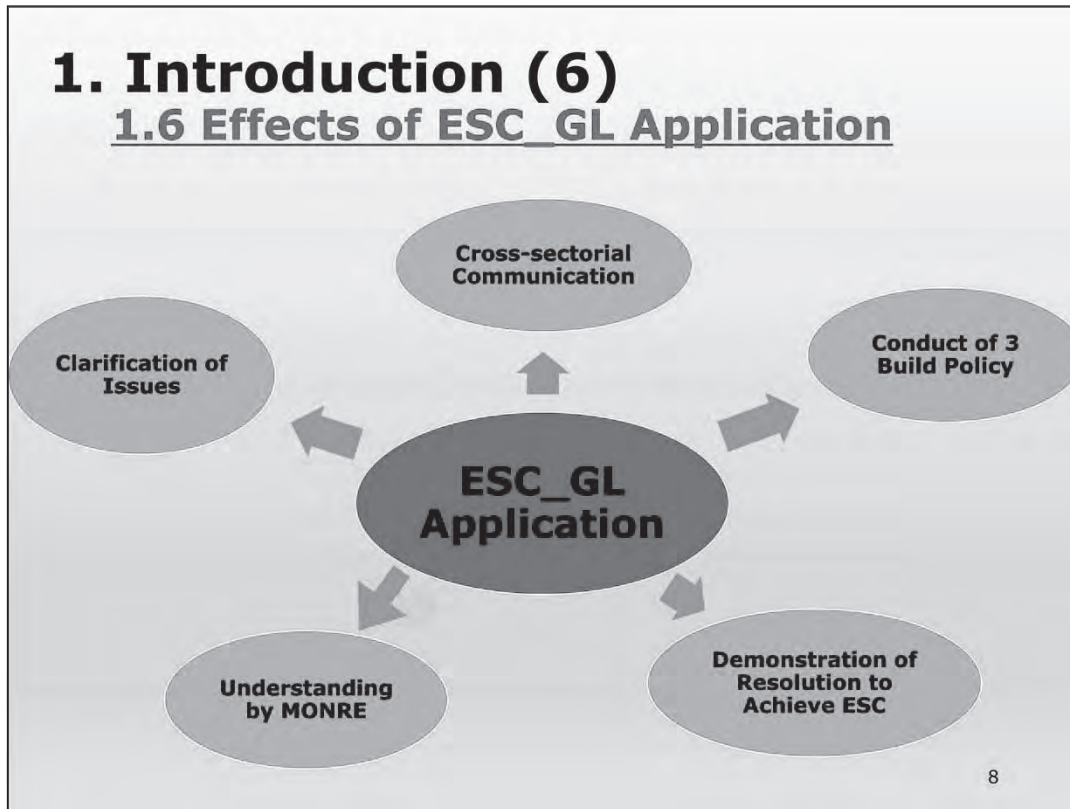
Environmental negative loads must be reduced and diverted at closest to their sources as possible and every effort should be made to prevent their generation in the first place. End-of-pipe approaches are more costly than preventive approaches. Most of the developed countries and newly developing countries, which experienced heavy burden in tackling environmental issues, have been making a dramatic shift to the environmental-load-less society. Laos should be in a position to pursue a totally proactive approach, which can preserve and nourish the value of our environment on the course of economic growth.

Ecological Harmony

Population and economic activities are less concentrated in cities in Laos than cities in many other countries. The rural areas and urbanized areas are adjacent, or even intermingled, and that enriches the urban lives in Laos. This further implies that urbanization with greenery in Lao cities has enjoyed the benefit of ecological services, such as purification, dilution, decomposition, generation and renewal. Ecological harmony in cities is the strength of Laos and should be a great potential for environmentally sustainable development.

Coordination

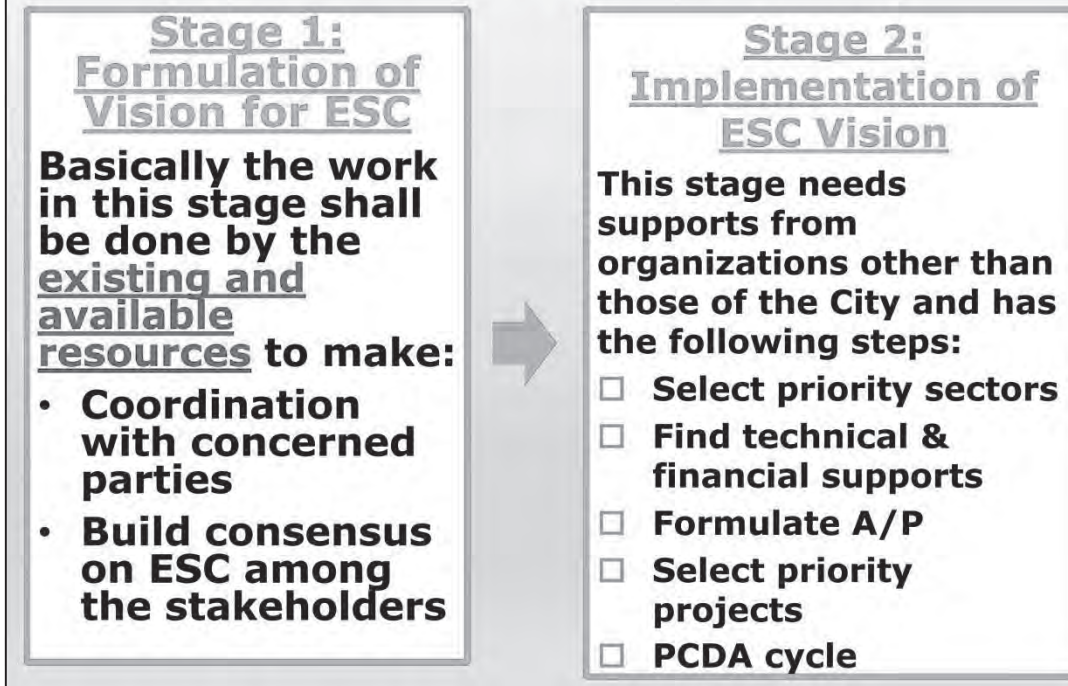
The attempts to ESC will be enhanced by the economic and social activities which are coordinated in a common direction to the environmental sustainability. Such coordination should be the result of mutual understanding by stakeholders, transparent decision making and equity of participation opportunities. It should be also associated with objective examination of cost and benefit, which is only possible when all the stakeholders seriously take the real condition of the environment.



MONRE/PCD found out ESC_GL application brought the following effects:

1. Good opportunity to gather all the relevant personnel to discuss ESC, which is a common, cross-sectorial agenda.
2. Clarification of issues to be dealt with for promotion of ESC.
3. Encouragement to mobilize the available resources from the provincial, district and village levels (in line with "3 Builds Policy"). => Facilitation of Decentralization
4. Demonstration of resolution to achieve ESC by local authorities to external agencies (including funding sources).
5. Understanding by MONRE about the overall environmental status all over the country.

2. Basic Structure of ESC_GL (1)

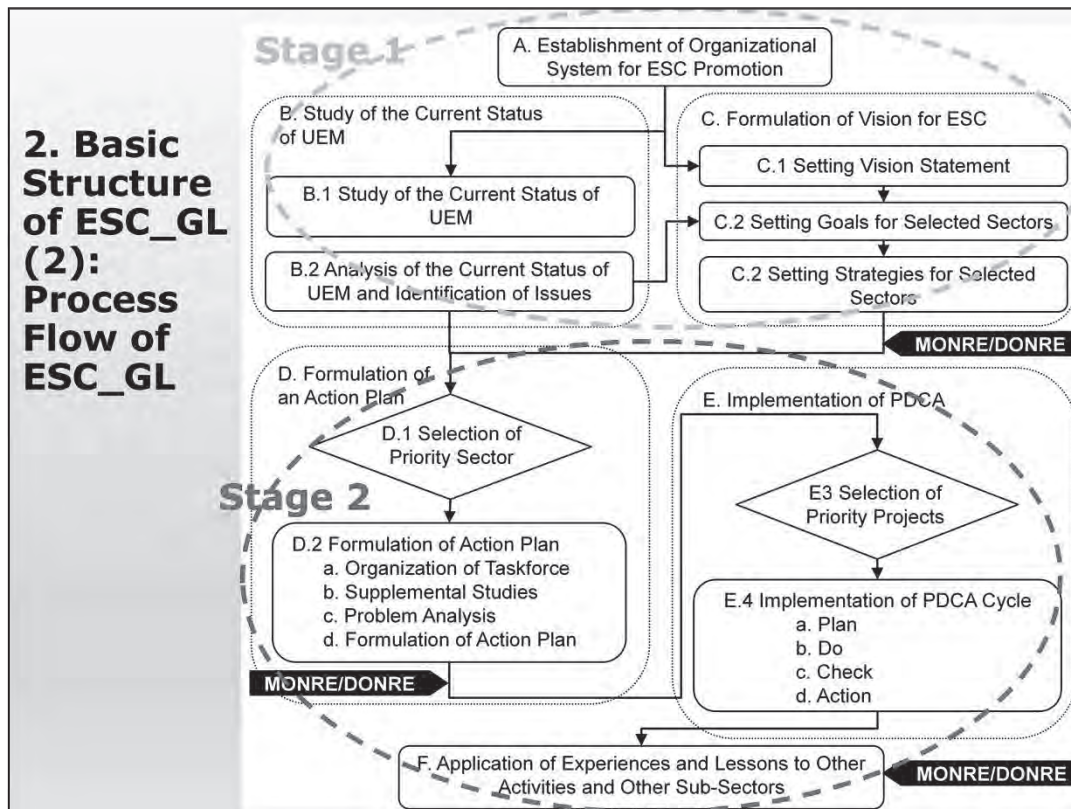


ESC_GL consists of the following two stages:

1. **Stage 1: Formulation of Vision for ESC**; and
2. **Stage 2: Implementation of ESC Vision**

Stage 1 shall be conducted by the existing and available resources of each city (Local Authority) by the coordination of concerned parties and building consensus on ESC among the stakeholders.

Stage 2: Implementation of ESC vision may require technical and financial supports from organizations other than those of the city, i.e. Central Government, International funding agencies, etc.



Both stages are further divided into three processes respectively.

