



**Ministry of Public Works and Transport
Kingdom of Cambodia**

**GMS: Southern Economic
Corridor Towns Development
Project**

**Loan 2983-CAM(SF), Loan 8265-CAM(SCF)
Grant 0334-CAM (UEIF), Grant 0335-CAM (SCF)**

**Quarterly Report
1st Quarter 2020**

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ABBREVIATIONS AND ACRONYMS

ADB	-	Asian Development Bank
AHs	-	Affect Household
APs	-	Affect People
CS	-	Construction Supervision
CTDP	-	Corridor Towns Development Project
DDR	-	Due Diligence Report
DED	-	Detailed Engineering Design
DMF	-	Design and Monitoring Framework
DMS	-	Detail Measurement Survey
DFEC	-	Declarations of Fraud and Ethical Conduct
EA	-	Executive Agency
EM	-	External Monitoring
EMP	-	Environmental Management Plan
FHH	-	Female Household Head
GAP	-	Gender Action Plan
GDR	-	General Department of Resettlement
GRM	-	Grievance Redress Mechanism
ICB	-	International Competitive Bidding
IEE	-	Initial Environmental Examination
IOL	-	Inventory of Loss
IRC	-	Inter-Ministerial Resettlement Committee
M&E	-	Monitoring and Evaluation
MEF	-	Ministry of Economy and Finance
MPWT	-	Ministry of Public Works and Transport
MRF	-	Material Recovery Facility
NCB	-	National Competitive Bidding
PAHs	-	Project Affect Households
PAP	-	Project-affected People
PIB	-	Public Information Booklet
PISCD	-	Project Implementation Support and Capacity Development
PIU	-	Project Implementation Unit
PMU	-	Project Management Unit
PPMS	-	Project Performance Management System
PPP	-	Public-Private Partnership
PRC	-	Procurement Review Committee
Q	-	Quarter
RGC	-	Royal Government of Cambodia
RP	-	Resettlement Plan
SDR	-	Special Drawing Rights
SEC	-	Southern Economic Corridor
SLEDP	-	Strategic Local Economic Development Plan
URP	-	Updated Resettlement Plan
WWT	-	Wastewater Treatment

SECTION 1 INTRODUCTION AND BASIC DATA

1.1 PROJECT OVERVIEW

The Royal Government of Cambodia (RGC) has received loans and grants from the Asian Development Bank (ADB) towards the cost of the Greater Mekong Sub-region (GMS) Southern Economic Corridor Towns Development Project (the Project).

The Project will enhance the competitiveness of towns along the Southern Economic Corridor (SEC). The Project will transform the Cambodian corridor towns of Battambang, Bavet, Neak Loeung, and Poipet (see Figure 1.1) into economic hubs by improving urban-environmental infrastructure and strengthening institutional capacities of provincial and local authorities.

Figure 1.1: Location of Three Corridor Towns of CTDP in Cambodia



The Project's expected outcome is improved urban infrastructure and enhanced climate resilience in Battambang, Bavet, Neak Loeung and Poipet. The Project consists of eight subprojects including: (a) two Subprojects in Battambang - Wastewater Treatment (Storm Drainage), and Materials Recovery Facility (MRF); (b) three subprojects in Bavet - Urban Road, Wastewater Treatment (Storm Drainage), and MRF; (c) one subproject in Neak Loeung - Flood Control; and (d) two subprojects in Poipet - Wastewater Treatment (Storm Drainage) and MRF.



1.2 BASIC DATA

Presented below are the basic Project data.

Project Title:	Greater Mekong Sub-region Southern Economic Corridor Towns Development Project		
Project Number:	43319-033		
Borrower:	Kingdom of Cambodia		
Executing Agency (EA) and Implementing Agencies (IA)	The EA of the Project is the Ministry of Public Works and Transport (MPWT). The EA assumes overall responsibility for the project implementation through the Project Management Unit (PMU). The Provincial Town Governor in each of the four Towns, in cooperation with PMU, has set up the PIUs for the implementation of Subproject activities. The key members of the PMU and PIUs are presented in Appendix A.		
Total Project Cost and Financing Plan			
Loan/Grant No.	Source of Funding	Amount (US\$ million)	Share of Total (%)
Loan 2983-CAM (SF)	Asia Development Fund	33.44 ^a	65.3
Loan 8265-CAM (SCF)	Strategic Climate Fund ^b	5.00	9.8
Grant 0335-CAM (SCF)	Strategic Climate Fund ^b	4.40	8.6
Grant 0334-CAM (UEIF)	Urban Environmental Infrastructure Fund Grant under the Urban Financing Partnership Facility ^c	1.50	2.9
	Government of Cambodia	6.87	13.4
	Total Project Cost	51.21	100.0

^a Revised due to the depreciation of the SDR against the US\$.

^b Under the Pilot Program for Climate Resilience financed by the Strategic Climate Fund. The ADB Strategic Climate Fund is administered by the Asian Development Bank.

^c Contributor: the Government of Sweden.

Date of Loan/Grant Approval	10 December 2012
Date of Signing of Agreement	17 January 2013
Date of Effectiveness	08 April 2013
Loan/Grant Closing Date	
ADB Review Mission Approved an Extension	30 June 2021 (loan period is 8.23 years from date of effectiveness)
Original Closing Date	30 June 2019 (loan period is 6.23 years from date of effectiveness)
Elapsed Loan Period	6.98 years from date of effectiveness (as of 31 March 2020) 85% of revised loan period. 112% of original loan period
Dates of ADB Review Missions and Mid –Term Review	08 September – 01 October 2014; 01 – 11 December 2015; 09 – 22 August 2016; 18 – 30 October 2017; 21-29 May 2018; Mid –Term Review 2-30 November 2018; 29 Apr-16 May 2019; 21 October– 6 November 2019.



Compared to the original plan, the implementation of the Project has been delayed by about 24 months. This is due mainly to delays in the procurement of the Detailed Engineering Design (DED) Consultant, preparation of DED and Bid Documents, and changing scope of the subprojects. Based on this, a proposal for the extension of the loan/grant closing date by 24 months, from 30 June 2019 to 30 June 2021, was prepared by the EA/MEF for approval by ADB.

The original loans/grants closing date was 30 June 2019, and ADB approved an extension of closing date of Loan 2983, Loan 8265 and Grant 0335-CAM to 30 June 2021. Whereas closing date of Grant 0334-CAM remains unchanged because all activities and funds under this Grant were completed and disbursed fully before 30 June 2019. The updated Overall Project Implementation Plan shown in **Appendix B**.

1.3 REPORTING PERIOD

This Quarterly Report is for the 1st Quarter of 2020 (January-March 2020) reporting period. It provides a summary of accomplishments during the reporting period, compliance with safeguards and covenants, identifies major issues and concerns and recommends the action required, and lists activities to be carried out in this quarter.



SECTION 2 UTILIZATION OF FUNDS

2.1 REVISED PROJECT COST ESTIMATE

The Project cost estimate was amended to take into consideration: (i) the reallocation of loan/grant proceeds due to contract awards under some loan categories that already exceeded their allocation, and the prioritization of Subprojects such that total cost will be within the available budget; (ii) budget shortfalls arising from the depreciation of the SDR against the US\$; and (iii) extension of loan/grant closing date. Table 2.1 presents the revised Detailed Cost Estimate by Financier within MEF, and approved by ADB.

Table 2.1: Revised Detailed Cost Estimate by Financier (US\$ million)
Reallocation of Loan and Grant Proceeds as Approved by ADB on 26 January 2017
(Greater Mekong Subregion Southern Economic Corridor Towns Development Project)

No.	Item	ADB Loan *		SCF Loan		SCF Grant		UFPF Grant		RGC				Total
		Amount	%	Amount	%	Amount	%	Amount	%	Nontax	Taxes	Amount	%	
1	Works	25.684	67.2	3.780	9.9	3.270	8.6	1.390	3.6	-	4.097	4.097	10.7	38.221
1A	CW: Wastewater Treatment and Flood Control	16.022	62.2	3.780	14.7	3.270	12.7	-	-	-	2.697	2.697	10.5	25.769
1B	CW: Road and Solid Waste Management	9.662	88.5	-	-	-	-	-	-	-	1.260	1.260	11.5	10.922
	Material Recovery Facilities	-	-	-	-	-	-	1.390	90.8	-	0.140	0.140	9.2	1.530
2	Consulting Services	3.317	69.7	0.739	15.5	0.702	14.8	-	-	-	-	-	-	4.758
2A	Project Implementation Support & CD	1.816	71.1	0.368	14.4	0.371	14.5	-	-	-	-	-	-	2.555
2B	Detailed Engineering Design	0.659	78.0	0.100	11.9	0.085	10.1	-	-	-	-	-	-	0.845
2C	Construction Supervision	0.730	58.6	0.270	21.7	0.246	19.7	-	-	-	-	-	-	1.246
2D	External Monitoring	0.113	100.0	-	-	-	-	-	-	-	-	-	-	0.113
3	Equipment	0.416	100.0	-	-	-	-	-	-	-	-	-	-	0.416
4	Training	0.136	100.0	-	-	-	-	-	-	-	-	-	-	0.136
5	Incremental Administration	0.651	50.7	0.001	0.1	0.001	0.1	-	-	0.630	-	0.630	49.1	1.283
5A	Project Management Unit	0.325	99.2	0.001	0.4	0.001	0.4	-	-	-	-	-	-	0.328
5B	Project Implementation Unit	0.325	100.0	-	-	-	-	-	-	-	-	-	-	0.325
5C	Salary Supplements	-	-	-	-	-	-	-	-	0.630	-	0.630	100.0	0.630
	Land Acquisition and Resettlement	-	-	-	-	-	-	-	-	1.650	-	1.650	100.0	1.650
6	Unallocated	2.427	62.1	0.467	11.9	0.427	10.9	0.110	2.8	0.096	0.385	0.481	12.3	3.910
7	Interest During Construction	0.810	98.4	0.013	1.6	-	-	-	-	-	-	-	-	0.823
	Contingency	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	33.440	65.3	5.000	9.8	4.400	8.6	1.500	2.9	2.376	4.482	6.858	13.4	51.198

* 1 SDR = 1.392 US\$

2.2 LOAN AND GRANT PROCEEDS

Loans and grants utilization by category, as of 31 March 2020 are presented in **Appendix C**, and consolidated in **Table 2.2**.



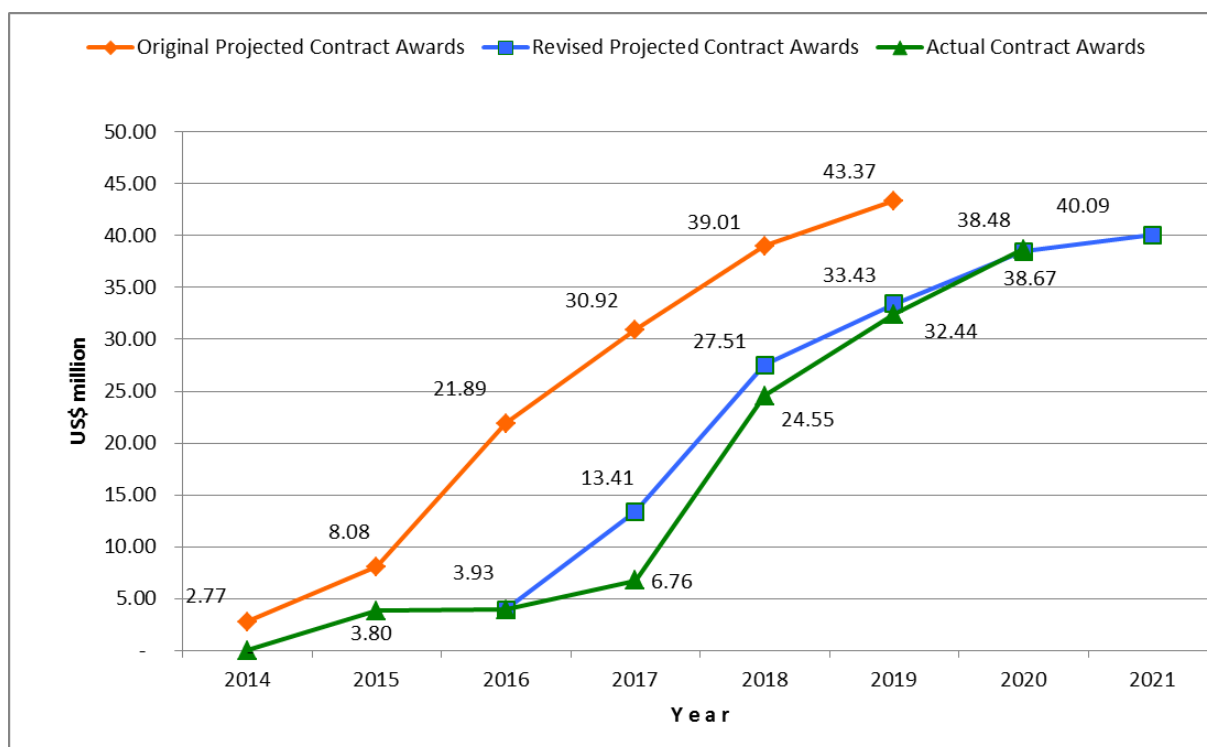
Table 2.2: Consolidated Status of Loan and Grant Proceeds

Loan/Grant No.	US Dollars					
	Allocation	Contracts Awarded	Uncontracted Loan Balance	Contracts Disbursed	Undisbursed Loan Balance	Undisbursed Contract Balance
	A	B	C = A - B	D	E = A - D	F = B - D
Loan 2983	32,982,399	29,632,066	3,350,333	16,748,227	16,234,172	12,883,839
Loan 8265	5,000,000	3,657,908	1,342,092	2,316,884	2,683,116	2,683,116
Grant 0334	1,500,000	1,500,000	-	1,500,000	-	-
Grant 0335	4,400,000	3,886,902	513,098	2,988,005	1,411,995	898,897
Total	43,882,399	38,676,877	5,205,523	23,553,117	20,329,283	16,465,852

2.3 CONTRACT AWARDS

During Q1 2020, the bidding process for Neak Loeung Flood Control Subproject (CW-10) was started. The bid opening is scheduled to be conducted on 22 April 2020. As of 31 March 2020, the contracts awarded by PMU amounted to US\$38,676,877 million, or 88% of total loan and grant amount. **Figure 2.1** shows the S-curves of the cumulative actual contract awards and original and revised projections/targets. The revision of the targets was made based on the approved reallocation of loan/grant proceeds, and updated procurement plan.