Stage 1 : Formulation of Vision for ESC

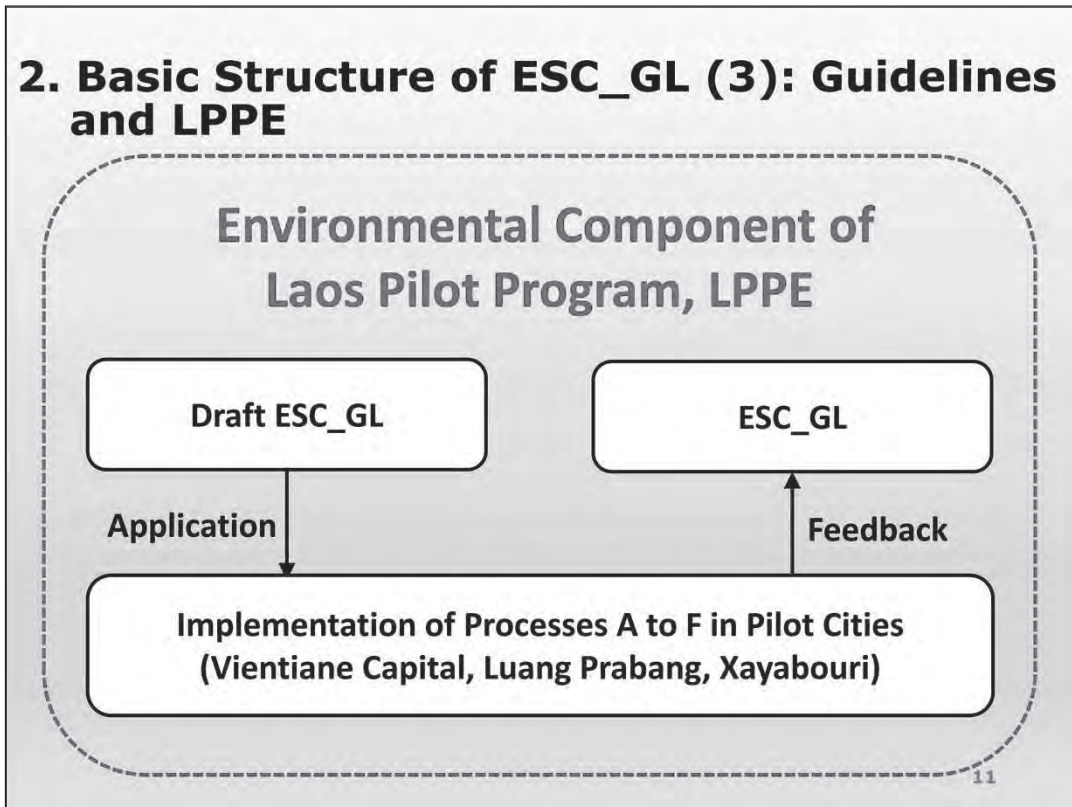
- A) Preparatory Stage: Establishment of Organizational System for ESC Promotion
- B) Study of the Current Status of Urban Environmental Management (UEM)
- C) Formulation of Vision for ESC

Stage 2: Implementation of ESC Vision

- D) Formulation of Action Plan
- E) Implementation of PDCA (Plan-Do-Check-Action) Cycle
- F) Application of Experiences and Lessons to Other Activities and Other Sub- Sectors

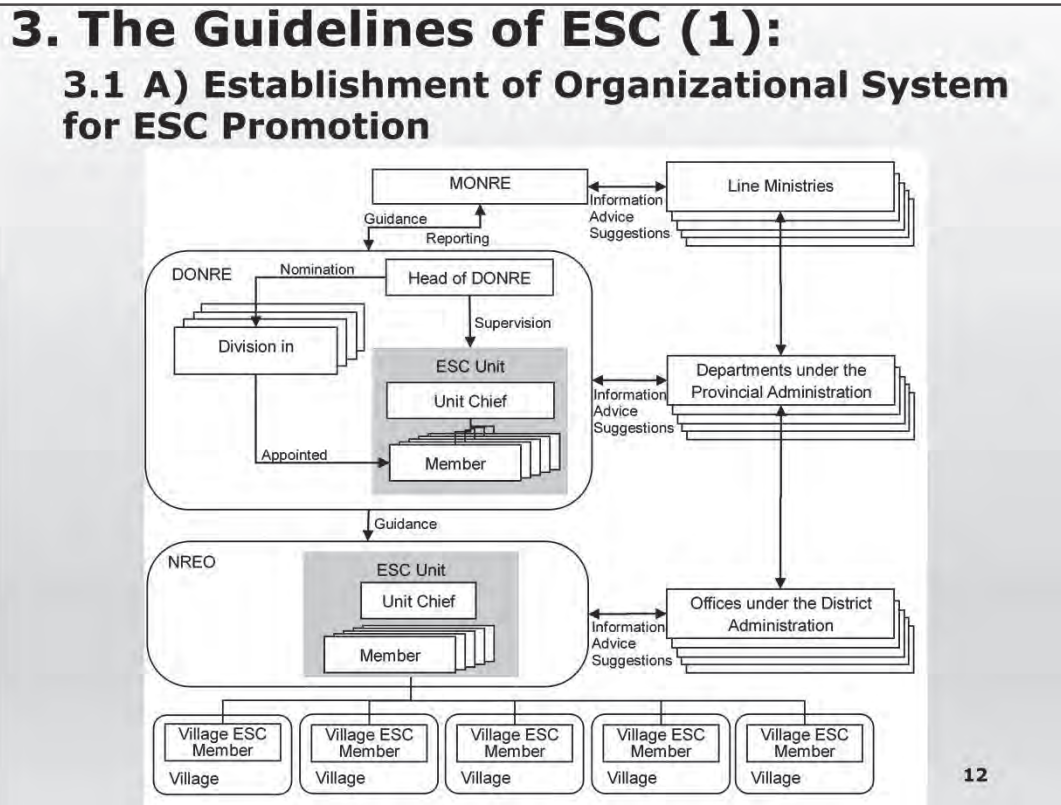
"Up to Stage 1, the urban environmental condition of the city is overviewed and a prospect for the improvement of most of the sub-sectors related to the city is developed.

On the contrary to Stage 1, Stage 2 considers selected specific sub-sectors in order to concentrate technical and financial input available to the local authority.



The Guidelines were drafted as an outcome of the first year activities of “Laos Pilot Program for Narrowing the Development Gap – Environmental Management Component (LPPE)”, which was implemented by MONRE in association with MPWT and with assistance by the Japan International Cooperation Agency (JICA) from 2011 to 2015.

In LPPE, the draft Guidelines were applied in the three pilot cities, Vientiane Capital, Luang Prabang, Xayabouri. Aforementioned processes from A to F were implemented and the applicability of the draft Guidelines was reviewed. The lessons learned in the pilot cities were fed back to the finalization of the Guidelines. This manual introduces various by-products of LPPE, so that the content of the Guidelines can be understood more easily.



Stage 1 starts with Process A, which is the establishment of an organizational system for urban environmental management of the city. UEM covers a wide range of environmental sub-sectors, hence various governmental agencies and other stakeholders are concerned. ESC can not be promoted until a cooperative relationship is established among those concerned agencies and stakeholders.

In order to arrange such an organizational system for ESC promotion, it is advised to set up an **ESC Unit** under the DONRE of the city as a focal driver for ESC promotion at the provincial level. The ESC Unit of the DONRE will then develop a cooperative relationship between the concerned agencies and stakeholders and proceed the ESC promotion with their cooperation. There can be an ESC Unit in NREO (Natural Resources and Environment Office) as well in order to respond site specific issues at the district level. The figure on the screen shows an expected organizational system for ESC promotion with the ESC Unit in the center.

3. The Guidelines of ESC (2):

3.2 B) Study of the Current Status of Urban Environmental Management (UEM) (1)

B.1 Study of the Current Status of UEM (1)

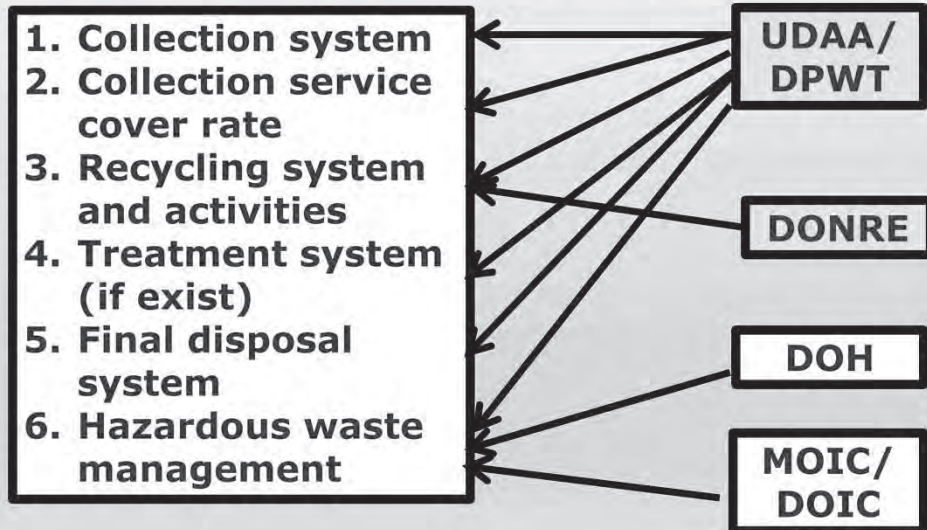


Following the establishment of the organizational system, we have Process B, where the current status of Urban Environmental Management (UEM) will be studied. The UEM are divided into three areas namely **Social Environment**, **Natural Environment** and **Socio-living Environment**, and these are further divided into **12 sub-sectors** (1. Localeconomy, 2. Landuse, 3. Traffic androadcondition, 4. UEMpolicyimplementation, 5. Poverty, 6. Ethnic people, 7. Landscape, 8. Gender, 9. Children'srights, 10. Culturalheritage, 11. Health and 12. Environmentalawareness), **7 sub-sectors** (1. Stormwater management, 2. Biodiversity, 3. Forestresources, 4. Urbangreenarea, 5. Naturereserve, 6. Globalwarming and 7. Mineralresourcesdevelopment) and **10 sub-sectors** (1. Airquality, 2. Waterquality, 3. Safedinkingwater, 4. Sanitation, 5. Soil contamination, 6. Solidwastemanagement, 7. Noise/vibration, 8. Land subsidence, 9. Odour and 10. Accident) respectively, or 29 sub-sectors in total.

3. The Guidelines of ESC (3):

3.2 B) Study of the Current Status of UEM (2)

B.1 Study of the Current Status of UEM (2)



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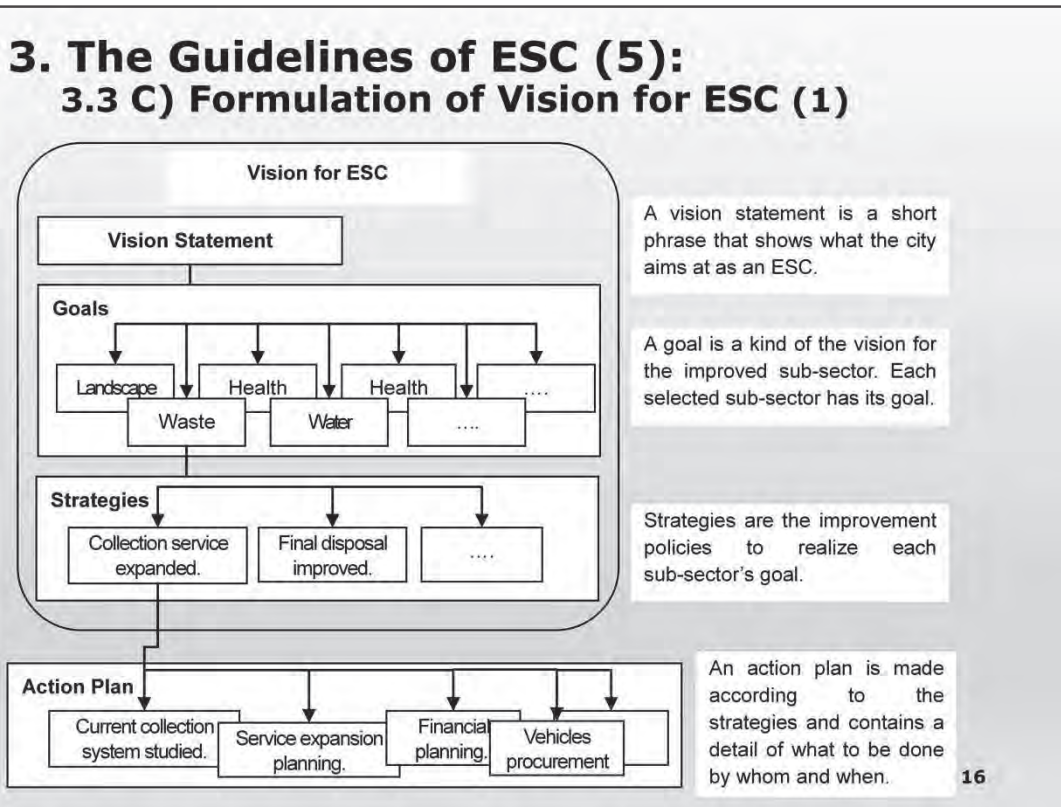
The first step of “the Study of the Current Status of UEM” is to collect existing and available information and data. Table 1 of the ESC_GL provides “Types of Information of UEM and Organization to be Asked for Information” for all 29 sub-sectors. This screen shows how to collect those information in the case of SWM sub-sector as follows:

- Most of information/ data necessary to understand current SWM are obtained from UDAA for Urban Area and DPWT for Rural Area;
- DONRE may have some information/ data on the recycling system and activities; and
- As for the Hazardous waste management especially for management at generation sources, DOH has information/data on healthcare waste management (HCWM) and MOIC/ DOIC may have those on Industrial Hazardous Waste Management.

3. The Guidelines of ESC (4):		
3.2 B) Study of the Current Status of UEM (3)		
B.2 Analysis of the Current Status of UEM and Identification of Issues		
Check List	Results	Issues
1. What is the percentage of population covered by waste collection service?	About 30%	Sanitary landfill and 3R (Reduce, Reuse and Recycle) should be promoted.
2. How much is the waste recycled?	Unknown	
3. Is the boundary of final disposal site designated?	Yes	
4. Is waste covered by earth after disposed of?	No	
5. How is the infectious health care waste (IHCW) treated?	Large portion of it collected & treated together with MSW	
6. How is the septage treated?	Disposed of at MSW dumpsite	

Using the basic information and data collected, the current status of UEM is analyzed and issues are identified. As for a useful reference in finding issues, Table 2 of the ESC_GL provides "ChecklistforFindingIssues" for all 29 sub-sectors. Based on this table, the issues of the UEM are identified and the important environmental sub-sectors that need to be improved are selected. Table 3 of the ESC_GL provides "IdentificationofIssuesandSelectionof ImportantEnvironmentalSub-Sectors (Example in the Case of Vientiane Capital)".

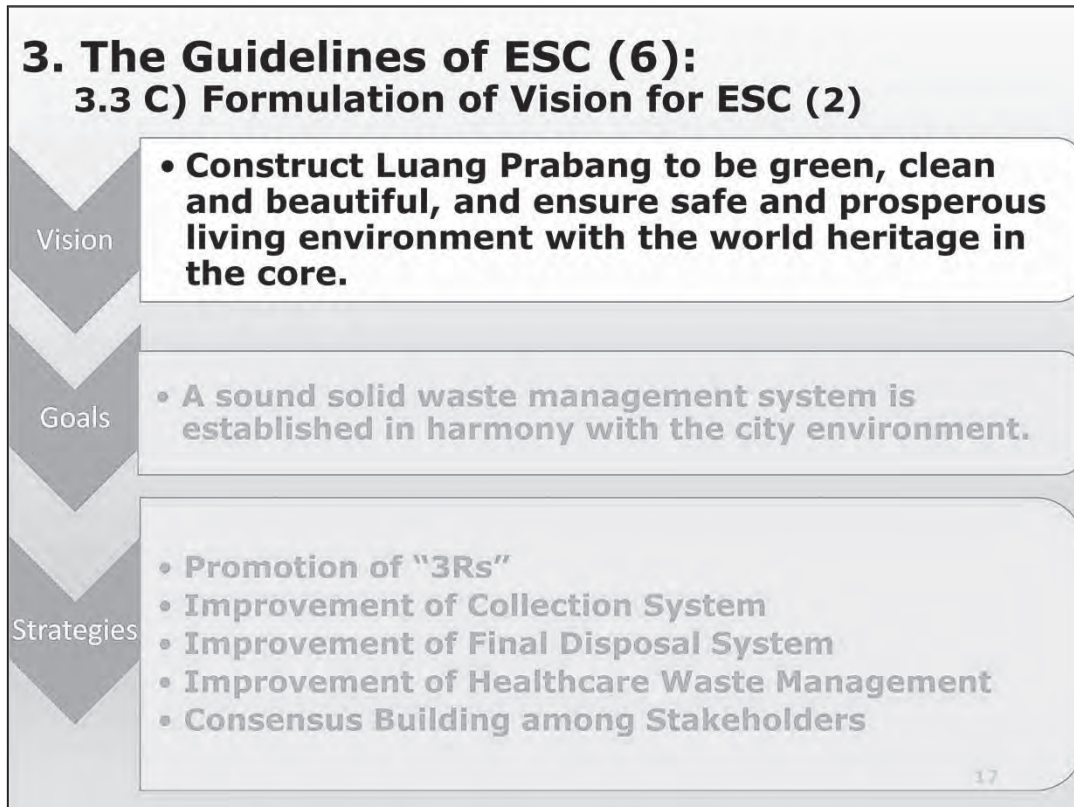
This screen shows how to find issues by using those information in the case of SWM sub-sector in VTE.: Following to the procedure SWM sub-sector in VTE identified the issues of "**Sanitary landfill and 3R (Reduce, Reuse and Recycle) should be promoted.**"



This is Process C, which is the last process of Stage 1. Process C is the process of vision formulation includes three steps:

1. setting a **Vision Statement**, => **A vision statement is a short phrase that shows what the city aims at as an ESC.**
2. setting **Goals towards the vision statement**, or expected future status, for each of the important environmental sub-sectors; => **A goal is a kind of the vision for the improved sub-sector. Each selected sub-sector has its goal.**
3. further setting **Strategies to achieve the goals** for the sub-sectors. => **Strategies are the improvement policies to realize each sub-sector's goal.**

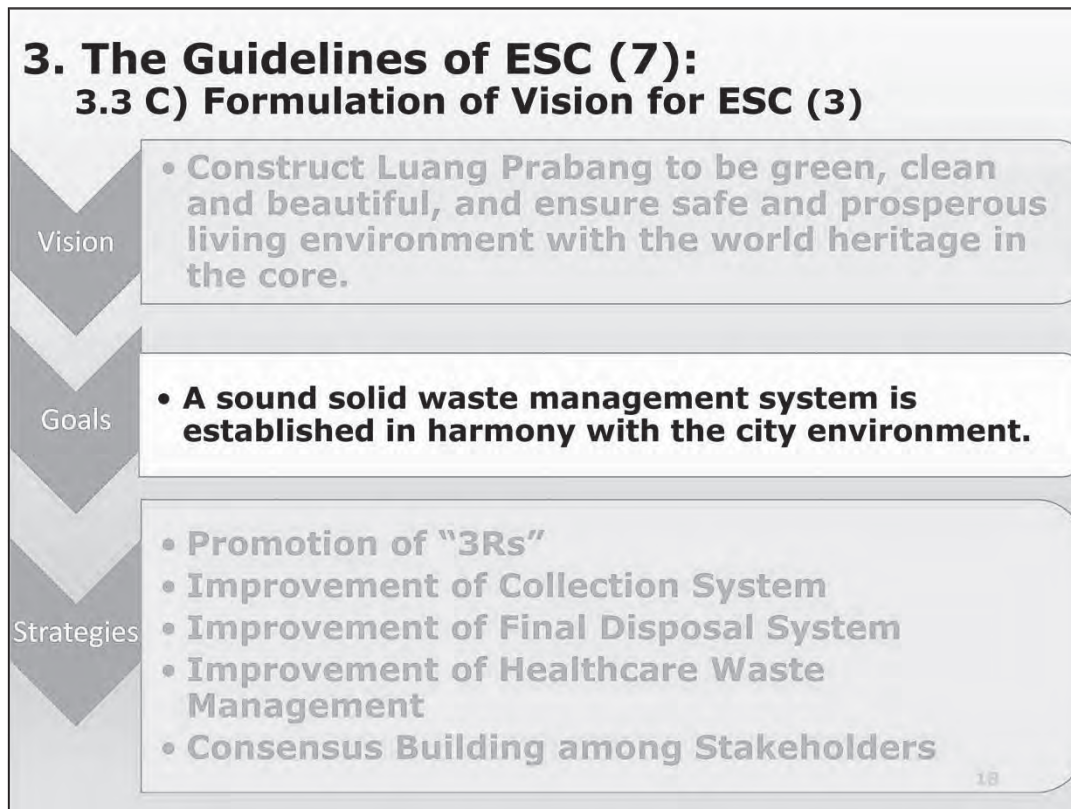
The relationship between the vision statement, goals, and strategies is illustrated in the figure of the screen. The figure also shows the relationship between the strategies and action plans, which are to be described in Section D.



C.1 Declaration of Vision Statement:

A vision is to express an ultimate goal as an ESC. It must fully reflect the fundamental characteristics, advantages and disadvantages of the city and must be understood and agreed by as many stakeholders as possible.

As an example the Vision for ESC of Luang Prabang is to “Construct Luang Prabang to be green, clean and beautiful, and ensure a safe and prosperous living environment with the world heritage in the core.”