Figure 2.1: Cumulative Actual Versus Projected Contract Awards



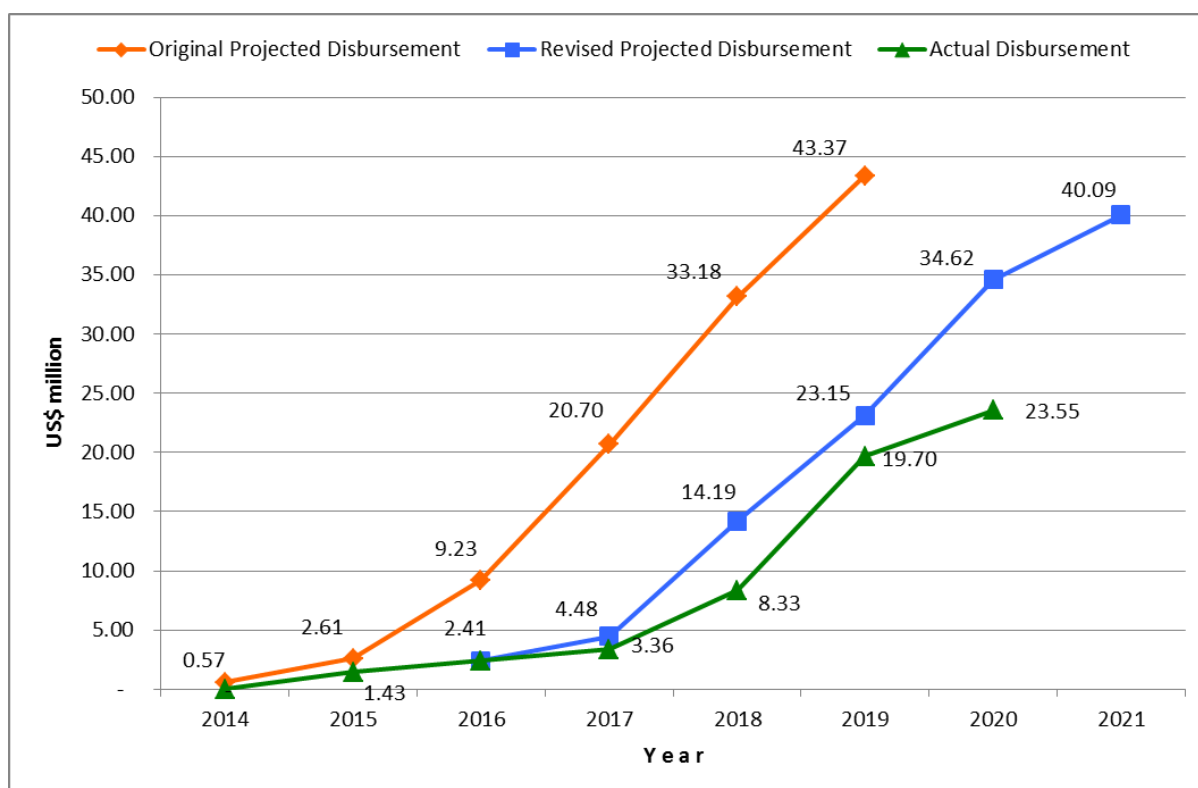
2.4 DISBURSEMENT

Disbursements during Q1 2020 were made through direct payment of Project Implementation Support and Capacity Development (PISCD) Consulting services, Civil Work



[CW6 Battambang Wastewater Treatment (Storm Drainage) and CW5 Bavet Urban Road), Construction Supervision (CS) Consulting Services, and salary for PMU and PIU government staffs. So far, a total of US\$23.553 million, or 61% of total contract awards, has been disbursed. This is equivalent to 54% of total loan and grant amount. The S-curves of the cumulative actual disbursements and original and revised projections/targets are shown in **Figure 2.2**. The revision of the targets was made based on the revised projected contract awards and the revised overall project implementation plan.

Figure 2.2: Cumulative Actual Versus Projected Disbursements



2.5 COUNTERPART FUNDS

The replenishment of RGC counterpart imprest account was made during the reporting period is US\$13,649.83 PMU and PIU staff allowances were paid from the account's balance of the previous quarter. As of 31 March 2020, the total counterpart funds released to the Project was US\$343,047 or 5 % of total government contribution.



SECTION 3 IMPLEMENTATION PROGRESS

3.1 OVERALL PROGRESS

As of 31 March 2020, the estimated disbursement of the project is 54% and the estimated physical completion of the Project is about 80%; while the time elapsed from effectiveness date was 85% of the revised loan period (112% of the original loan period). The physical completion is indicated as a percentage derived from the estimate of the weight contributed by each activity as a percentage of the total project, consistent with the S-curve concept.

Civil Work

The construction of Wastewater Treatment (Storm Drainage) in Battambang town has been completed. The construction of the Bavet Urban Road, Bavet and Poipet Wastewater Treatment (Storm Drainage) and additional works for Material Recovery Facility for three towns are in progress. The estimated physical progress of the Bavet Wastewater Treatment (Storm Drainage) is 38%, the Bavet Urban Road is 88%, Poipet Wastewater Treatment (Storm Drainage) is 65% and additional works for the MRFs in three towns is 50%.

Neak Loeung Flood Control Subproject (CW-10):

The bidding documents for the Neak Loeung Flood Control Subproject (CW-10) were submitted to ADB for review on 31 December 2019. The bid was advertised on 06 March 2020 and the bid opening is scheduled for 22 April 2020.

Field Activities and Meetings:

On February 10, 2020, at the PMU Office, a consultation meeting on Smart GRM, is the program initiated by ADB, allows local communities to lodge complaint on resettlement issues to the MPWT and development partners directly was held. After the meeting, the ADB team organized training on Smart GRM for PIU and commune councilors in Battambang town on 27 February 2020.

Environmental and Social Safeguard & Gender and Training Program:

The activities for Strengthening of Institutional Capacity are presented in Subsection 3.6. Those for Environmental Safeguards are presented in Subsection 5.1. The Resettlement activities are presented in Subsection 5.2. The activities for Implementation of Gender Action Plan are presented in Subsection 5.3. Those for Assessment of Project Performance through PPMS are presented in Section 4.

3.2 PROCUREMENT

The Project involves the procurement of: (i) civil works with an estimated amount of \$38.22 million; (ii) consulting services, \$4.76 million; (iii) goods and equipment, \$0.42 million; and (iv) training, \$0.14 million.

3.2.1 Awarded and Ongoing, and Completed Contracts

As of end of Q1 2020, the status of procurement is as follows:

- Consulting services Seven Contracts awarded: (i) PISCD Consultant (ongoing), (ii) DED Consultant (completed), (iii) Procurement Specialist (completed), (iv) Financial Specialist (completed), (v)



Construction Supervision (ongoing), (vi) Environmental Specialist (ongoing) and (vii) External Monitoring (ongoing). The recruitment of all consulting services has been completed.

- Goods and Works all six Contracts awarded and completed.
- The status of civil works' progress is presented below:

Table 3.1: Completed Contracts and Ongoing Contracts

Package Number	Completed Contracts
CW-01	MRFs (Battambang, Poipet and Bavet).
CW-06	Battambang WWT (Storm Water Drainage)
	Ongoing Contracts
CW-01a	MRFs Additional work (Battambang, Poipet and Bavet)
CW-05	Bavet Urban Road
CW-07	Poipet WWT (Storm Water Drainage)
CW-08	Bavet WWT (Storm Water Drainage)

3.2.2 Updated Procurement Plan

Due to budget shortfalls resulting from the depreciation of the SDR, and underestimation of scope of civil works and cost of construction materials in the Feasibility Studies, the EA and ADB understand that not all of the subprojects could be covered under the Project budget.

3.3 CONSULTING SERVICES

Consultants were engaged to provide services to support the PIU and PMUs during project implementation, specifically: (i) Project Implementation Support and Capacity Development (PISCD), (ii) Detailed Engineering (DED) Consultant, (iii) Construction Supervision (CS) Consultant, (iv) External Monitoring (EM) Consultant, (v) Procurement Specialist, and (vi) Financial Specialist.

3.3.1 Project Implementation Support and Capacity Development (PISCD)

Contract No. ICB/MPWT/PMU/CTDP1/001 between the Ministry of Public Works and Transport and NJS Consultants Co., Ltd. in Joint Venture with Key Consultants (Cambodia) Ltd. was signed on 04 August 2014. The consultant began mobilizing the consulting team on 15 August 2014.

Activities of the PISCD Consultant included assisting the PMU with Procurement (see Subsection 3.2), Detailed Engineering Design (see Subsection 3.3.2), Strengthening of Institutional Capacity (see Subsection 3.6), Environmental Safeguards (see Subsection 5.1), Resettlement (see Subsection 5.2), Implementation of Gender Action Plan (see Subsection 5.3), and Assessment of Project Performance through PPMS (see Section 4). The PISCD Consultants have also assisted the PMU in the preparation of this Quarterly Report.

3.3.2 Detailed Engineering Design (DED)

The Detailed Engineering Design and bid documents for the Neak Loeung Flood Control Subproject (CW-10) were completed by the PISCD Consultant in Q3 2019. During Q1 2020, the PISCD Consultant assisted the PMU in responding to queries from potential bidders.



3.3.3 Construction Supervision (CS)

During Q1 2020, the Construction Supervision Consultant continued supervision of construction of the Bavet Urban Road Subproject, Poipet and Bavet Wastewater Treatment (Storm Water Drainage) Subprojects and additional work at the MRFs. As of the end of Q1 2020, construction progress is as follows:

a) Construction of Battambang Wastewater Treatment (Storm Drainage) Subproject:

Overall Physical Progress - 100 %

b) Construction of Bavet Urban Road Subproject:

Overall Physical Progress - 88%

Construction Activity & Progress of work:

1. Lay AC Binder layer on the road pavement - 85% completed.
2. Installation of concrete curbs/paving slabs along the middle island - 95% completed.
3. Installation of concrete curbs/paving slabs along the side walkways - 75% completed.
4. Installation of electrical lighting posts - 95% completed.
5. Construction of additional road length 170 m (Pk 2+230 – 2+400 m) is in progress.

c) Construction of Poipet Wastewater Treatment (Storm Drainage) Subproject:

Overall Physical Progress - 65 %

Construction Activity & Progress of work:

1. RC Box culvert along Line – 2 & 3.
 - Steel shoring, Excavation and laying of screed concrete for box culvert along the lines above.
 - Installation of pre-cast box culvert sections along the lines 2 & 3.
 - Reinstate of concrete road/pavement along the line 2 & 3.
 - Back filling and compaction on excavated trenches.
2. Construction of box culvert section across the National road - line 1 & 4 completed.
3. Pre-casting of RC box sections is in progress.

d) Construction of Bavet Wastewater Treatment (Storm Drainage) Subproject:

Overall Physical Progress - 38 %

Construction Activity & Progress of work:

1. Construction of box culvert line L1-1 & L1-2 is in progress.



2. Construction of box culvert line L2-1 is in progress

3. Construction of box culvert line L-3 is in progress.

e) Construction of Additional works for Material Recovery Facilities at Bavet, Battambang and Poipet

Overall Physical Progress - 50 %

Construction Activity & Progress of work:

Bavet MRF

1. Casting of concrete columns (for fix steel column) of the proposed structure is completed.
2. Fabricated roof trusses, steel columns and roof purlins were delivered to the site.
3. Arrangements have been made to erect the steel structure of the building.