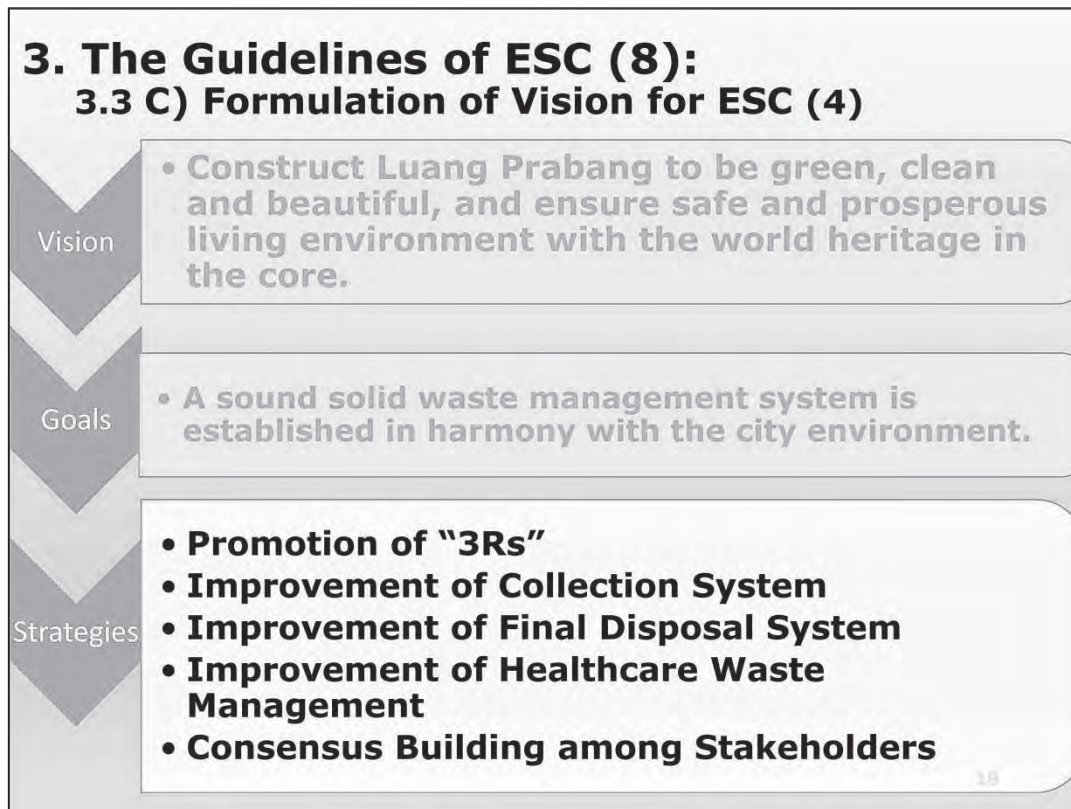
C.2 Establishment of Goals for Selected Sectors:

The process of Goals establishment follows the 3 steps:

Step1: Issues are found for all the environmental sub-sectors, and important sub-sectors to be improved are selected. **Step2:** The target year of the improvement is defined. It will be 5-10 years ahead the present.

Step3: Based on the issues found, a goal of improvement by the target year is determined for each of the important sub-sectors. The goals of the sub-sectors should express the expected condition to be realized by the target year and support the vision that has been set.

As an example the Goal of the solid waste management sector of Luang Prabang toward the vision is “A sound solid waste management system is established in harmony with the city environment.”



C.3 Development of Strategies for Selected Sectors:

Since each sub-sector contains a number of components, the achievement of the goals requires a set of several strategies according to the problem components. It is recommended to clarify what the goal implies, to develop images of expected future conditions and to rephrase the goal using several practical terms.

As for the example the strategies for solid waste management improvement of Luang Prabang are presented below:

1. In order to lighten the load of solid waste collection and final disposal and to protect the environment, "3Rs" are promoted at generation sources.
2. Waste collection system is improved through the strengthening of collection service capacity and enhancement of public cooperation.
3. Final disposal system is improved to mitigate adverse impacts on the surrounding areas.
4. Healthcare waste management is improved.
5. The governmental agencies, the private sector, the waste business operators and the local citizens evenly bear the cost under the transparent and fair rules.

3. The Guidelines of ESC (9): 3.3 C) Formulation of Vision for ESC (5): ESC Vision for LPB (1)

How the Vision was made

The first step was gaining an overall understanding of the current urban environmental status by baseline survey related to urban environment conservation. During survey period from September to December 2011 by DONRE, UDAA of Luang Prabang District and experts dispatched by JICA, the information was collected and analyzed to present conditions of urban environment management according to the 39 sector categories as shown below.

Social Environment 1. Local economy 2. Land use 3. Traffic and road condition 4. UEM policy 5. Poverty 6. Ethnic people 7. Landscape 8. Gender 9. Children's rights 10. Cultural heritage 11. Health 12. Environmental awareness	Natural Environment 1. Stormwater Management 2. Biodiversity 3. Forest resources 4. Urban green area 5. Nature reserve 6. Global warming 7. Mineral resources development	Socio-Living Environment 1. Air quality 2. Water quality 3. Safe drinking water 4. Sanitation 5. Soil contamination 6. Solid waste management 7. Noise/vibration 8. Land subsidence 9. Odor 10. Accident
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The second step was "scoping" based on the results of the current status assessment of each sector and a checklist for issue finding. 23 sectors were selected in those which require further actions in light of environmental sustainability.

The next step was to define a vision. As mentioned earlier, a vision is a short statement to express the future desired image of Luang Prabang district. It should be concise and impressive, but also narrative and self-explanatory. In setting the Vision, we took a due account of the characteristics of Luang Prabang which enjoys historical and touristic assets and peaceful culture. Under the Vision, goals were set for each sector and strategies were proposed to achieve the Goal.

Procedure Afterward

Submitted comments and our responses through website <http://bit.ly/2bcoM1L>.

Department of Pollution Control
Ministry of Natural Resources and Environment

www.donre.gov.la
www.monre.gov.la

**Environmental Sustainable Vision
Luang Prabang District**

Background

MONRE intends to encourage the cities in Laos to be clean, green and beautiful so that they become environmentally sustainable without compromising the quality of living of the next generation.

Japan International Cooperation Agency (JICA) has commenced the Laos Pilot Program for Narrowing the Development Gap towards ASEAN Integration-Environmental Management Component (LPPE) in August 2011. The LPPE has established the promotion of environmentally sustainable cities (ESC), one of the areas advocated in "Ensuring Environmental Sustainability" in the blueprint for the ASEAN socio-cultural community (ASSC), as the primary objective of the project.

The LPPE has conducted the baseline survey on urban environmental management (UEM) in 3 pilot sites (Vientiane Capital, Luang Prabang and Xayabour) from the beginning of September 2011 by the short-term JICA expert team (SERT) in cooperation with Lao counterparts (CPT).

Based on the results of the survey, Department of Natural Resources and Environment (DONRE) and Urban Development Administration Authority (UDAA) of Luang Prabang Province has prepared this Vision by supporting from

LPPE in March 2012. DONRE and UDAA have finalized the Vision in March 2013 reflecting the public comments received by the end of 2012.

Environmental Sustainable Vision of Luang Prabang District

Environmental sustainable vision includes an overarching goal, sector-specific goals and strategies with a view of environmental sustainability.

Luang Prabang District is part of the ASEAN Environmentally Sustainable Cities (ESC) Network and was awarded an ESC award in 2008. As such, the authority is expected to lead the way in environmental activities in the district while ensuring economic and social development, world heritage conservation and healthy and comfortable urban lives for all its citizens.

This Vision was thus drafted to stimulate and integrate urban activities, and to involve all stakeholders, from both public and private sectors and individuals, in the movement towards and environmentally sustainable World Heritage City, Luang Prabang.


You can access this vision on website at <http://bit.ly/2bcoM1L>.

www.donre.gov.la
www.monre.gov.la

Since the Vision for ESC shall be understood and shared by as many stakeholders as possible, it should be published in a handy and simple manner so that its whole picture can be viewed easily. As for the example of Vision for ESC published, the screen shows front and back pages of the ESC Vision for LPB. The ESC Vision for LPB has been published in an A3 paper of both side as shown in the screen. The A3 paper is folded to A4 and the screen shows the front and back side of the ESC Vision of LPB.

The front page gives information on Background and Introduction of the ESC Vision. The back page provides information of "How the Vision was made" and "Procedure Afterward".

3. The Guidelines of ESC (10): 3.3 C) Formulation of Vision for ESC (6): ESC Vision for LPB (2)



Vision for an Environmentally Sustainable Luang Prabang District

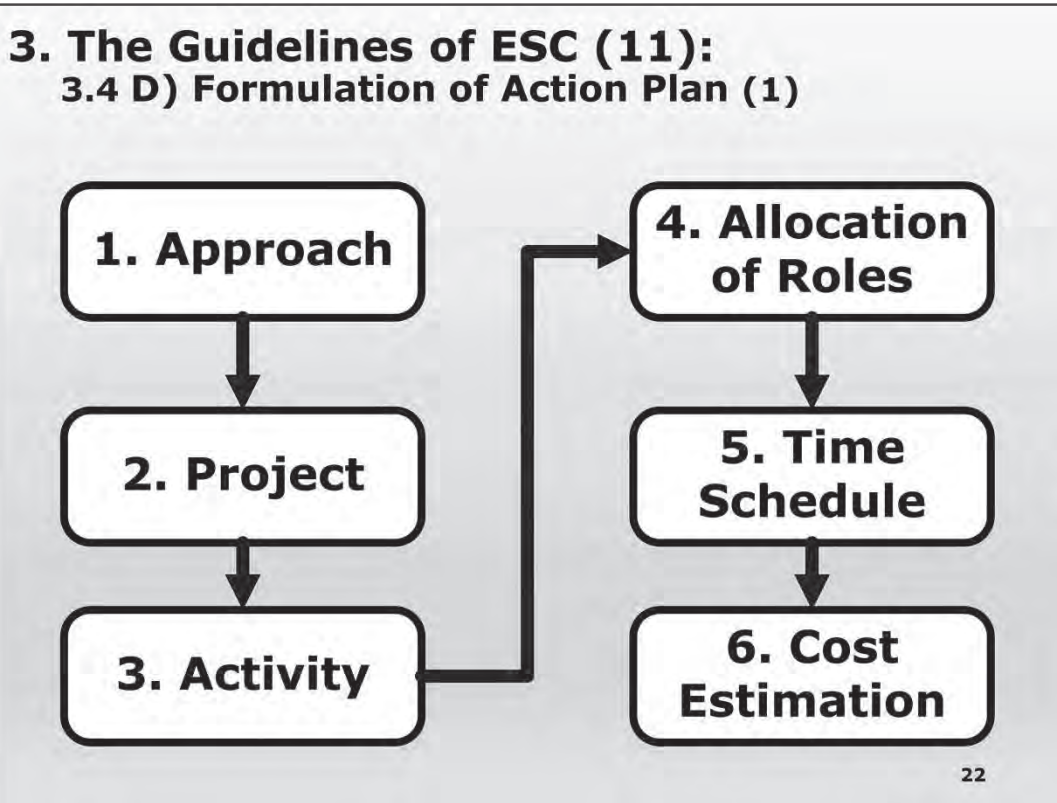
Construct Luang Prabang to be green, clean and beautiful, and ensure safe and prosperous living environment with the world heritage in the core.

Sub-sector	Goal 2020	Strategy	Sub-sector	Goal 2020	Strategy	
SOCIAL GOVERNANCE AND JUSTICE	1. Land Use	Regulation of land use to avoid burning in urban development plan and digital monitoring system.	→ Authorization of land use plan. → Enforcement of land use regulation. → Control and revocation of illegal construction.	13. Forest Resources	Illegal logging is monitored and controlled regularly. Reforestation is accelerated continuously.	→ Budget allocation and staff training are urgently implemented to monitor and control illegal logging. → Reforestation is promoted.
	2. Traffic and Road Condition	Road network in rural area is improved for people to access the main road to urban center.	→ Survey of current road condition in rainy season by DPWT and UDAA. → Allocation of government budget → 5-year Environmental Management Action Plan is realized.	14. Urban Green Area	The green areas located by World Cultural Heritage Site are managed properly for citizens to enjoy them.	→ The area of public urban parks is extended so that citizens can enjoy accessible green.
	3. Urban Environmental Management Policy Implementation	Education and provincial capacity development strategy building is conducted to promote urban environmental management by implementation of urban Environmental Management Action Plan.	→ Survey of current road condition in rainy season by DPWT and UDAA. → Allocation of government budget → 5-year Environmental Management Action Plan is realized. → Capacity development is carried out continuously since it is prioritized in each environmental action plan of MONRE and DONRE of LPB.	15. Nature Reserve	Conservation forest assessment according to the fundamental plan.	→ The protected areas are strictly protected by management of relevant organizations.
	4. Poverty	Millennium Development Goal is achieved according to poverty eradication program.	→ Review of poverty eradication program. → The situation of poverty is studied in rural area of LPB District.	16. Global Warming	Concrete action plan is prepared and implemented.	→ Concrete action plan is prepared and implemented.
	5. Landscape	Current condition values landscape is conserved according to urban development plan.	→ Review of urban development plan from the viewpoint of landscape conservation.	17. Air Quality	Open burning on the agricultural land is reduced.	→ Open burning on agricultural land is controlled.
	6. Gender	The quality of life of people is improved by addressing gender imbalance in the national education level especially to support the environment development goal.	→ Awareness of gender imbalance in the various education level is enhanced through activities of Women's Union.	18. Water Quality	The environmental condition of wetland in the urban area is improved.	→ Wetland management is incorporated in the land use planning. → Regular monitoring system is established to analyze the status of water quality. → The capacity of the government staff in charge of water quality management is strengthened.
	7. Children's Right	The Socio-economic Development Plan of LPB District is realized and 100% of children can go to school. Moreover, 10% of children can continue to study from low grade to high grade.	→ Primary schools are constructed in some of the villages who have no school. → Allocation of government budget for school teachers.	19. Safe Drinking Water	Water supply on the Socio-economic Development Plan is achieved and the rate of water supply is improved (100% in LPB District).	→ Water supply on the Socio-economic Development Plan is strengthened. → Water supply service area is expanded according to the Socio-economic Development Plan year by year. → DPWT and UDAA support the state company of water supply to make investments for business expansion.
	8. Cultural Heritage	MONRE and UDAA cooperate with DPWT to protect cultural heritage against urban development.	→ National and provincial cultural heritages are designated as necessary.	20. Sanitation	Latrines are provided in the schools for urban group, communities and tourism places. Wastewater treatment is improved.	→ Survey of actual sanitary condition in rural area and in ethnic groups. → Improvement of wastewater treatment system
	9. Health	Health care system can be accessed even in remote rural area in LPB District.	→ The situation of villagers who cannot access to primary health care is surveyed. → Medical kits are provided to the villagers who cannot go to health care center. → Rules and regulations are clearly explained to people. → Useful education tools are developed and utilized.	21. Soil	The region of producing and using organic fertilizer is expanded and the new equipment is introduced and larger agricultural land.	→ Personnel, equipment and budget are prepared to expand the region of producing and using organic fertilizer. → Capacity development of staff → Procurement of equipment
	10. Environmental Awareness	People follow rules and regulations to make the city safer and beautiful.	→ The situation of villagers who cannot access to primary health care is surveyed. → Medical kits are provided to the villagers who cannot go to health care center. → Rules and regulations are clearly explained to people. → Useful education tools are developed and utilized.	22. Solid Waste Management	Waste management system in urban area is improved and the city is beautiful.	→ "3R" are promoted at generation sources. → Waste collection system is improved through the strengthening of collection service capacity and enhancement of public cooperation. → Final disposal system is improved to mitigate adverse impacts on the surrounding areas. → Healthcare waste management is improved. → An official document that defines the solid waste management system is prepared.
	11. Stormwater Management	Flood area is managed according to the urban development plan to reduce impact of environment.	→ Review of urban development plan from the viewpoint of flood control. → Flood management plan is formulated newly.	23. Accident	Traffic accidents decrease year by year. There are no illegal activities around World Cultural Heritage Site.	→ Traffic control, vehicle maintenance, safety education and training of drivers and campaigns of traffic safety for students are conducted continuously. → Overloading with passengers is controlled.
	12. Biodiversity	Natural environment adjacent to the heritage is protected and conserved properly.	→ District Biodiversity Conservation Area in LPB District is monitored strictly to prevent illegal cutting. → Reforestation is promoted.			

The screen shows the other side of the A3 paper, which presents the ESC Vision of LPB. As shown in the screen, based on the issues found for all the environmental sub-sectors the ESC Vision for LPB has selected 23 sub-sectors to be improved and set goals for 23 sub-sectors. Then in order to achieve the goals of the selected sub-sectors a set of several strategies according to the problem components were set as shown in the screen.

The sub-sector of solid waste management is found in the part surrounded by a red line. Its goal for the year 2020 is written in blue and five strategies are listed. By doing so for all the other sub-sectors, we can see a bird's-eye picture of city environment directed to ESC.

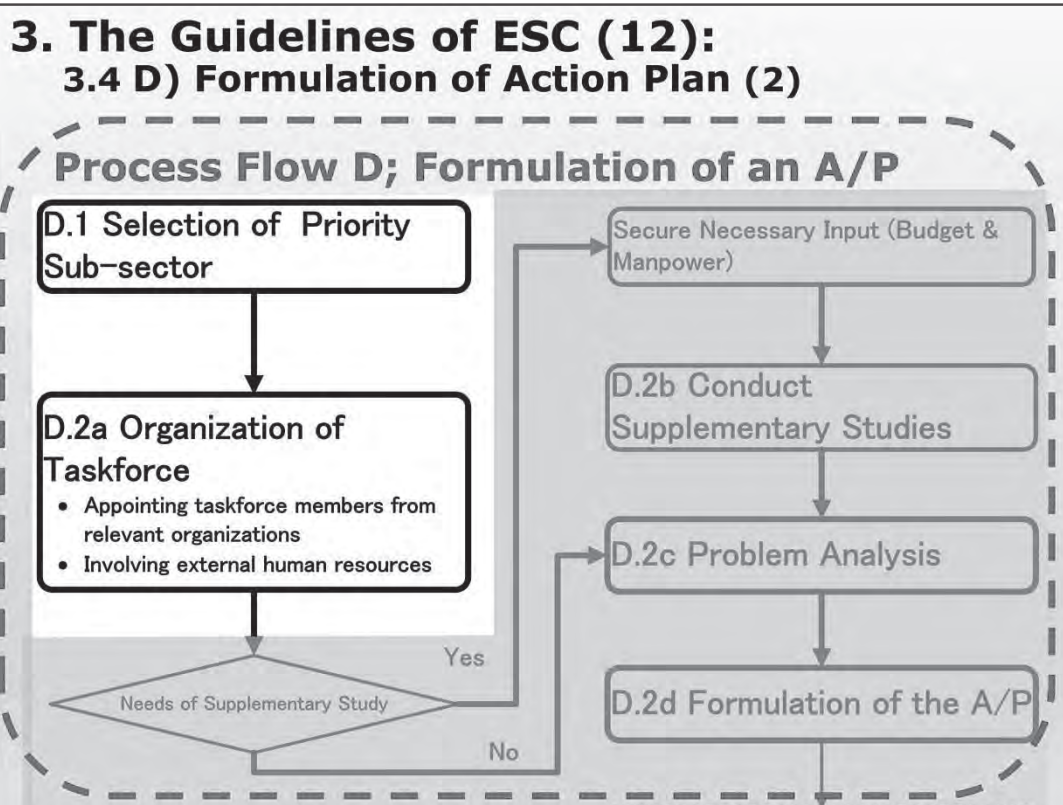
When the Vision containing a vision statement, sectoral goals and strategies were concluded, the ESC unit should consult MONRE/DONRE. PCD makes sure that the Vision is in consistent with its policy direction to Clean, Green, Beautiful Laos.



With this slide, Stage 2 "implementation of ESC Vision" starts. The first process of Stage 2 is Process D, "Formulation of Action Plan".

So far, goals and strategies are set for each of the sub-sectors. However, strategies do not tell practical directions and we need an Action Plan, which is a guiding document to carry the strategies into effect. It is formulated by clarifying the following elements.

1. **Approach:** It shows the methodology to materialize the strategy which aims at the sub-sectoral goal. It is, therefore, said to be a detailed strategy.
2. **Project:** It shows what to be done to take the aforementioned approach. It contains specific projects necessary to actually implement the detailed strategy.
3. **Activity:** It shows what kinds of specific actions to be done to take the project. Each project contains specific activities.
4. **Allocation of roles:** For every activity, an organization responsible for implementation, another organization that assists implementation and other organizations to be collaborated in implementation are specified and their roles are defined.
5. **Time schedule:** A time schedule of each activity will be drawn.
6. **Cost estimation:** Cost required to implement each activity will be approximated and which financial sources are available and how to approach them will be shown.



D.1 Selection of Priority Sector

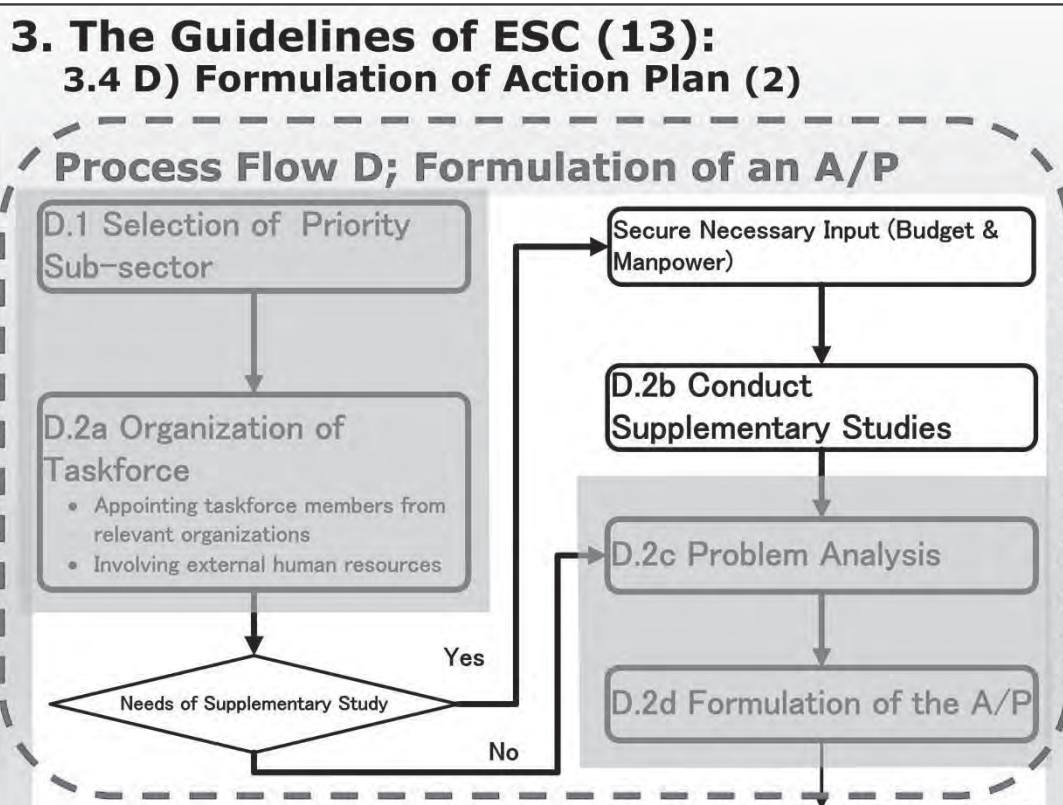
An action plan (A/P) formulation of each of the sub-sectors entails a certain amount of time and input due to the following reasons:

1. A/P formulation requires technical knowledge and judgment of a certain level.
2. A/P formulation will require in-depth understanding of the current situation in each of the sub-sectors concerned. The city, therefore, may need to prepare budget for necessary supplemental studies.