Battambang MRF

1. Bored piling for the columns of the proposed structure is completed.
2. Casting of concrete bases/columns is in progress.
3. Fabricated roof trusses, steel columns and roof purlins were delivered to the site.
4. Arrangements have been made to erect the steel structure of the building.

Poipet MRF

1. Casting of concrete columns and cement plastering is completed.
2. Erection of steel structure - 95% completed.

The physical & financial progress of subprojects as of the end of Q1 2020 is shown in **Table 3.2:**

Table 3.2: Physical and Financial Progress on 31 March 2020

Package No.	Name of the Subproject	Date of Commencement of Work	Contract Amount (USD)	Work Done Amount (USD)	Financial Progress		Physical Progress	
					Target	Actual	Target	Actual
CW 02	Battambang Material Recovery Facility	25-Jul-17	424,991.84	459,617.55	Completed		100%	100%
CW 03	Bavet Material Recovery Facility	25-Jul-17	389,826.64	409,719.29	Completed		100%	100%
CW 04	Poipet Material	25-Jul-17	359,571.12	630,663.16	Completed		100%	100%



Package No.	Name of the Subproject	Date of Commencement of Work	Contract Amount (USD)	Work Done Amount (USD)	Financial Progress		Physical Progress	
					Target	Actual	Target	Actual
	Recovery Facility							
CW 05	Bavet Urban Road Improvement	19-Mar-18	7,674,956.00	4,221,225.80	100%	78%	92%	88%
CW 06	Battambang Wastewater Treatment	01-Apr-18	9,368,943.03	8,057,291.00	100%	100%	100%	100%
CW 07	WWT Storm Drain - Poipet	27-May-19	2,583,030.00	258,303.00	56%	33%	88%	65%
CW 08	WWT Storm Drain - Bavet	22.11.19	5,594,396.85	1,902,094.93	32%	34%	35%	38%
CW 01a	Additional works for MRFs		258,533.73	129,266.86	65%	50%	70%	50%

3.3.4 External Monitoring (EM)

External Monitoring is part of the Safeguards Monitoring for the Project. Environmental and Resettlement Safeguards are to be monitored during the pre-construction, construction and post-construction periods. The Ministry of Economy and Finance (MEF) has engaged an external monitoring consultant to provide EM for resettlement activities and implementation of the Resettlement Plan (RP). The MPWT has engaged an External Monitoring Consultant to provide external monitoring of the implementation of the Environmental Management Plan (EMP).

The third Environment Safeguards Monitoring Report covering the period from July to December 2018 was submitted to ADB for review on 6 May 2019 and was finalized on 25 September 2019. ADB issued a NOL and the report was disclosed on the ADB Website on 30 September 2019.

The fourth Environment Safeguards Monitoring Report covering the period from January to June 2019 was submitted to ADB on 30 September 2019 and was finalized on 29 December 2019. ADB issued a NOL and the report was disclosed on ADB Website on 30 December 2019.

Environmental monitoring was implemented by External Monitoring Consultant, the PIU and the PISCD national environmental specialist on 23-26 December 2019 for preparation of the Fifth Environmental Monitoring Report. The draft of Fifth Environmental Monitoring Report covering the period from July to December 2019 was submitted to ADB at the end of January 2020.

3.3.5 Financial and Procurement Specialists

The Financial and Procurement Specialists who are contracted directly by the PMU are responsible for the preparation of Quarterly Financial Management Report, updating the Procurement Plan and Construction Contract Tendering.



3.4 ADOPTION AND IMPLEMENTATION OF THE SLEDP (OUTPUT 1)

The SLEDPs for Bavet, Neak Loeung, Battambang and Poipet, which were all prepared in 2011, were reviewed by relevant Government agencies and provincial authorities, and adopted by these agencies/authorities. The PISCD Consultant worked on updating the SLEDPs during Q1 2020. The updated SLEDPs will be submitted to ADB during Q2 2020.

3.5 IMPLEMENTATION OF PRIORITY URBAN INFRASTRUCTURE INVESTMENTS (OUTPUT 2)

The construction of the three MRFs and the Battambang Wastewater Treatment (Storm Drainage) Subproject have been completed. Construction of the Bavet Urban Road Subproject, the Bavet Wastewater Treatment (Storm Drainage) Subproject and the Poipet Wastewater Treatment (Storm Drainage) and additional works for MRFs are ongoing. The bidding documents for the Neak Loeung Flood Control Subproject have issued for bidding. The scheduled bid opening is on 22 April 2020.

It was agreed by the EA and ADB that the criteria for the prioritization of Subprojects be based on the importance and urgency of works to be done, and readiness in terms of safeguards requirements and detailed engineering designs. The agreed ranking of Subprojects, in order of priority, is shown in **Table 3.3**:

Table 3.3: Ranking of Subprojects, in Order of Priority

Rank	Package	Subproject	Readiness
1	CW02	Battambang Material Recovery Facility	No potential safeguards issues as MRF located adjacent to the existing dumpsite on land that belongs to Battambang town.
2	CW04	Poipet Material Recovery Facility	The MRF site is located on a public land proposed for the landfill. This land is currently utilized as source of borrow materials and has recently been almost completely excavated. The MRF site therefore was relocated south of the proposed landfill. The PIU has already acquired land for the new site of the MRF. Deputy governor of Poipet Town issued land title on 30 August 2019, confirmed the land 3200 m2 for MRF construction belongs to the government (see support document in Appendix M).
3	CW03	Bavet Material Recovery Facility	The PIU acquired land south of National Road No.1 for the new site of the MRF. Reference letter No.013 dated 04 May 2018, Bavet Governor provided land 20 ha for construction of MRF and WWTP (see support document in Appendix M).
4	CW06	Battambang Wastewater Treatment (Storm Drainage)	The storm drainage subproject has been completed 100% Sewerage system and wastewater treatment plant will be constructed under the ADB Tonle Sap 2 Project.



Rank	Package	Subproject	Readiness
5	CW07	Poipet Wastewater Treatment (Storm Drainage)	Contractor committed to address the issue and complete the works on time. Construction method has been changed from on-site casting to pre-casting to adapt with the narrow working corridors. Three additional full and complete teams have mobilized from first week of November 2019 by Contractor to complete the work on time. Sewerage system and wastewater treatment plant will be constructed under the ADB Livable Cities Investment Project (LCIP).
6	CW05	Bavet Urban Road	All resettlement resolution has been completed The Contractor committed to address and expedite the progress from 01 November 2019 and complete the remaining works on time. The EA Variation Order also included a proposal to add another layer of Asphalt Concrete wearing course to ensure the durability of the upgraded road and future heavy traffic.
7	CW8	Bavet Wastewater Treatment (Storm Drainage)	To speed up construction during this dry season, the IRC/GDR, EA including consultants, contractor and ADB identified the sections without IR impact, so that the free IR impact sections can be handed over to Contractor for construction. Sewerage system and wastewater treatment plant will be constructed under the ADB Livable Cities Investment Project (LCIP).
8	CW09b	Poipet Solid Waste Management	The implementation of this Subproject is deferred under GMS SECTDP. Sanitary Landfill will be constructed under the ADB Livable Cities Investment Project (LCIP).
9	CW10	Neak Loeung Flood Control	Bid documents for Construction were advertised on 06 March 2020. The scheduled bid opening is on 22 April 2020. The ADB issued a NOL for the ADB IEE and EMP on 03 February 2020. The MOE EMP for the Neak Loeung Flood Control Subproject (Khmer version) was completed and submitted to MOE for approval on 09 April 2020. MOE approved and issued the license on 13 April 2020. The DMS has been completed, Data entry is in the progress. It will be handed over to the PISCD consultant for the data analysis and DRP when data entry is finished.
10	CW09a	Poipet Wastewater Treatment (Sewerage)	MEF letter No.4755 dated 31 May 2018, MEF purchased land for pumping station construction (Support document see in Appendix M). Sewerage system and wastewater treatment plant will be constructed under the ADB Livable Cities Project (LCIP).



Rank	Package	Subproject	Readiness
11	CW12	Poipet Wastewater Treatment (Mechanical Wastewater Treatment plant)	The Mechanical Wastewater Treatment Plant will not be constructed. Lagoon system will be constructed under the ADB Livable Cities Investment Project (LCIP) (see CW09a).

3.6 STRENGTHENING OF INSTITUTIONAL CAPACITY

The capacity development program is intended to ensure smooth implementation of the priority subprojects and to provide sustainable operation and maintenance constructed infrastructure. During the report period no training course was conducted, as of Q4 2019 the training session and awareness campaigns by KCC, PISCD consultants and contractors as following:

Conducted by KCC

The formal Training Program was conducted by KCC completed in November 2018. A total of 24 training sessions were conducted by KCC. A total of 434 participants (PMU and PIU) attended in the training program, 78 of them are women. A complete list of the participants is presented in **Appendix E**.

Conducted by PISCD Consultants

During the report period no training was conducted by PISCD consultant. As of the end of Q1 2020, the training programs conducted by PISCD consultant are as follows:

Health and Sanitation Promoters with support from PIU, PDoWA, DoWA and Sangkat Councilors conducted Environmental Sanitation and Hygiene Promotion to a total 948 (622 women) students and villagers who are living in the SECTDP areas:

- 1) Bavet: conducted Environmental Sanitation and Hygiene Promotion to 385 villagers (249 women).
- 2) Battambang: conducted Environmental Sanitation and Hygiene Promotion to 159 villagers (112 women).
- 3) Poipet: conducted Environmental Sanitation and Hygiene Promotion to 404 villagers (261 women)

The training program was conducted by PISCD consultants at the PIU offices and Contractor's campsite in Poipet, Battambang and Bavet. As of Q1 2020, seven training sessions have been conducted by PISCD consultants, 1,062 participants attended the training sessions, 650 of them are women. A complete list of the participants is presented in **Appendix E**.

Conducted by Contractors

Beijing Urban Construction Group CO., LTD Conducted Training on Solid Waste Recycling Skills at the Battambang Town Dumpsite on 11 September 2019 to waste pickers at the dumpsite and waste pickers from Leap Lim company. There were 52 participants of which 30 are women.

Beijing Urban Construction Group CO., LTD Conducted Training on Concrete Works and Painting Skills in Contractor's office (BEIJING URBAN CONSTRUCTION GROUP CO., LTD), Battambang Town on 25 August 2019 to construction workers. There were 32 participants of which 31 are women.



Beijing Urban Construction Group CO., LTD Conducted Training on Existing Business for Women to 12 villages in Battambang Town on 11-15 July 2019. There were 162 participants of which 99 are women.

Road safety awareness and information campaigns was conducted by Bavet Urban Road construction Contractor in Bavet town on 28-29 June 2019 for school children, communities and garment factories workers. There were 497 school children of which 239 are women. Attendance in the road safety and awareness campaigns included 42 people from communities attended of which 25 are women and 4,969 garment factories workers from SHEICO Group garment factory and ELITE (Cambodia) of which 4,848 are women.

MTA Construction CO., LTD and Xingjiang Beixin Road and Bridge Group CO., LTD Conducted HIV/AIDs and STIs awareness campaign in Bavet Town on 22 March – 10 April 2019 to construction workers, entertainment workers, waste pickers, and villagers. There were 191 participants of which 89 are women.

MTA Construction CO., LTD Conducted Training on Existing Business for Women to seven villages in Bavet Town on 13-14 March 2020. There were participants of which 78 are women.

Beijing Urban Construction Group CO., LTD Conducted HIV/AIDs and STIs awareness campaign in Battambang Town between 01 - 31 January 2019 to construction workers, entertainment workers, waste pickers, and villagers. There were 251 participants of which 138 are women.

UNG SIM SIA Construction CO., TLD Conducted HIV/AIDs and STIs awareness campaign in Poipet Town between 01 - 30 November 2019 to construction workers, waste pickers, and villagers. There were 152 participants of which 68 are women.

So far, a total of four training sessions and four awareness campaigns were conducted by contractors in Battambang, Bavet and Poipet. The training sessions were attended by 351 participants of which 41 are women. The awareness campaigns were attended by 6,102 participants of which 5,407 are women.

A complete list of the participants is presented in **Appendix E**.



SECTION 4 PROJECT PERFORMANCE

4.1 GENERAL

Project performance M&E includes tracking progress from the baseline situation against the targets and the indicators identified in the DMF, and assessing progress toward achieving the respective result level outputs, outcome and impact.

In this Project, although outputs, outcome and impacts will be achieved only as Subprojects are completed (some of the Subprojects sooner, others later; some fully, others partly), it is necessary to assess the likelihood or degree of the achievement of outputs, outcome and impact already during implementation. The subjectivity of the judgments involved can be reduced by taking into account the implementation progress and, equally important, by realistically reassessing the assumptions and risks that affect outputs and development objectives.

4.2 ASSESSMENT OF ASSUMPTIONS AND RISKS

Assumptions and risks are the external factors which cannot be controlled by the project manager or the executing agencies, but which influences the success of project implementation. These are identified in the DMF. Assumptions explain important conditions that affect project implementation, while risks are the probability or likelihood that key assumptions may not materialize. The assessment of assumptions and risks is presented in **Appendix F**.

As of the end of Q1 2020, the overall GAP implementation and gender indicators in DMF are on-track. The project has achieved the following: (i) 159 women (construction workers, waste pickers and home-based and street vendors in Battambang province received skills training; (ii) 5,508 people (5,212 women) received awareness raising on road safety; (iii) 13,062 days of 43,487 days (30%) of unskilled laborer claimed by women; (iv) 27 participants (8 women) received a training of the training on sanitation and hygiene. The skills training provided to (i) construction workers; (ii) waste pickers; and (iii) home-based and street vendors in Battambang. Female construction workers appreciated the skills training on concrete and painting work, which have equipped them to do better work and increase their job opportunities. Female waste pickers acknowledged that they have improved their knowledge on solid waste segregation and recycling and hygiene and sanitation. PMU and PIUs shall work closely with contractors to review and approve the technical proposal before the service providers deliver the training.

4.3 PROJECT PERFORMANCE AGAINST THE TARGETS SET OUT IN THE DMF

M&E of performance indicators involves the tracking and assessment of the degree of attainment and sustainability of Project outputs, outcome and impact by comparing actual performance, as measured by its corresponding indicator, to the baseline and performance target.

The Project's performance against the targets set out in the DMF is reported in **Appendix G**. As of the end of Q1 March 2020, assessments of progress toward achieving Outputs 1 and 3 are being carried out since the activities toward attaining these outputs have commenced and are ongoing. Progress toward achieving Output 2, Outcome and Impact, however, can only be assessed upon completion of subprojects and during their operation.



The project's DMF has been updated to reflect the change in scope upon the official request from the government including budget reallocation. The project's DMF has been submitted to ADB on 29 November 2019 for approval.

4.4 BASELINE VALUES, PERFORMANCE TARGETS FOR INDICATORS, AND PROJECTED ACHIEVEMENTS

The projected achievements of performance target values for the indicators in the project DMF has been updated based on the results of civil work completed in the 3rd, 4th quarters of 2017, 2018 and 2019. The baseline values and performance targets, and projected achievements that have been updated, are discussed in **Appendix H**.



SECTION 5 COMPLIANCE WITH SAFEGUARDS AND COVENANTS

5.1 ENVIRONMENTAL SAFEGUARDS

Update IEE and EMP Neak Loeung

The update of a separate ADB IEE and EMP for the Neak Loeung Flood Control Subproject was completed and submitted to ADB in January 2020. ADB issued a NOL for the updated IEE and EMP on 03 February 2020.

Ministry of Environment Approval

The MOE confirmed on 21 August 2019 that an EMP in Khmer and the Ministry specified format is required for the Neak Loeung Flood Control Subproject. The MOE EMP for the Neak Loeung Flood Control Subproject in Khmer was completed and submitted to MOE for approval on 09 April 2020. MOE approved the document and issued the license on 13 April 2020.

Project Information Disclosure

The booklets in Khmer have been developed and were distributed to villagers in Bavet on 17 January 2020. The PISCD national Environmental Specialist organized a meeting and provided booklets to village chiefs of Chrakleav, Bavet Leu and Bavet Kandal to distribute to villagers and follow up to make sure the activities are done. Photographs of the meeting are presented in **APPENDIX O**.

The information in the booklets included the following:

- Brief of project background
- Benefits
- Environmental protection and mitigation measure
- Grievance Redress Mechanism
- Telephone number to register a complaint

Training on Environmental Monitoring, GRM and Reporting

The training on Environmental Monitoring, GRM and Reporting was conducted by the PISCD Environmental Specialist on 13 March 2020. The number of participants in the training course is shown in Table 5.1.

Table 5.1: Participants from Target Groups

No.	Target Groups	Number of Participant
1	Project Implementation Unit (PIU), Bavet	4 (1woman)
2	Construction Supervision (CS)	2
3	Contractor HSB (Wastewater treatment in Bavet Town)	3
4	Contractor (MRF three towns)	3



No.	Target Groups	Number of Participant
5	Commune Council	1
6	Bavet City Hall Official	1
	Total	14 (1 woman)

CEMP

CEMP for additional works at MRFs has been completed after comments and correction and submitted to PMU by January 2020.

5.2 RESETTLEMENT

Resettlement activities during Q1 2020 include the following:

Poipet Wastewater Treatment (Storm Drainage) Subproject

The updated RP has been prepared and approved by both GDR and ADB in December 2018 and disclosed on ADB website. Compensation and other entitlements have been paid to all affected households, except one case (an AH located at the end section L#1), the provincial GDR and the provincial GRC planned to carry out another consultation/negotiation meeting in early January 2020.

Bavet Wastewater Treatment (Storm Drainage) Subproject

The updated RP has been prepared, approved and disclosed on ADB website in October 2019. Contract agreements with affected person to received compensation have been signed and compensation payment had been made in February 2020. ADB issued NOL handover letter on 18 March 2020. Line #4 with one AH is under progress of negotiation and preparing the contract agreement.

Neak Loeung Town

Following the completion of the DED, Corridor of Impact and hand it over to IRC/GDR by MPWT for the detailed measurement survey and started the process of the public consultation. The IRC provincial meeting was held at Prey Veng Provincial hall on 27th November with the participation from the chief of IRC, Chief of Inter-Ministerial Resettlement Committee and relevant stakeholders. The orientation meeting to the DMS team by GDR, PISCD was conducted the following day at Peam Ro district. The public consultation with the Affected Households (AHs) was conducted 5 times in 3 days, a half day of each, on 06, 09 and 11 December 2019 to accommodate the number of AHs - 452. The setting out of the alignment and DMS process also was started a day after the first day the public consultation. Setting out of the alignment and the DMS were completed in February 2020. Data entry was completed and the cost of study report was submitted for the approval.

5.3 IMPLEMENTATION OF GENDER ACTION PLAN

During Q1 2020, the PISCD National Gender Specialist was remobilized. The following activities for implementation of Gender Action Plan were accomplished:

- Updated GAP progress report and assessed if all targets and actions in GAP remain relevant in the changes of project scope.
- Bavet Urban Road: Developed TOR for consultant to conduct training on “Existing Business Improvement for Women” and sent to contractor for



consultant selection. Assist contractor to review proposal and submitted to PMU for approval. As a resultant, consultant was selected to do training preparation as required by TOR. Up to date, the training has been completed. The training report will be reviewed and sent to PMU/ADB by April 2020.

- Continued monitoring civil work contractors to ensure mobilization and utilization of unskilled women in the construction work. Supported civil work to ensure that the gender action target of 30% women unskilled laborers is achieved.

GAP Implementation Progress is presented in **Appendix J**.

5.4 STATUS OF COMPLIANCE WITH LOAN COVENANTS, AND RISK ASSESSMENT AND RISK MANAGEMENT PLAN

There are 36 key loan covenants, out of which twenty-six (28) are complied, three (3) are ongoing, four (4) are partly complied and one (1) is not yet due for compliance. The list of covenants under relevant categories and their status of compliance as of March 31, 2020 are provided in **Appendix K**.

The status of compliance with the Risk Assessment and Risk Management Plan is presented in **Appendix L**.



SECTION 6

GRIEVANCE REDRESS MECHANISM (GRM)

6.1 GRM OBJECTIVE

A grievance redress mechanism (GRM), consistent with the requirements of the ADB Safeguard Policy Statement (2009) will be established to prevent and address community concerns, reduce risks, and assist the project to maximize environmental and social benefits. In addition to serving as a platform to resolve grievances, the GRM has been designed to help achieve the following objectives: (i) open channels for effective communication, including the identification of new environmental issues of concern arising from the project; (ii) demonstrate concerns about community members and their environmental well-being; and (iii) prevent and mitigate any adverse environmental impacts on communities caused by project implementation and operations. The GRM is accessible to all members of the community.

6.2 PROPOSED GRM SYSTEM

In Cambodia, there is currently no existing legally established system to resolve environmental concerns and complaints. The MPWT, as the EA of the CTD1 will establish the GRM. The setup shall be made before commencement of site works and have members from the PMU, district authority and commune councils. Grievances can be filed in writing or verbally with any entry point of the GRM. The committee will have 15 days to respond with a resolution. The PMU's Environment Safeguards Officer will oversee the implementation of the mechanism with technical support by PMU's environmental safeguard consultants and will be responsible for keeping the PMU informed. The PIU's Environmental Safeguards Focal Point will be responsible for ensuring GRM implementation at the Subproject level effectively.

6.3 ACCESS TO THE MECHANISM

A well-defined grievance redress and resolution mechanism will be established to resolve grievances and complaints in a timely and satisfactory manner. The PMU, through Environment Safeguards Officer (PMU-ESO) and staff in the MPWT, will ensure that: (i) The public and all stakeholders are aware of their rights to access, and will have access to, the GRM free of administrative and legal charges; and (ii) The GRM is fully disclosed prior to construction: (a) in public consultations, (b) through posters displayed in the commune office (posters to include names and contact details of the PIU-SFP). The GRM is fully disclosed prior to construction: (a) in public consultations, (b) through posters displayed in the commune office (posters to include names and contact details of the PIU).

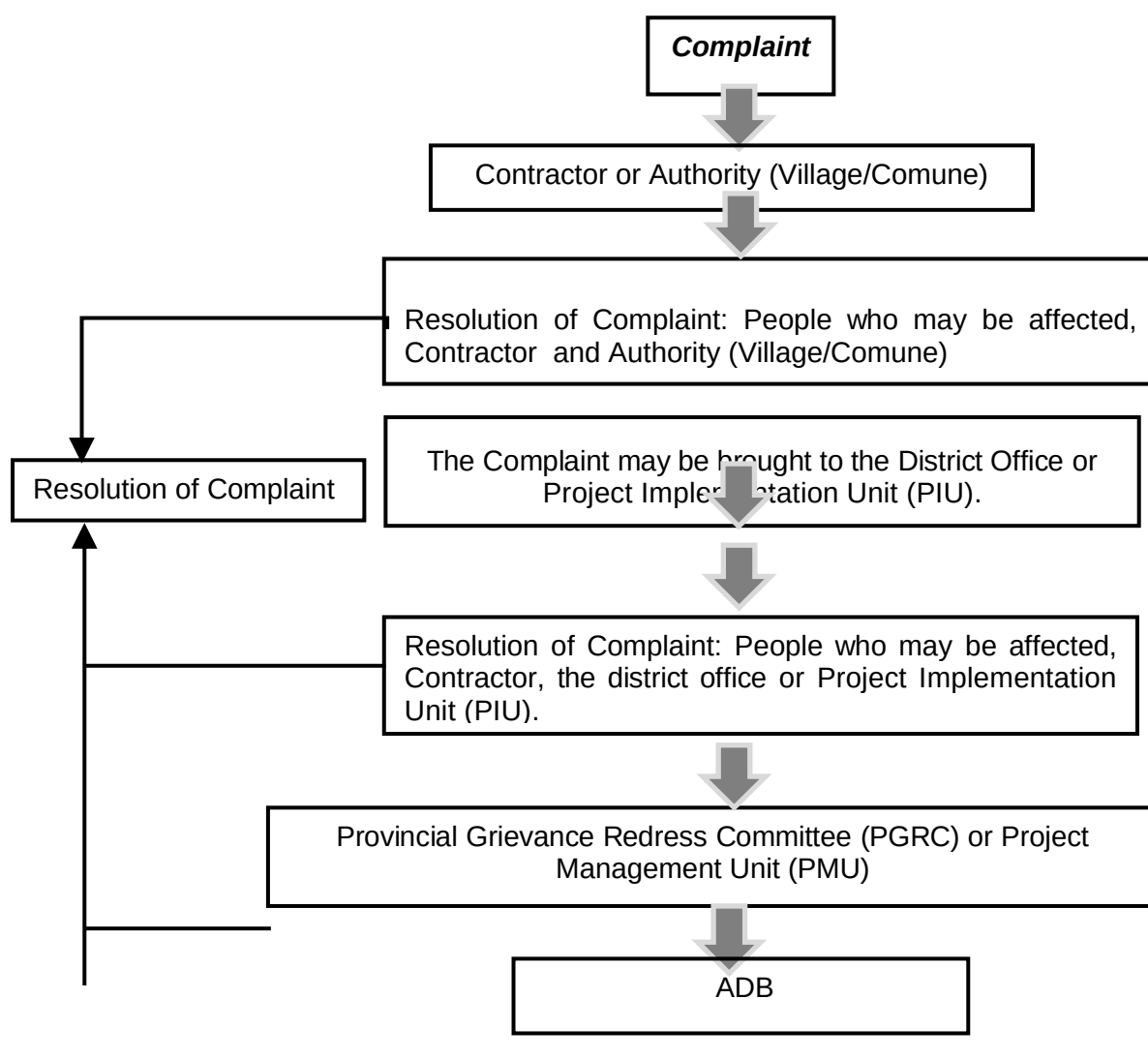
The grievance redress process applies to environmental issues and includes three steps of which three are followed before complaints may be elevated to the ADB as a last resort, as follows:

- (i) 1st step: Complaints and grievances will be provided verbally or in writing to the village chief, commune chief, or to contractor. The receiving agent will provide immediate written confirmation of receiving the complaint. If after 5 days the complainant does not hear from the contractor or not satisfied, the complainant will continue to village chief and then go to commune chief/council if still not satisfied. If after 15 days the complainant does not hear from the contractor, village and commune chiefs or if he/she is not satisfied with the decision taken in the first stage, the complaint may be brought to the District Office or Project Implementation Unit (PIU).