Due to the restriction of time and input available to the cities, the ESC Unit under the DONRE is advised to prioritize the sub-sectors for which A/Ps are to be formulated. The ESC Unit will then need to organize a selection committee that consists of representatives from organizations relevant to UEM and select priority sub-sector(s).

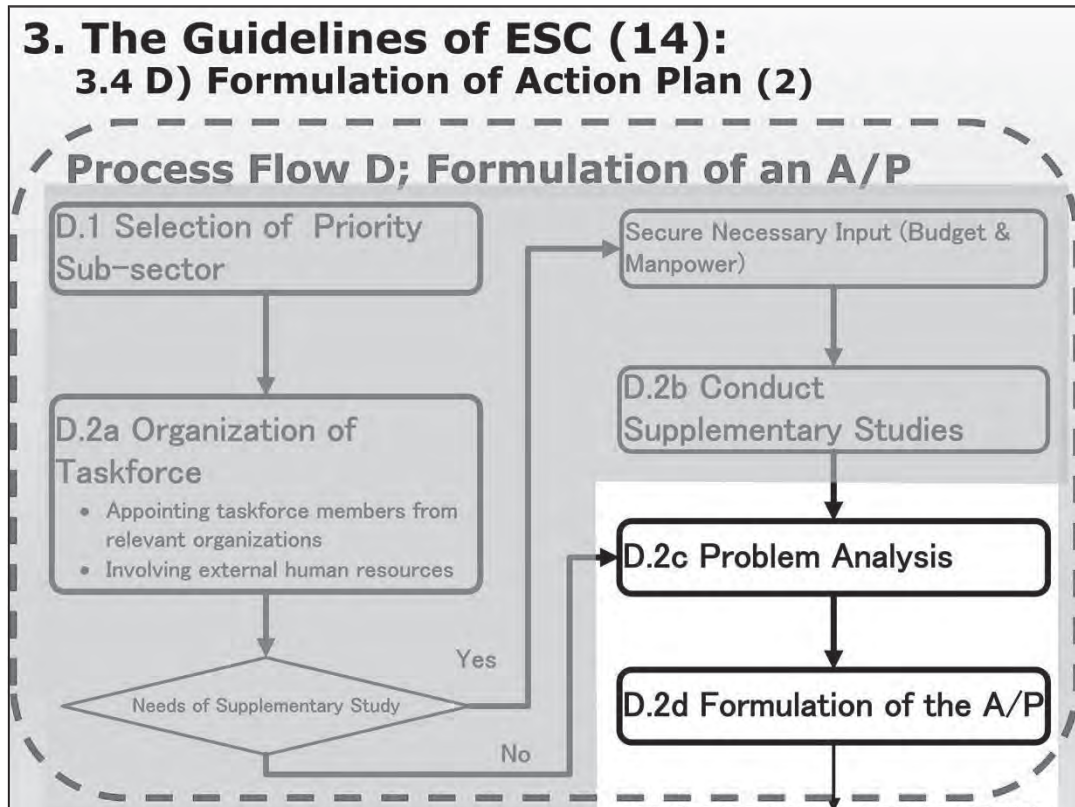
D.2 Formulation of Action Plan a. Organization of Taskforce

The A/P of the priority sub-sector must clarify which organizations carry out which implementation activities from when and how. Such task must start with detailed understanding of current conditions and important issues of the sub-sector through supplemental studies. Therefore, prior to A/P formulation, the ESC Unit is recommended to organize a taskforce for A/P formulation, which consists of representatives of organizations relevant to the sub-sector and experts.



b. Implementation of Supplemental Studies

The first question for the taskforce is whether the supplemental studies are needed for A/P formulation. Then the answer is yes, an implementation organization, methodology and time schedule must be determined. The taskforce further secure the necessary input (cost and manpower), and the studies are to be carried out. Examples of the supplemental studies for SWM sub-sector of Luang Prabang (LPB) are shown in the screen after next one.



c. Problem Analysis

Result of the supplemental studies will be analyzed to identify the current problems and their structures. Proper understanding of the problems is significantly effective to construct an appropriate and feasible plan for improvement. Also, the strategies, which were set out based on the existing data and information available at the time of the UEM study, may need to be modified by using the results of the supplemental studies.

In the case of LPB, specific problems related to Strategy 1: **"3Rs are promoted."** were identified in the supplemental study. They are shown in the screen after next one.

d. Formulation of Action Plan

Taking all the findings and analysis into consideration, an A/P is formulated for each of the strategies of the priority sub-sector.

The A/P is the final output of Process D, and only priority projects in the A/P will proceed to Process E. Therefore, practically speaking, **the A/P as an output of Process D can be a simple framework leaving the detailed planning work to Process E.**

In order to understand Procedure of an A/P formulation, the A/P formulation process of Strategy 1: 3Rs Promotion of SWM sub-sector of LPB is presented from the next screen.

3. The Guidelines of ESC (15):
3.4 D) Formulation of Action Plan (3) : Results of the Supplementary Studies of SWM Sector in LPB

	Waste Generation (g) per person per day
Urban Area	569
Suburban Area	766
Average	630

**Waste Composition
 => 69% is
 compostable**

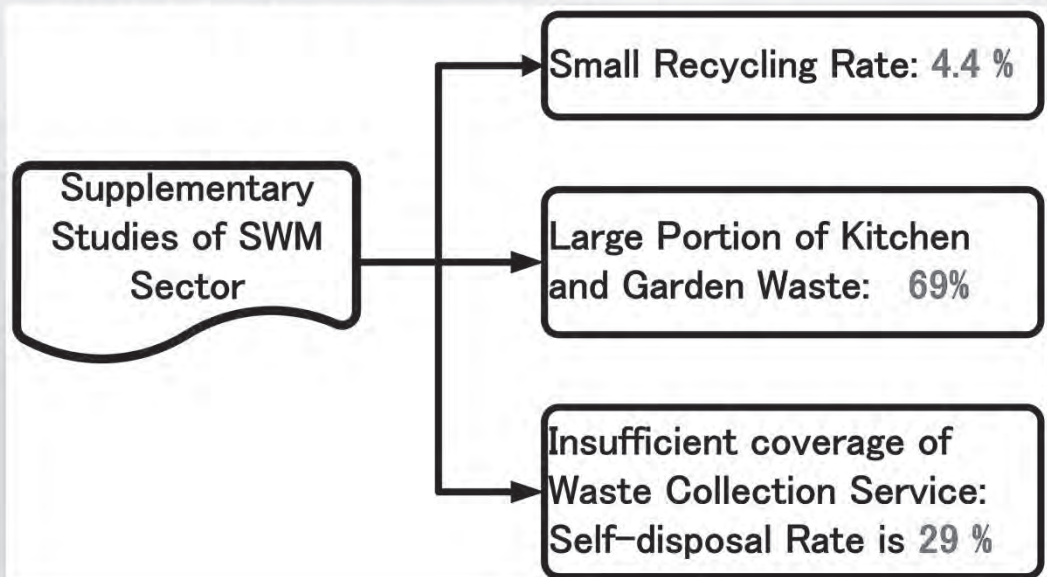
**Waste Generation =>
 about 630 g /person/day**



For the formulation of the A/P for SWM sub-sector of LPB, “Waste amount and composition study, final disposal amount study” was conducted as the supplementary studies. The screen shows the results of waste amount and composition survey.

For example, it was found that people in LPB generated about 630 g of waste per person every day. The study also showed that 69 % of waste was organic and compostable.

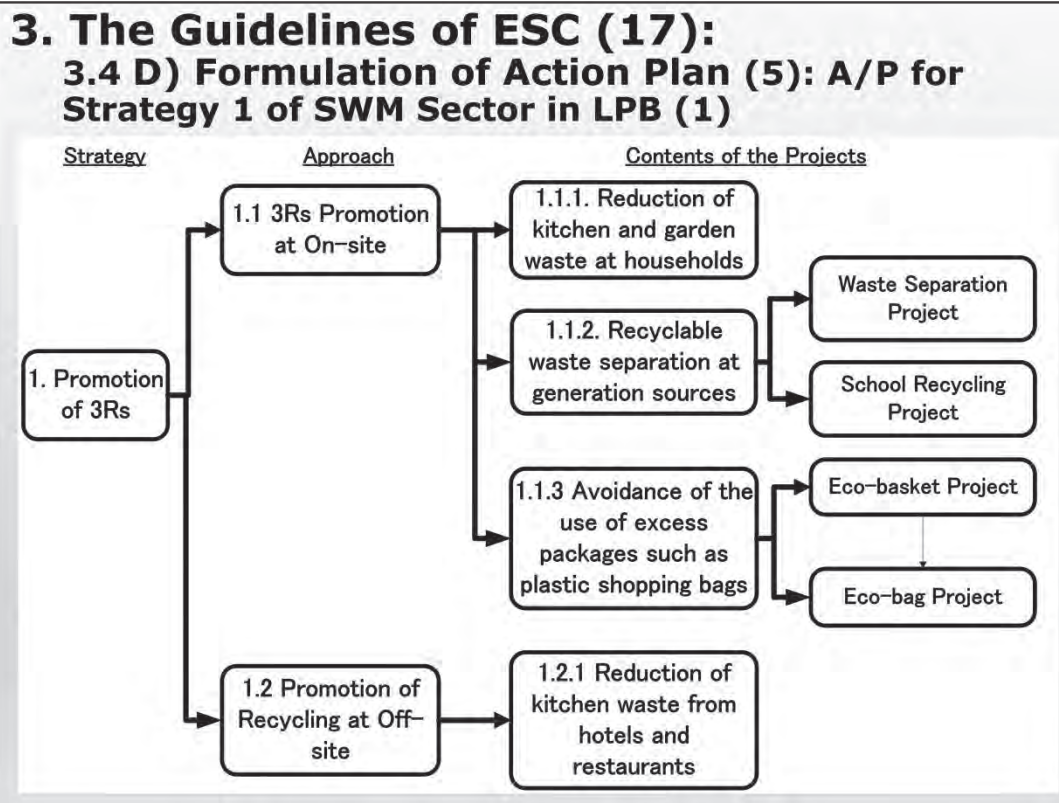
3. The Guidelines of ESC (16): 3.4 D) Formulation of Action Plan (4): Problems related to Strategy 1 Identified by the Supplementary Studies of SWM Sector in LPB