- (ii) 2nd step: The District Office in cooperation with Project Implementation Unit (PIU) has 15 days within which to resolve the complaint to the satisfaction of all concerned. If the complaint cannot be solved at this stage, the District Office or Project Implementation Unit (PIU) will bring the case to the Provincial Grievance Redress Committee (PGRC) or Project Management Unit (PMU) and has to inform the complainant. The Annex 10: GRM-Complaint Recording Form.
- (iii) 3rd step: The PGRC or Project Management Unit (PMU) meets with the aggrieved party and tries to resolve the situation. Within 15 days of the submission of the grievance, the Committee or PMU will make a written decision and submit copies to ADB.

Figure 6.1: Grievance Redress Mechanism Chart





SECTION 7

MAJOR PROJECT ISSUES AND PROBLEMS, AND ACTIONS TAKEN

The major project issues and problems encountered, and actions taken during Q1 2020 are as follows:

Issues/Problems	Action Taken
1. Bavet Urban Road Subproject, this Subproject has delayed construction work, due to rainy season, upon handing over of site for work and additional work.	The Contractor committed to address and expedite the progress from 01 November 2019 and complete the remaining works on time.
2. Pipet Wastewater Treatment (Storm Drainage) Subproject, this Subproject has delayed construction work, due to rainy season and upon handing over of site for work, narrow site positioning which is difficult to carry out the works.	The Contractor committed to address the issue and complete the remaining works on time. Construction method has been changed from on-site casting to pre-casting to adapt with the narrow working corridor. Three additional teams were mobilized to speed up the works. The changing the alignment of L#2 including the contract variation was done. ADB issued the NOL on 3 April 2020.
3. One case (AH at the end section L1 has not been compensated.	Provincial GDR and the provincial GRC planned to carry out consultation meetings at the end of December and at early January 2020. The compensation was expected to be done in Q1, 2020.
4. Contractors were not aware of the EMP requirements, which was one of the reasons for incomplete implementation of the EMP.	- Contractors are regularly reminded of their responsibilities. - The training on Environmental Monitoring, GRM and Reporting was provided by the PISCD Environmental Specialist on 13 March 2020 to contractors for implementation of the EMP.



SECTION 8 ACTIVITIES FOR THE NEXT STEPS

The work plans for the next steps is presented in **Table 8.1** and agree action plan is presented in **Appendix N**.

Table 8.1: Work Plan for Next Steps (Q2 2020)

Main Task	Activities to be Carried out	Responsible	Agreed Due Date
Civil Work	Construction supervision and coordination works for implementation of Poipet, Bavet and Neak Loeung Subprojects.	CS Consultant, PMU and PIU	Q2 2020
Procurement	Bid opening for Neak Loeung Flood Control Subproject	PMU Procurement Specialist	22 April 2020
	Sign contract for Neak Loeung Flood Control Subproject	PMU Procurement Specialist	Q2 2020
SLEDPs	The SLEDPs to be updated and disclosed	PISCD Consultant	Q2 2020
Implementation of Gender Action Plan	- Follow up training course on Existing Business Improvement for Women in Bavet town. - Support PMU to follow up Contractor in Poipet to select consultant to conduct Existing Business to Women in Poipet town. - Assist PIU to monitor civil works Contractors regarding core labor issues and unskilled women in construction. - Update GAP progress report. - Support civil work to ensure that the gender action targets (30% women unskilled laborers)	PISCD Consultant	Q2 2020
Resettlement	- DRP report preparation for Neak Loeung Flood Control Protection subproject. - Contract signing with AHs of Neak Loeung Flood Control Protection subproject - Compensation.	GDR/PISCD Consultant	Q2 2020



Main Task	Activities to be Carried out	Responsible	Agreed Due Date
Environmental Safeguards	• Environmental Monitoring and reporting. • Review Contractor's environmental monitoring report. • Review CEMP Neak Loeung Flood Control Protection	PISCD Consultant Environmental Specialist	Q2 2020
	• Updating of projected accomplishments of performance, baseline and target values. • Data collection/information to prepare Q2 2020 Quarterly Report	PISCD Consultant	Q2 2020



APPENDIX A

KEY MEMBERS OF PROJECT MANAGEMENT UNIT AND PROJECT IMPLEMENTATION UNITS

A.1 Key Members of Project Management Unit

PMU Member	Project Responsibility	Phone
1. H.E. Vong Pisith	- Project Director	012 833 411
2. Mr. Sem Kim Choeun	- Project Manager	089 618 778
3. Mr. Pou Manith	- Procurement Officer	012 803 203
4. Ms. Thap Solini	- Financial Officer	
5. Mr. Vong Rada	- Technical Officer and Gender Focus Point	012 451545
6. Mr. Vong Litet	- Social & Environmental Affairs	
7. Mr. Chay Vila	- Municipal Development Planning	092 443 434
8. Mr. Sros Sitharith	- Impact Assessment	
9. Mr. Pal Piseth	- General Administrator	
10. Mr. Nuon Sikheng	- Liaison Officer	
11. Mr. Ung Sa Em	- Driver	
12. Mr. Nget Chan Goeun	- Driver	
13. Mr. Mao Chansok	- Driver	
14. Mrs. Srey Chea	- Office Support	

A.2 Key Members of Project Implementation Units

PIU Member	Project Responsibility	Phone
Battambang		
1. Mr. Chan Sambo	- Chief of PIU	092 930 966
2. Mr. Dy Pao	- Deputy Chief of PIU	
3. Mrs. Kem Sokuntheary	- Administrative & Financial Officer	092 818017
4. Mr. Prounh Rith Tha	- Technical Officer	
5. Mr. Song Soeung	- Technical Officer	012 975 250
6. Mr. Nou Chamroeun	- Urban Development Plan	017 339 986
7. Ms. Sok Kinna	- Social & Environmental Officer	012 479 030
8. Mrs. Toun Bopha	- Impact Assessment	

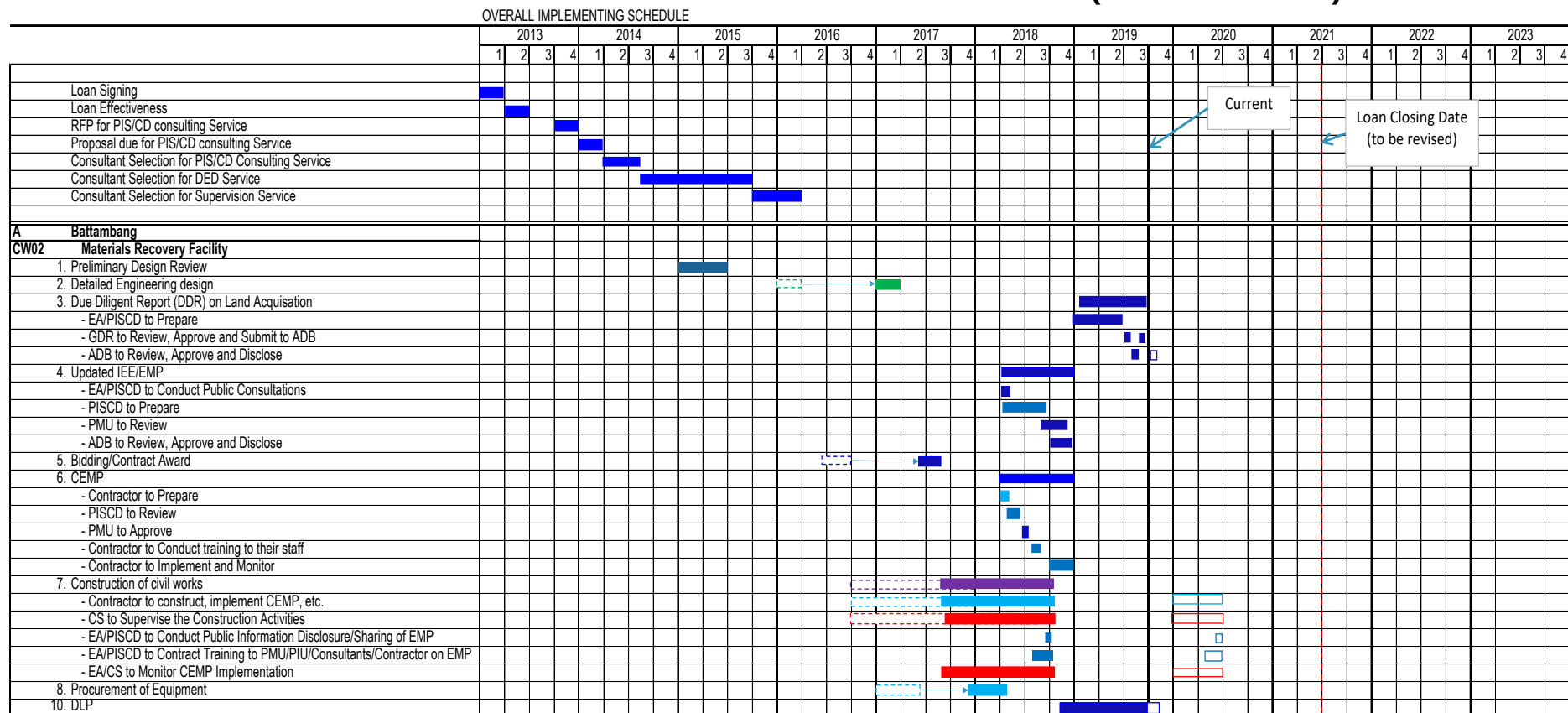


PIU Member	Project Responsibility	Phone
9. Mr. Nou Chhorvivann	- Coordinator and Gender Focus Point	017 260 560
Poipet		
1. Mr. Chea Sovanthoun	- Chief of PIU	012 220 015
2. Mr. Touch Mony	- Deputy Chief of PIU	012 998 998
3. Mr. Chheang Monin	- Technical Officer	
4. Mr. Orn Siphea	- Technical Officer	012 686 196
5. Mr. Sok Penhnane	- Urban Development Plan	
6. Ms. Chhay Vannin	- Administrative & Financial Officer	012 509 158
7. Mr. Sang Sony	- Social & Environmental Officer	077 319 444
8. Ms. Sophal Leaphea	- Impact Assessment and Gender Focus Point	017 622 270
9. Mr. Rinh Bunchhuoy	- Coordinator	
Neak Loeung		
1. Mr. Kry Rathat	- Chief of PIU	012 497 374
2. Mr. Yaem Pheara	- Deputy Chief of PIU	097 249 3342
3. Mr. Nhem Sokheourn	- Technical Officer	
4. Mrs. Penh Sophea	- Urban Development Plan	031 233 2340
5. Mr. Puth Sophea	- Social & Environmental Officer	088 222 6737
6. Mrs. Phat Sreysros	- Gender & Public Campaign Officer	093 427 117
7. Mr. Prak Sareth	- Impact Assessment	
Bavet		
1. Mr. Noun Lihoun	- Chief of PIU	012 707 616
2. Mrs. Chuon Sovannary	- Deputy Chief of PIU	088 4412888
3. Mr. Yun Raksmeay	- Technical Officer	
4. Mr. Sok Sophal	- Administrative & Financial Officer	097 751 6364
5. Mr. Keo Sarang	- Social & Environmental Officer and Gender Focus Point	088 6440544
6. Mr. Kham Rithy	- Urban Development Plan	097 481 1801