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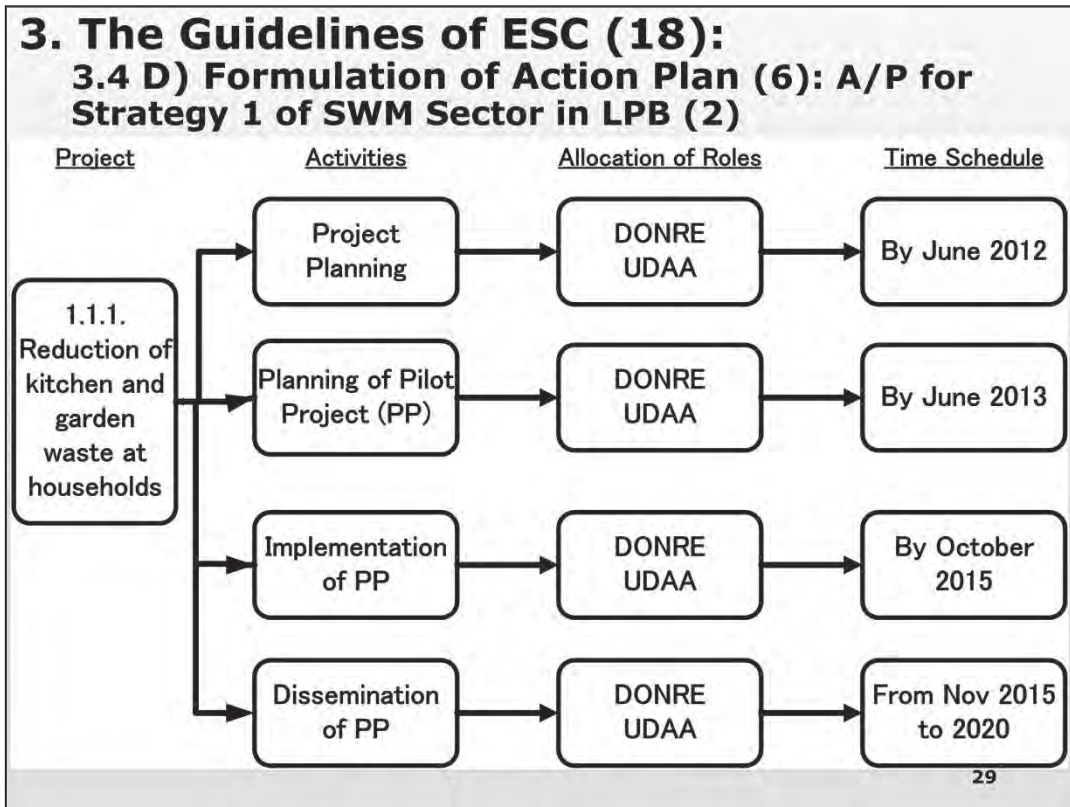
Problems related to Strategy 1 of SWM for Luang Prabang, which were found in the results of the supplementary studies as follows:

1. Small recycling rate: Only 4.4% of the total waste generation is recycled. The waste recycled at households is only 1.5%.
2. Large portion of kitchen and garden waste: Kitchen waste and garden waste, both of which are organic and compostable, account for as much as 69% of waste generated at households.
3. Insufficient coverage of waste collection service: As much as 29% of waste is disposed of by households (self-disposal). This indicates insufficient coverage of waste collection service. However, the areas with high self-disposal rate are mostly located in the remote suburban area with poor access. Therefore, the collection service for those areas will be more costly than other areas already receiving collection service.



In order to solve the problems related to “Strategy 1: “3Rs” are promoted.” of SWM in Luang Prabang, an A/P was made as shown in Table 4 of the ESC GL. The A/P the Strategy 1 is formulated according to the following procedures:

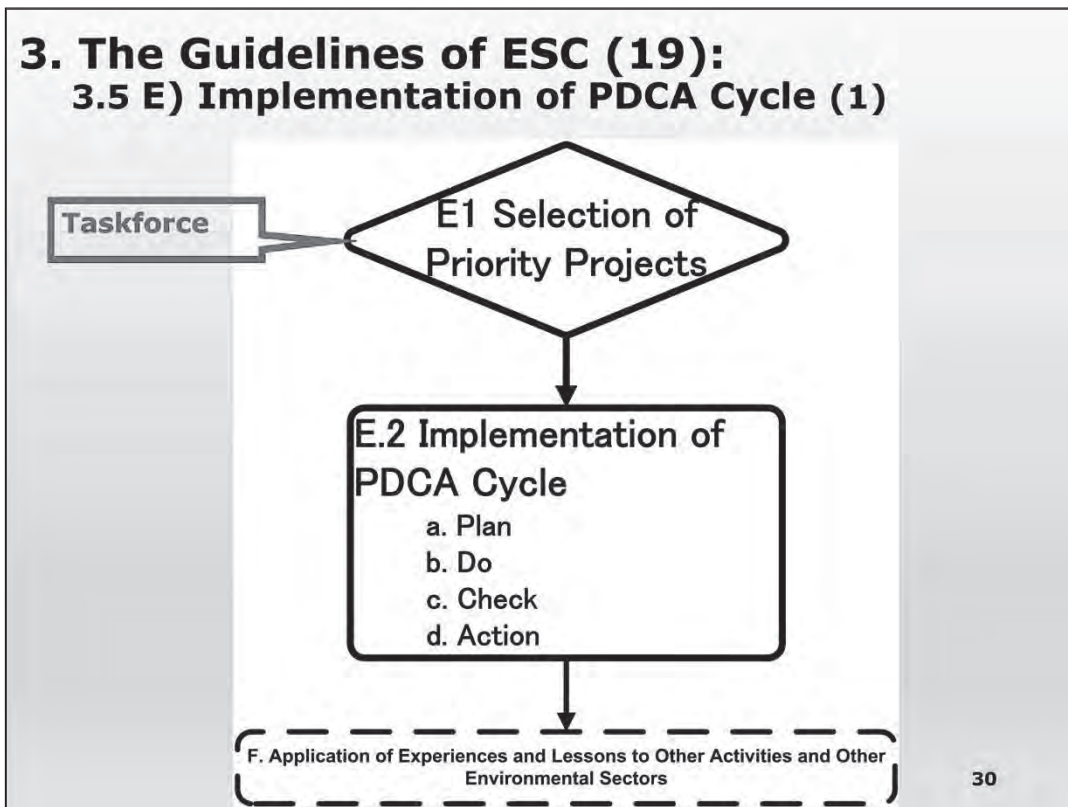
1. There are two approach: 1.1 “3Rs” are promoted at on-site to reduce waste generation amount. And 1.2 Recycling is promoted at off-site by composting.
2. There are 4 main projects: Approach 1.1 has three, “1.1.1. Reduction of kitchen waste and garden waste at households”, “1.1.2. Recyclable waste separation at generation sources” and “1.1.3 Avoidance of the use of excess packages such as plastic shopping bags”. Approach 1.2 has one, “1.2.1. Reduction of kitchen waste from hotels and restaurants”
3. “1.1.2. Recyclable waste separation at generation sources” is divided into two projects, “a. Waste separation project” and “b. School recycling project”.
4. “1.1.3 Avoidance of the use of excess packages such as plastic shopping bags” is divided into two projects, “a. Eco-basket project” and “b. b. Eco-bag project”.



The screen shows the “Activities”, “Allocation of Roles” and “Time Schedule” of the Project, “1.1.1. Reduction of kitchen waste and garden waste at households” of Strategy 1, Approach “1.1 3Rs Promotion at On-site” of SWM in LPB.

The cost required to implement each activity was approximated. Then taskforce concluded most of the activities were able to start as pilot projects (PPs) of LPPE with cost sharing of “Investment cost born by LPPE” and “Part of education & monitoring cost born by DONRE & UDAA”.

So that PPs were considered to be the priority projects subject to the detailed planning work and implementation (PCDA) to Process E.



Action plan formulation is followed by Process E, which is the implementation of PDCA cycle.

E.1 Selection of Priority Projects.

The A/P tells that a wide range of activities should be carried out to achieve the goal of the sub-sector. Also, it shows that each of the activities necessitates appropriate role execution of different parties and allocation of required budget. Consequently, it can be very difficult to carry out all the activities in parallel.

The taskforce should, therefore, discuss to prioritize the activities in the action plan and select one or some of them to be “priority project(s)”. The fundamental criteria to select priority projects will be **whether the input (such as time, manpower, and budget) necessary for their implementation is secured.**

E.2 Implementation of PDCA Cycle a. Plan

A plan of the project implementation will include following components:

1. Target indicators (e.g. the rate of households who compost their organic waste at the target year) and timing of their monitoring.
2. Activities to be carried out and their sequential order
3. Allocation of roles: Name of appointed organization
4. Time schedule

The plan should be presented in such a format as to facilitate the following Do, Check and Action.

b. Do

Referring to the planning chart, organizations appointed to each activities execute their works. The plan execution body should supervise and coordinate all the works and all the stakeholders involved according to the planning chart.

c. Check

The plan execution body carries out the monitoring of target indicators at the time scheduled in the planning chart. It also needs to recognize the difficulties that are appearing as the project progresses. The causes of the obstacles or difficulties must be well understood in cooperation with relevant stakeholders to find out necessary measures to be taken.

d. Action

The taskforce, in collaboration with the plan execution body, examines the causes and countermeasures and modify the plan of the priority project. The modification may be required for the action plan if the priority project has to be drastically changed or even cancelled.

3. The Guidelines of ESC (20):
3.5 E) Implementation of PDCA Cycle (2): Example of Target Indicators (1)

Project:
Reduction of kitchen waste and garden waste at households

Area:
B. Vat That, B. Pong Vane, B. Pakham (38 households, estimated 210 people)

Summary:
Home composting is carried out to reduce waste discharge amount.

Target Indicator:
50% or more of on-site composting continuation rate in 2015

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Actual activities in the PDCA cycle is presented in several slides from here taking one pilot project in Luang Prabang as an example.

The pilot project is the reduction of kitchen waste and garden waste at households. This was planned as part of Action Plan of Strategy 1.

The project area includes three villages as shown in the map on the next screen.

The project aimed at the reduction of waste discharge by carrying out home composting by village residents.

Composting continuation rate, in other words how many percentage of households continue composting, was considered as an indicator and the target was set at 50% in 2015, after three years of project initiation.

3. The Guidelines of ESC (21): 3.5 E) Implementation of PDCA Cycle (3): Example of Target Indicators (2)



The PP site are located as shown in the screen. The taskforce made preliminary study of the project site and conducted PP planning.