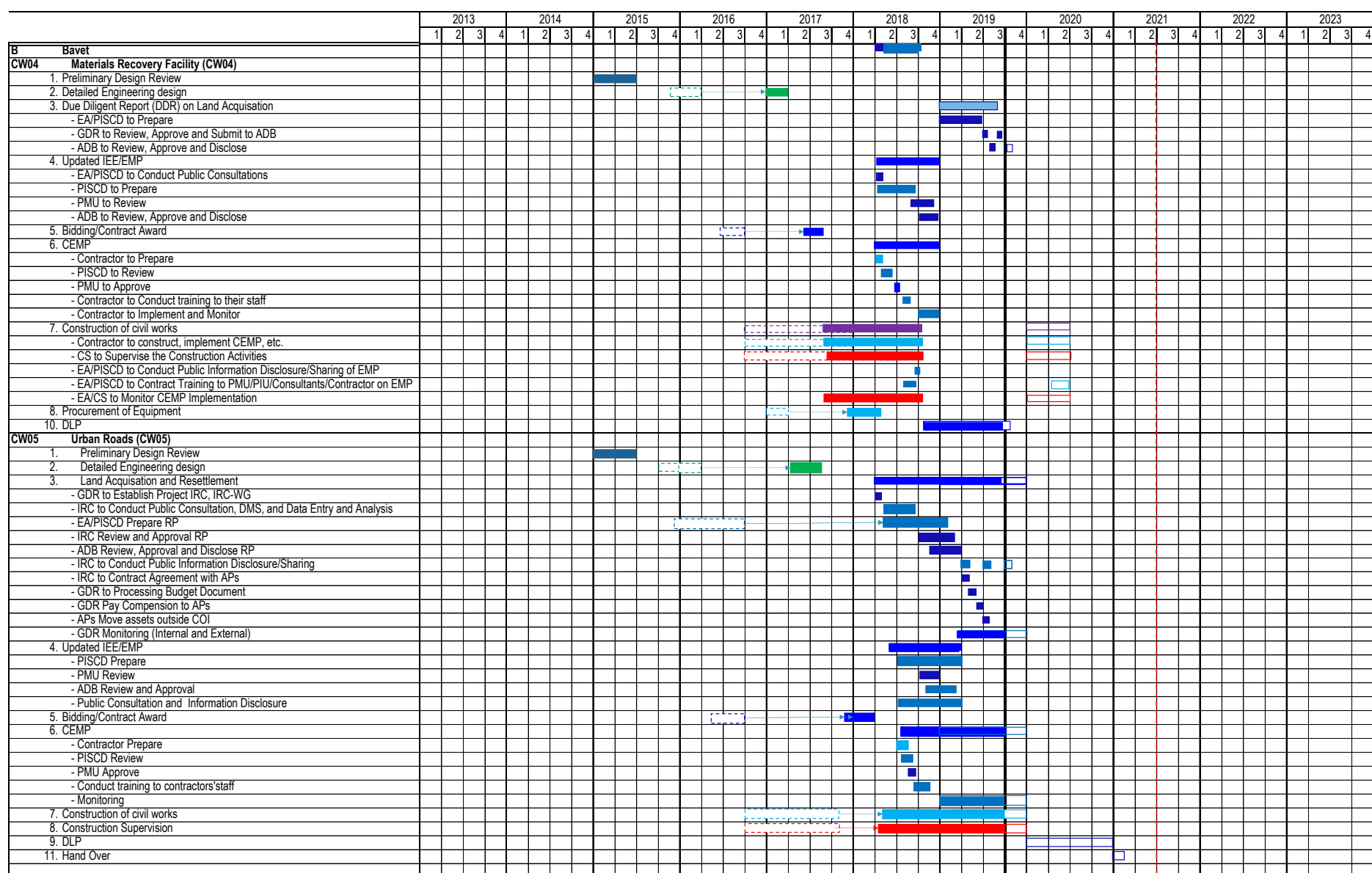
APPENDIX B

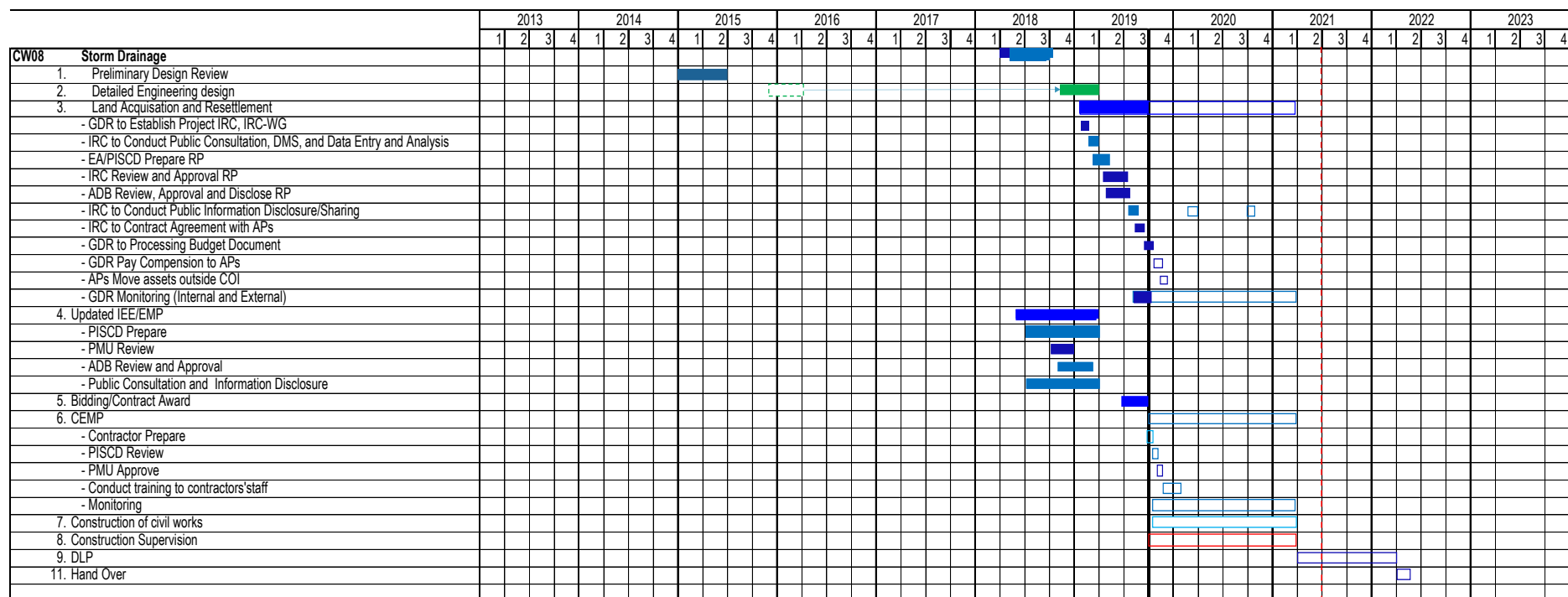
REVISED OVERALL PROJECT IMPLEMENTATION PLAN (November 2019)





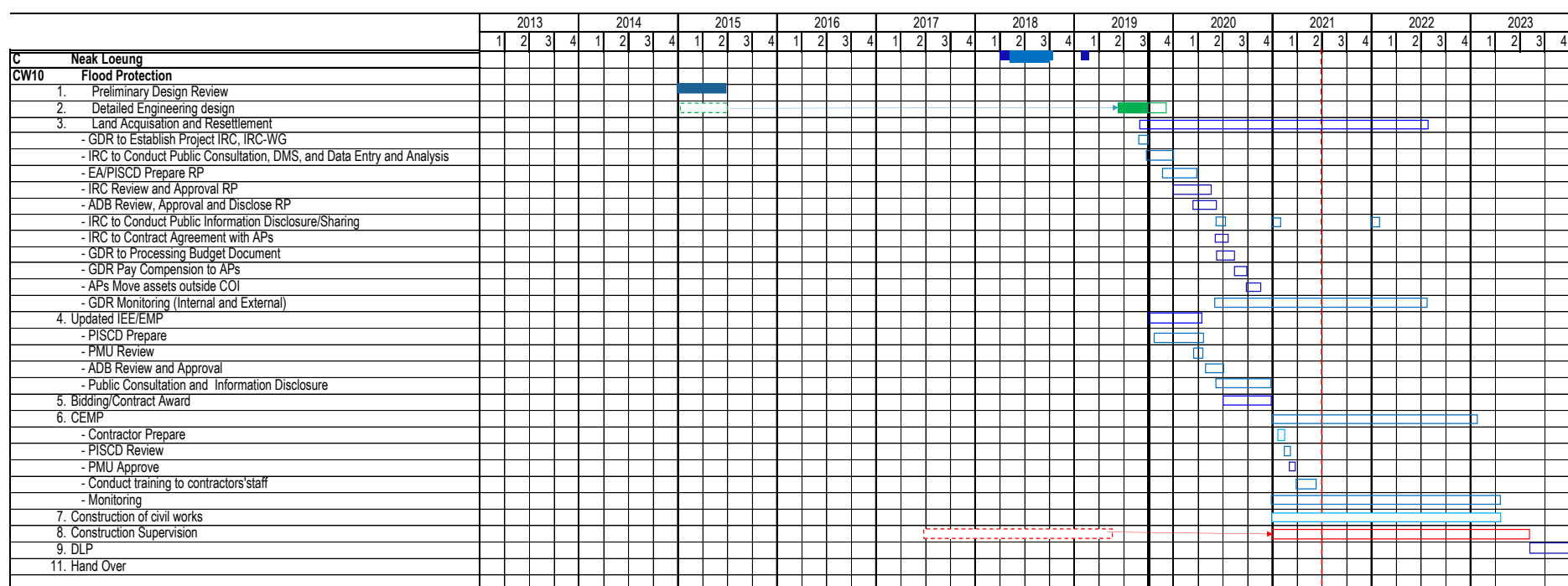
Ministry of Public Works and Transport, Kingdom of Cambodia
GMS: Southern Economic Corridor Towns Development Project







Ministry of Public Works and Transport, Kingdom of Cambodia
GMS: Southern Economic Corridor Towns Development Project



Quarterly Report, 1st Quarter 2020: Appendices



Ministry of Public Works and Transport, Kingdom of Cambodia
GMS: Southern Economic Corridor Towns Development Project

		2013				2014				2015				2016				2017				2018				2019				2020				2021				2022				2023			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Other Studies and Trainings																																													
1. Strategic Local Economic Development Plans (SLEDPs)																																													
2. O and M Training for MRFs																																													
3. O and M Training for Neak Loeung Pump Station																																													
E.	Project Implementation Support and capacity development consultant																																												
Implementation support and benefit monitoring																																													
F.	Capacity Development and Training																																												
Capacity Development and Training																																													
G.	Independent Monitoring																																												
Prequalification, awarding of consultant																																													
Mobilization																																													
Implementation support and benefit monitoring																																													

Legends:

Responsibility	Works Planned at PAM2015	Works Contracted/Planned at this mission	Works Progress Completed
PISCD:			
DED:			
MPWT			
Contractor			
Construction Supervision			
External organization			



APPENDIX C LOANS AND GRANTS UTILIZATION

Status of Loan Utilization (Loan 2983)

As of 31 Mar 2020							
Cat. Ref.	Category Name	US Dollars					
		Allocation	Contracts Awarded	Uncontracted Loan Balance	Contracts Disbursed	Undisbursed Loan Balance	Undisbursed Contract Balance
		A	B	C = A - B	D	E = A - D	F = B - D
01	Works		-	-	-	-	-
1A	CW- Battambang WWT	7,465,094	10,948,935	(3,483,841)	6,787,786	677,308	4,161,149
1B	CW- Road and Solid Waste M	9,585,008	9,589,798	(4,790)	5,367,877	4,217,130	4,221,921
1H	CW-Bavet Drain&NL FC	10,390,346	4,309,364	6,080,982	-	10,390,346	4,309,364
02A	CS - PISCD	2,675,225	2,672,594	2,631	2,365,365	309,860	307,228
02B	CS - DED	629,005	629,004	1	629,004	1	-
02C	CS - Construction Supervision	716,076	713,065	3,011	461,612	254,464	251,453
02D	CS - External Monitoring	-	-	-	-	-	-
03	Equipment	367,305	367,281	24	367,281	24	-
04	Training	-	-	-	-	-	-
05A	Incremental Admin - PMU	211,822	297,573	(85,751)	247,980	(36,158)	49,593
05B	Incremental Admin - PIUs	143,354	104,453	38,901	104,453	38,901	-
06	Unallocated	-	-	-	-	-	-
07	Interest During Construction	791,733	-	791,733	178,264	613,469	(178,264)
99	Imprest Account	7,432	-	7,432	238,605	(231,173)	(238,605)
	Total	32,982,399	29,632,066	3,350,333	16,748,227	16,234,172	12,883,839
ADB Source: 30 Mar 2020							

Status of Loan Utilization (Loan 8265)

As of 31 Mar 2020							
Cat. Ref.	Category Name	US Dollars					
		Allocation	Contracts Awarded	Uncontracted Loan Balance	Contracts Disbursed	Undisbursed Loan Balance	Undisbursed Contract Balance
		A	B	C = A - B	D	E = A - D	F = B - D
01	Works						
1A	CW- Battambang WWT	1,828,652	1,828,653	(1)	1,535,922	292,730	292,730.46
1H	CW-Bavet Drainage & NL FC	2,257,403	928,670	1,328,733	-		2,257,403.00
2A	CS - PISCD	531,139	530,781	530,781	469,765	61,374	61,374.13
2B	CS - DED	98,080	98,079	1	98,079	0.81	0.81
2C	CS - Construction Sup.	270,435	270,435	-	175,094	95,341	95,340.74
03A	Increment Adm PMU	1,291	1,290	1	1,290	1	0.69
03B	Increment Adm PIU	-	0				
04	Service Charge	13,000	-	-	2,584	10,416	10,415.89
05	Unallocated	-	-			-	-
	Imprest Account			-	34,150	(34,150)	(34,150.00)
	Total	5,000,000	3,657,908	1,859,515	2,316,884	425,713	2,683,115.72
ADB Source: 30 Mar 2020		-	-				



Status of Grant Utilization (Grant 0334)

As of 31 Mar 2020							
Cat. Ref.	Category Name	US Dollars					
		Allocation	Contracts Awarded	Uncontracted Loan Balance	Contracts Disbursed	Undisbursed Loan Balance	Undisbursed Contract Balance
		A	B	C = A - B	D	E = A - D	F = B - D
01	Works						
01	Material Recovery Facility	1,500,000	1,500,000	-	1,500,000	-	-
	Total	1,500,000	1,500,000	-	1,500,000	-	-
ADB Source: 30 Mar 2020				ADB	1,500,000		1.00

Status of Grant Utilization (Grant 0335)

As of 31 Mar 2020							
Cat. Ref.	Category Name	US Dollars					
		Allocation	Contracts Awarded	Uncontracted Loan Balance	Contracts Disbursed	Undisbursed Loan Balance	Undisbursed Contract Balance
		A	B	C = A - B	D	E = A - D	F = B - D
01	Works						
01A	CW- Battambang WWT	2,665,290	2,665,291	(1)	2,238,631	426,659	426,660
01H	CW- Bavet & NL	866,223	356,363	509,860	-	866,223	356,363
02A	CS - PISCD	537,757	534,519	3,238	473,073	64,684	61,446
02B	CS - DED	83,489	83,489	0	83,489	0	-
02C	CS - Construction Sup.	245,850	245,850	-	159,177	86,673	86,673
03	Incremental Administration	1,391	1,390.67	0	1,391	0	-
04	Unallocated	-	-	-	-	-	-
	Imprest Account		-	-	32,245	(32,245)	(32,245)
	Total	4,400,000	3,886,902	513,098	2,988,005	1,411,995	898,897
ADB Source: 30 Mar 2020							



APPENDIX D

UPDATED PROCUREMENT PLAN

(Updated as of 22 May 2019)

Basic Data

Project Name: Greater Mekong Subregion Southern Economic Corridor Towns Development Project	
Project Number: 43319-033	Approval Number: 2983/8265/0334/0335
Country: Cambodia	Executing Agency: Ministry of Public Works and
Project Procurement Classification: Category A	Implementing Agency: N/A
Project Procurement Risk: Low	
Project Financing Amount: US\$ 54,780,000 ADB Financing: US\$ 37,000,000 Cofinancing (ADB Administered): US\$ 10,900,000 Non-ADB Financing: US\$ 6,880,000	Project Closing Date: - Original: 30 June 2019 - Revised: 30 June 2021
Date of First Procurement Plan: 10 December 2012	Date of this Procurement Plan: 22 May 2019

A. Methods, Thresholds, Review and 18-Month Procurement Plan

1. Procurement and Consulting Methods and Thresholds

Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	Threshold	Comments
International Competitive Bidding for Goods	US\$ 1,000,000 and Above	
National Competitive Bidding for Goods	Beneath that stated for ICB, Goods	The first language version of National Competitive Bidding is subject to prior review, thereafter post review.
Shopping for Goods	Below US\$ 100,000	The first language version of shopping is subject to prior review, thereafter post review.
International Competitive Bidding for Works	US\$ 3,000,000 and Above	
National Competitive Bidding (NCB) for Works	Beneath that stated for ICB, Works	The first language version of National Competitive Bidding is subject to prior review, thereafter post review.
Shopping for Works	Below US\$ 100,000	The first language version of shopping is subject to prior review, thereafter post review.

Consulting Services



Method	Comments
Consultant's Qualification Selection for Consulting Firm	Prior review
Quality- and Cost-Based Selection for Consulting Firm	Prior review
Individual Consultants Selection for Individual Consultant	Prior review

2. Goods and Works Contracts Estimated to Cost \$1 Million or More

The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value (US\$)	Number of Contracts	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
CW-08	Bavet Wastewater Treatment Subproject (Drainage)	6,900,000	1	ICB	Prior	1S1E	Q3 / 2019	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Small Works
CW-10	Neak Loeung Flood Control Subproject	8,000,000	1	ICB	Prior	1S1E	Q4 / 2019	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Small Works
CW01a	Additional Works for MRF in Battambang, Bavet & Poipet Towns	270,000	1	NCB	Post	1S1E	Q3/ 2019	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Based on SOP/PM of Cambodia

3. Consulting Services Contracts Estimated to Cost \$100,000 or More

The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior/ Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments



4. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000 (Smaller Value Contracts)

The following table lists smaller-value goods, works and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months.

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments

Consulting Services							
Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments

B. Indicative List of Packages Required Under the Project

The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Comments

Consulting Services							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Review (Prior/Post)	Type of Proposal	Comments
NA							

C. List of Awarded and On-going, and Completed Contracts

The following tables list the awarded and on-going contracts and completed contracts.

1. Awarded and Ongoing Contracts

Goods and Works							
Package Number	General Description	Estimated Value (US\$)	Awarded Contract Value (US\$)	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
CW-01	Battambang Materials Recovery Facility Subproject	480,000	424,991.84	NCB	08-May-2017	07-Jul-17	Taing Cheng Oing Construction & Import Export Co., Ltd VO1= US\$465,709.30



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Goods and Works							
Package Number	General Description	Estimated Value (US\$)	Awarded Contract Value (US\$)	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
							VO2= US\$459,617.55
	Bavet, Materials Recovery Facility Subproject	420,000	389,826.64	NCB	08-May-2017	07-Jul-17	Taing Cheng Oing Construction & Import Export Co., Ltd VO1= US\$418,848.05 VO2= US\$409,719.29
	Poipet Materials Recovery Facility Subproject	490,000	359,571.12	NCB	08-May-2017	07-Jul-17	Taing Cheng Oing Construction & Import Export Co., Ltd VO1= US\$615,442.65 VO2= US\$630,663.16
CW-06	Battambang Wastewater Treatment Subproject	12,000,000	9,368,943.03	ICB	Prior	03-Jan-18	Beijing Urban Construction Group Co., Ltd
CW-05	Bavet Urban Roads Subproject	9,900,000	7,674,956.00	ICB	Prior	13-Feb-18	MTA Construction Co., Ltd and Xinjiang Beixin Road and Bridge Group Co. Ltd (JV)
CW-07	Poipet Wastewater Treatment Subproject (Drainage)	2,600,000	2,583,030.00	NCB	Prior	25-Jan-19	Ung Simsia Construction Co., Ltd.

Services							
Package Number	General Description	Estimated Value	Awarded Contract Value	Recruitment Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
CS-01	Project Implementation Support and Capacity Development	2,480,000	2,222,490.00	QCBS	Q1 / 2013	31-JUL-14	NJS Consultants Co., Ltd. VO7 =US\$2,59,2690 VO8 =US\$2,897,629.50 VO9 US\$2,897,629.50 VO10 US\$3,077,568.50
CS-03	Construction Supervision	1,750,000	1,229,250.00	QCBS	Q3/2015	05 Jan 17	Contract with RDC (lot1= US\$ 825,950, &



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Services							
Package Number	General Description	Estimated Value	Awarded Contract Value	Recruitment Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
	Consultants						Lot2= US\$297,300)
CS-06	National Environmental Specialist	60,000	40,934.00	ICS	Q1 / 2016	18 Aug 16	Contract with Mr. Bun San

2. Completed Contracts

Package Number	General Description	Estimated Value	Awarded Contract Value	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Date of Completion	Comments
G-01	Procurement of Vehicles	200,000	166,800.00	NCB	08-Apr-2015	06 Jul 2015	29-Jan-16	RMA (Cambodia) Co., Ltd
G-02	Procurement of Office Equipment	90,000	94,460.00	Shopping	26-Mar-2015	N/A	30-Nov-15	NEEKA Limited
G-03	Procurement of Office Furniture	35,000	24,945.00	Shopping without advertising	N/A	11-Nov-2015	18-Apr-16	LC Office Furniture Shop
G-04	Bavet Transformer 3 phase-100kva	5,000	11,626.00	Shopping without advertising	NA	NA	31-Aug-15	KROI KOR Electricity Supply
G-05	UAV (Drone)	45,000	78,045.00	Shopping	26- Mar -15	NA	30-Jun-16	ENVOSTAR Co., Ltd.
CW-01/1	PMU Office Renovation	15,000	15,091.31	Shopping without advertising	NA	8-Jan-15	25-Jan-16	TAING CHENG ONG CONSTRUCTION CO. LTD.
CW-01/2	Battambang Office Renovation	9,000	9,344.80	Shopping without advertising	NA	NA	24-Mar-16	Vong Reaksmeay
CW-01/3	Poipet Office Renovation	7,000	7,049.00	Shopping without advertising	NA	NA	25-May-16	T.M.3 Consulting Co., Ltd.
CW-01/4	Neak Loeung Office Renovation	9,000	9,990.00	Shopping without advertising	NA	NA	21-Apr-16	Y.S.B.
CW-01/5	Bavet Office Renovation	5,000	5,760.00	Shopping without advertising	NA	NA	12-Jul-16	Chhun Nary Import-Export Co., Ltd. Construction



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Package Number	General Description	Estimated Value	Awarded Contract Value	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Date of Completion	Comments
								Co. Ltd.
G-06	Accounting Software	3,000	2,595.00	Shopping without advertising	NA	NA	26-Sep-16	BIZDIMNSION CO., LTD
G-07	Supply & Installation of Parts for Ford Ranger Plate No. State 25 2-0607	6,000	6151.33	Shopping without advertising	NA	NA	21-Feb-17	RMA (Cambodia) Co., Ltd.
CS-02	DED consultants for all 10 subprojects	1,151,000	1,137,175.00	QCBS	Q3 / 2014	19-OCT-15	19- Jun-17	FCG International Ltd.
CS-05	National Procurement Specialist	72,000	27,508.00	ICS	Q1 / 2016	9-June-16	12 June- 17	Contract with Mr. Pheang Pheourn
CS-04	Financial Management Specialist	72,000	32,660.00	ICS	Q1 / 2016	9- June- 16	12 June- 17	Contract with Mr. Mao Dor

D. National Competitive Bidding

A. Regulation and Reference Documents

1. The procedures to be followed for national competitive bidding shall be those set forth for the "National Competitive Bidding" method in the Government's Procurement Manual issued under Sub-Decree Number 74 ANKR.BK, updated version dated 22 May 2012 with the clarifications and modifications described in the following paragraphs. These clarifications and modifications are required for compliance with the provisions of the Procurement Guidelines.
2. For the procurement of ADB financed contracts under National Competitive Bidding (NCB) procedures, the use of harmonized national bidding documents (NCB and National Shopping) developed in consultation with development partners including ADB, is mandatory except where the Government and ADB have agreed to amendments to any part of the documents. The Procurement Manual also advises users to check the ADB website from time to time for any update on ADB documents, which form the basis, among others, of the existing harmonized national bidding documents.

B. Procurement Procedures

1. Application

3. Contract packages subject to National Competitive Bidding procedures will be those identified as such in the project Procurement Plan. Any change to the mode of procurement of any procurement package in the Procurement Plan shall be made through updating of the Procurement Plan, and only with prior approval of ADB.

2. Sanctioning

4. Bidders shall not be declared ineligible or prohibited from bidding on the basis of barring procedures or sanction lists, except individuals and firms sanctioned by ADB, without prior approval of ADB.