3. The Guidelines of ESC (22): 3.5 E) Implementation of PDCA Cycle (4): Example of Plan (Planning Chart)

Activities ^o	Detailed Activities ^o	Allocation of Roles ^o	Time Schedule ^o				
			2012 ^o	2013 ^o	2014 ^o	2015 ^o	2020 ^o
Project Planning ^o	Set up project management system ^o	DONRE, UDAA, SJET ^o	■	□	□	□	□
	Set up concept ^o	DONRE, UDAA, SJET ^o	■	□	□	□	□
Planning of PP ^o	Study and selection of pilot area ^o	DONRE, UDAA, SJET ^o	■	□	□	□	□
	Study of composting method ^o	SJET ^o	□	■	□	□	□
	Procurement of equipment ^o	SJET ^o	□	■	□	□	□
	Preparation of education tools ^o	DONRE, UDAA, SJET ^o	□	■	□	□	□
Implementation of PP ^o	Delivery of equipment and instruction of method ^o	DONRE, UDAA, SJET ^o	□	■	□	□	□
	Monitoring and awareness raising ^o	DONRE, UDAA, SJET ^o	□	□	■	■	■
	Evaluation of the PP ^o	DONRE, UDAA, SJET ^o	□	□	□	■	□
	Suggestion for dissemination ^o	SJET ^o	□	□	□	■	□
Dissemination of PP ^o	Planning of dissemination ^o	DONRE, UDAA ^o	□	□	□	■	□
	Dissemination to other area ^o	DONRE, UDAA ^o	□	□	□	□	■

The screen shows the planning chart of the pilot project. The Planning chart shows:

- Activities to be carried out
- Allocation of roles, i.e. Organization responsible for each activity
- Time schedule of each activity

3. The Guidelines of ESC (23): 3.5 E) Implementation of PDCA Cycle (5): Example of Do (Barrel and Worm Composting)



Barrel Composting



Worm Composting

The screen shows the Do (Implementation) of the Pilot Project (PP). The following two on-site composting PPs are conducted (Do):

- Barrel composting
- Worm composting

Prior to the PPs instruction leaflets for both composting method were prepared. Then instruction and education of both composting were provided in the PP sites.

3. The Guidelines of ESC (24): 3.5 E) Implementation of PDCA Cycle (6): Example of Check and Action (Barrel and Worm Composting)

The infographic is divided into two main sections: **Barrel Composting** and **Worm Composting**.

Barrel Composting (Left Panel):

- ຄູ່ມືເບື້ອງຕົ້ນ ໃນການເຮັດຝຸ່ນປົມລະດັບຄອບຄົວ** (Initial Guide for Household Level Compost Making)
- ຕົວຢ່າງອາວຸກມີສານແຂງ(ໂຕລົງໃນຖ້ຳ)** (Example of hard waste disposal in a pit)
- ຕົວຢ່າງອາວຸກທີ່ບໍ່ຄວນໂຕ້ລົງໃນຖ້ຳ** (Example of waste that should not be thrown in a pit)
- ຂັ້ນຕອນທີ 3: ການລົງລະດັບອີກຄັ້ງ** (Step 3: Re-leveling)
- ຂັ້ນຕອນທີ 4: ການນຳໃຊ້ຝຸ່ນປົມ** (Step 4: Using the compost)

Worm Composting (Right Panel):

- ຄູ່ມືເບື້ອງຕົ້ນ ໃນການເຮັດຝຸ່ນປົມ ໂດຍການນຳໃຊ້ຂີ້ກະເດືອນຊ່ວຍ** (Initial Guide for Compost Making using Earthworms)
- ຂຽນຄູ່ມືທີ່ໃຊ້ໃນການຝຶກຮ້າງເດືອນ** (Writing a manual for earthworm training)
- ຂັ້ນຕອນການຝຶກຮ້າງເດືອນ** (Earthworm training steps)

The screen shows the Check (Monitoring) and Action (Modification) of the Pilot Project. Based on the monitoring results the following actions were taken:

- Improvement of the Barrel and Worm composting methods;
- Modification and finalization of instruction leaflets for both composting
- Preparation of instruction video for worm composting

**3. The Guidelines of ESC (25):
3.6 F) Application of Experiences and Lessons to
Other Activities and Other Environmental
Sectors(1)**

Application by ESC Unit of DONRE

- **Other priority projects of the same sub-sector**
- **Priority projects of other sub-sectors.**

Application by PCD of MONRE

- **Dissemination of ESC_GL**
- **Sharing good examples for the promotion of ESC**

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The experience and lessons derived from the implementation of priority projects up to Process E should be applied to other new projects by (i) ESC Unit of DONRE and (ii) PCD. The application of experience and lessons by the ESC Unit of DONRE is to:

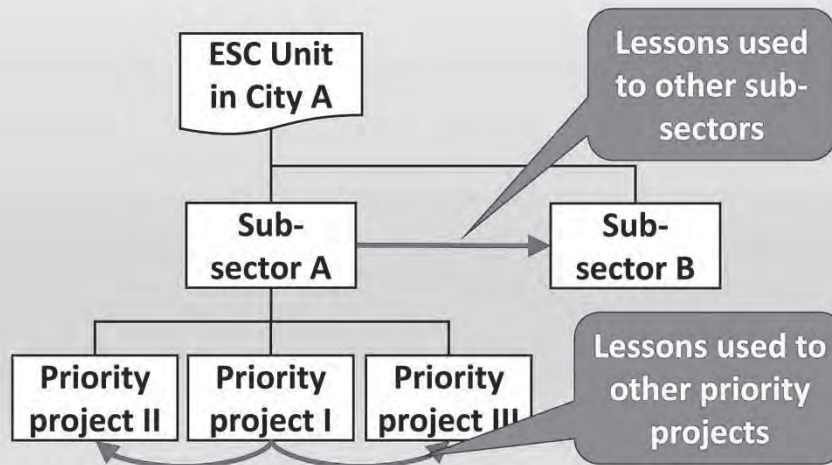
1. Other priority projects of the same sub-sector
2. Priority projects of other sub-sectors.

The application of experiences and lessons by PCD is practiced in:

1. Dissemination of ESC_GL
2. Sharing good examples for the promotion of ESC in Lao PDR.

3. The Guidelines of ESC (26): 3.6 F) Application of Experiences and Lessons to Other Activities and Other Environmental Sectors(2)

Application by ESC Unit of DONRE



a. Application of Experiences and Lessons By ESC Unit of DONRE

The ESC Unit of DONRE applies the experiences and lessons obtained from the implementation of the priority project to the development of another priority project, which can be of the same sub-sector or other sub-sectors, by referring to the result of prioritization process carried out in Process D.1 and D.2 of ESC_GL.

a.1 Application to other priority projects of the same sub-sector

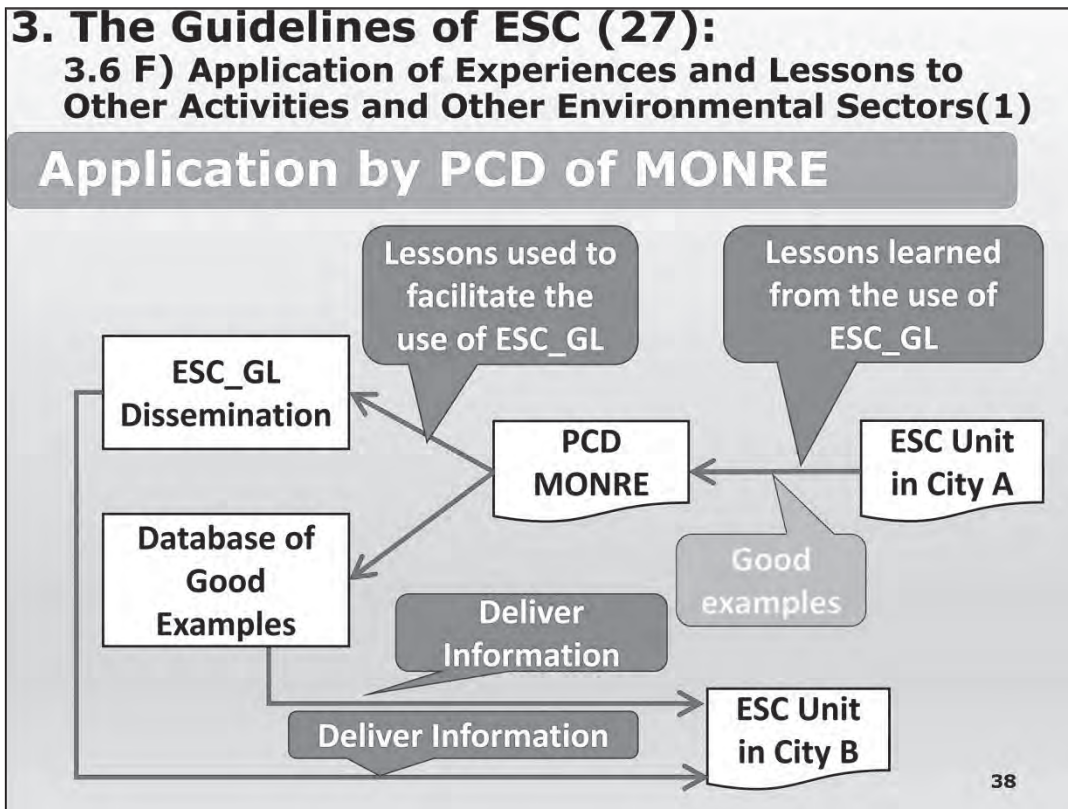
Application will be conducted as follows:

1. The priority projects implemented are evaluated.
2. From the results of the evaluation, the issues and problems of the sub-sector are examined and proposals are made for the improvement of the issues and problems.
3. Based on the proposals, the A/P is revised.
4. Through Process E, the priority projects are selected, planned and implemented.

a.2 Application to other sub-sectors

Application will be conducted as follows:

1. Another priority sub-sector is selected.
2. From the results of the evaluation of the priority projects implemented, the applicable lessons to the newly selected sub-sector are examined and proposals are made for the improvement of the selected sub-sector.
3. Based on the proposals the A/P of the selected sub-sector is formulated.
4. Through Process E priority projects are selected, planned and implemented.



b.1 Dissemination of ESC_GL

The lessons learnt by the ESC Unit should be shared with PCD as the National ESC Guidelines are alive, requiring feedbacks and reviews as follows:

1. During the application of the ESC_GL, the ESC Unit may find out some issues such as unclear points and difficulties.
2. Those issues associated with ESC_GL application are reported to PCD.
3. PCD takes account of those issues in its activities of ESC_GL dissemination to promote the understanding by the local authorities.
4. If necessary, the ESC_GL is modified to be more useful and easy-to-understand.

b.2 Sharing good examples for promotion of ESC

Considering the current limitation of resources available for the local authorities, it is important for PCD to support them to promote ESC. One of the most important supporting works is to provide technical information useful for the promotion of ESC. The PCD acts as technical information hub, which collects and delivers technical information when it is required by the local authorities. The technical information necessary for the local authorities to promote ESC is as follows:

1. Information on overall ESC promotion:
This includes such information as the experiences of ESC unit formation and examples of visions for ESC. It will be useful for the local authorities in the initiation stage.
2. Information on the improvement of sub-sectors:
This includes, for example, procedures and methodologies of priority projects selection of different sub-sectors and outputs produced through project implementation. It will be of help for the local authorities to conduct similar projects.

In case of LPPE, a lot of pilot projects have been implemented as priority projects of the SWM sector and produced a lot of important tools and examples. Those tools and examples are in the database of PCD and available to the local authorities.

**Department of Pollution
Control**
**Ministry of Natural
Resources and
Environment**

For further information of MONRE 's
assistance, please
visit <http://www.dopc.monre.gov.la>

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Please contact with PCD of MONRE for further information.