3. Rejection of all Bids and Rebidding

5. The Borrower shall not reject all bids and solicit new bids without ADB's prior concurrence. Even when only one or a few bids is/are submitted, the bidding process may still be considered valid if the bid was satisfactorily advertised and prices are reasonable in comparison to market values.

4. Advertising

6. Bidding of NCB contracts shall be advertised on the ADB website via the posting of the Procurement Plan. Borrowers have the option of requesting ADB to post specific notices in the ADB website.

C. Bidding Documents

5. Use of Bidding Documents

7. The Standard National Competitive Bidding Documents provided with the Government's Procurement Manual shall be used to the extent possible both for the master bidding documents and the contract-specific bidding documents. The English language version of the procurement documents shall be submitted for ADB review and approval in accordance with agreed review procedures (post and prior review) as indicated in the Procurement Plan. The ADB-approved procurement documents will then be used as a model for all procurement financed by ADB for the project.

6. Bid Evaluation

8. Bidders shall not be eliminated from detailed evaluation on the basis of minor, non-substantial deviations.
9. A bidder shall not be required, as a condition for award of contract, to undertake obligations not specified in the bidding documents or otherwise to modify the bid as originally submitted.

7. Employer's Right to Accept or Reject Any or All Bids

10. The decision of the Employer to accept or reject any or all bids shall be made in a transparent manner and involve an obligation to inform of the grounds for the decision through the bid evaluation report.

8. ADB Policy Clauses

11. A provision shall be included in all NCB works and goods contracts financed by ADB requiring suppliers and contractors to permit ADB to inspect their accounts and records and other documents relating to the bid submission and the performance of the contract, and to have them audited by auditors appointed by ADB.
12. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that the Borrower shall reject a proposal for award if it determines that the bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the contract in question.
13. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that ADB will declare a firm or individual ineligible, either indefinitely or for a stated period, to be awarded a contract financed by ADB, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices or any integrity violation in competing for, or in executing, ADB-financed contract.



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Procurement Monitoring and Tracking Form – Works												Loan No.: 2983-CAM (SF), 8265-CAM (SCF), GRANT NO. 0334-CAM (UEIF) &. 0335-CAM (SCF)											
Project name: Greater Mekong Subregion Southern Economic Corridor Towns Development Project																							
Update: 23-January-2020																							
Procurement Monitoring and Tracking Form																							
Works																							
No	Contract Number	Description of Works	Procurement Method	Prior review (Prior) or Post Review (Post)	Plan (P)/Schedule (S)/Actual (A)	Bidding Documents (BD) and Bidding Process								Bid Evaluation/Contract Award							Contract		
						Cost Estimate/Actual Cost	Completion of Design	Completion of Draft Bid Documents	Submission to PRC	Approval of Draft Bid Doc by PRC	Submission to DP for NOI	NOL by DP	Advertisement of IFB	Bid Closing/Bid Opening	Issue of Minutes to DP/Bidders	Completion of Evaluation by BEC	Submission to PRC	Approval by PRC	Submission to DP	NOL by DP	Issue Letter of Acceptance	Contract Signing	Signed Contract to DP
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	CW-01 LOT 1	Bttambang Materials Recovery Facility Subproject	NCB	Prior	P	480,000.00	1-Jun-16	22-Jun-16	25-Jun-16	2-Jul-16	5-Jul-16	12-Jul-16	15-Jul-16	29-Aug-16	30-Aug-16	19-Sep-16	22-Sep-16	29-Sep-16	2-Oct-16	9-Oct-16	12-Oct-16	19-Oct-16	28-Oct-16
					S	480,000.00	2-Jun-17	23-Jun-17	26-Jun-17	3-Jul-17	6-Jul-17	13-Jul-17	16-Jul-17	30-Aug-17	31-Aug-17	20-Sep-17	23-Sep-17	30-Sep-17	3-Oct-17	10-Oct-17	13-Oct-17	20-Oct-17	26-Oct-17
					A	424,991.84	1-Apr-17	26-Apr-17	26-Apr-17	26-Apr-17	26-Apr-17	2-May-17	8-May-17	7-Jun-17	7-Jun-17	3-Jul-17	3-Jul-17	3-Jul-17	3-Jul-17	7-Jul-17	11-Jul-17	14-Jul-17	25-Jul-17
2	CW-01 LOT 2	Bavet Materials Recovery Facility Subproject	NCB	Prior	P	420,000.00	1-Jun-16	22-Jun-16	25-Jun-16	2-Jul-16	5-Jul-16	12-Jul-16	15-Jul-16	29-Aug-16	30-Aug-16	19-Sep-16	22-Sep-16	29-Sep-16	2-Oct-16	9-Oct-16	12-Oct-16	19-Oct-16	29-Oct-16
					S	420,000.00	2-Jun-17	23-Jun-17	26-Jun-17	3-Jul-17	6-Jul-17	13-Jul-17	16-Jul-17	30-Aug-17	31-Aug-17	20-Sep-17	23-Sep-17	30-Sep-17	3-Oct-17	10-Oct-17	13-Oct-17	20-Oct-17	27-Oct-17
					A	389,826.64	1-Apr-17	26-Apr-17	26-Apr-17	26-Apr-17	26-Apr-17	2-May-17	8-May-17	7-Jun-17	7-Jun-17	3-Jul-17	3-Jul-17	3-Jul-17	3-Jul-17	7-Jul-17	11-Jul-17	14-Jul-17	25-Jul-17
3	CW-01 LOT 3	Poipet Materials Recovery Facility Subproject	NCB	Prior	P	490,000.00	1-Jun-16	22-Jun-16	25-Jun-16	2-Jul-16	5-Jul-16	12-Jul-16	15-Jul-16	29-Aug-16	30-Aug-16	19-Sep-16	22-Sep-16	29-Sep-16	2-Oct-16	9-Oct-16	12-Oct-16	19-Oct-16	27-Oct-17
					S	490,000.00	2-Jun-17	23-Jun-17	26-Jun-17	3-Jul-17	6-Jul-17	13-Jul-17	16-Jul-17	30-Aug-17	31-Aug-17	20-Sep-17	23-Sep-17	30-Sep-17	3-Oct-17	10-Oct-17	13-Oct-17	20-Oct-17	27-Oct-17
					A	359,571.12	1-Apr-17	26-Apr-17	26-Apr-17	26-Apr-17	26-Apr-17	2-May-17	8-May-17	7-Jun-17	7-Jun-17	3-Jul-17	3-Jul-17	3-Jul-17	3-Jul-17	7-Jul-17	11-Jul-17	14-Jul-17	25-Jul-17
4	CW-05	Bavet Urban Roads Subproject	ICB	Prior	P	9,900,000.00	1-Jun-16	22-Jun-16	25-Jun-16	2-Jul-16	5-Jul-16	12-Jul-16	15-Jul-16	29-Aug-16	30-Aug-16	19-Sep-16	22-Sep-16	29-Sep-16	2-Oct-16	9-Oct-16	12-Oct-16	19-Oct-16	30-Oct-16
					S																		
					A	7,674,956.00	30-Sep-17	15-Oct-17	18-Oct-17	22-Oct-17	25-Nov-17	28-Nov-17	1-Dec-17	17-Jan-18	17-Jan-18	26-Jan-18	26-Jan-18	26-Jan-18	07-Feb-18	13-Feb-18	19-Feb-18	28-Feb-18	5-Mar-18
5	CW-06	Battambang Wastewater Treatment Subproject	ICB	Prior	P	12,000,000	1-Jun-16	22-Jun-16	25-Jun-16	2-Jul-16	5-Jul-16	12-Jul-16	15-Jul-16	29-Aug-16	30-Aug-16	19-Sep-16	22-Sep-16	29-Sep-16	2-Oct-16	9-Oct-16	12-Oct-16	19-Oct-16	26-Oct-16
					S																		
					A	9,368,943.03	1-Jun-17	2-Aug-17	3-Aug-17	8-Aug-17	6-Oct-17	6-Oct-17	12-Oct-17	30-Nov-17	30-Nov-17	27-Dec-18	27-Dec-18	27-Dec-18	27-Dec-18	3-Jan-18	5-Jan-18	30-Jan-18	1-Feb-18
6	CW-07	Poipet Wastewater Treatment Subproject (Storm Drain)	NCB	Prior	P	2,600,000	1-Jun-17	22-Jun-17	25-Jun-17	2-Jul-17	5-Jul-17	12-Jul-17	15-Jul-17	29-Aug-17	30-Aug-17	19-Sep-17	22-Sep-17	29-Sep-17	2-Oct-17	9-Oct-17	12-Oct-17	19-Oct-17	25-Oct-17
					S																		
					A	2,583,030.00	20-Oct-17	26-Feb-18	26-Feb-18	1-Mar-18	1-Mar-18	8-Mar-18	12-Mar-18	11-Apr-18	11-Apr-18	27-Apr-18	27-Apr-18	27-Apr-18	30-Apr-18	25-Jan-19	25-Jan-19	28-Jan-19	9-Feb-19
7	CW-08	Bavet Wastewater Treatment Subproject	ICB	Prior	P	3,210,000.00	1-Jun-16	22-Jun-16	25-Jun-16	2-Jul-16	5-Jul-16	12-Jul-16	15-Jul-16	29-Aug-16	30-Aug-16	19-Sep-16	22-Sep-16	29-Sep-16	2-Oct-16	9-Oct-16	12-Oct-16	19-Oct-16	28-Oct-16
					S	6,900,000	1-Mar-19	22-Mar-19	25-Mar-19	1-Apr-19	4-Apr-19	11-Apr-19	14-Apr-19	29-May-19	30-May-19	19-Jun-19	22-Jun-19	29-Jun-19	2-Jul-19	9-Jul-19	12-Jul-19	19-Jul-19	25-Jul-19
					A	7,415,348.34	15-Nov-18	20-Mar-19	01-Apr-19	5-Apr-19	7-Apr-19	3-Jun-19	27-Jun-19	14-Aug-19	14-Aug-19	5-Sep-19	5-Sep-19	5-Sep-19	12-Sep-19	21-Oct-19	21-Oct-19	25-Oct-19	
8	CW-10	Neak Loeung Flood Control Subproject	ICB	Prior	P	8,800,000.00	30-Aug-19	14-Sep-19	21-Sep-19	27-Sep-19	29-Sep-19	13-Oct-19	20-Oct-19	4-Dec-19	4-Dec-19	13-Jan-20	13-Jan-20	15-Jan-20	18-Jan-20	30-Sep-20	14-Oct-20	28-Oct-20	5-Nov-20
					S																		
					A	9,426,707.94	17-Dec-19	20-Dec-19	25-Dec-19	27-Dec-19	27-Dec-19												
9	CW01a	Additional Works for Material Recovery Facility in Bavet, Battambang and Poipet Towns	NCB	Post Review	P	254,284.00	5-Mar-19	8-Mar-19	12-Mar-19	12-Mar-19	N/A	N/A	30-Mar-19	29-Apr-19	29-Apr-19	15-May-19	16-May-19	18-May-19	20-May-19	5-Jun-19	6-Jun-19	28-Jun-19	1-Jul-19
					S																		
					A	258,533.73	15-Mar-19	5-Jun-19	10-Jun-19	10-Jun-19	N/A	N/A	19-Jun-19	18-Jul-19	18-Jul-19	5-Sep-19	5-Sep-19	5-Sep-19	-	-	8-Oct-19	11-Oct-19	14-Oct-19



APPENDIX E

LIST OF CAPACITY DEVELOPMENT AND TRAINING CONDUCTED

Training Course Conducted By NJS and KCC

Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
11.1	Urban Asset Management	27-28 February 2018	Khemera Battambang 1 Hotel, Chhrey Kourng Village, Sla Kaet Commune, Battambang District, Battambang Province.	PMU	1	0	1
				PIU BB	2	1	3
				PIU PP	0	2	2
				PIU NL	0	2	2
				PIU BV	0	2	4
				Total	3	7	10
3.2	GIS Mapping by using computer software ArcMAP	08-12 January 2018	Guest house Svay Rieng Red Cross National Road No.1, Svay Rieng City	PMU	0	0	0
				PIU BB	0	3	3
				PIU PP	0	3	3
				PIU NL	0	3	3
				PIU BV	0	2	2
				Total	0	11	11
4.1	Best Practices in Project Management of ODA funded Project	18-20 December 2017	Destiny Cafe, National Road No.5, Poipet Municipality, Banteay Meanchey Province	PMU	1	2	3
				PIU BB	2	2	4
				PIU PP	1	3	4
				PIU NL	1	3	4
				PIU BV	-	4	4



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
				Total	5	14	19
1.4	Consultation and Participation Approaches for Safeguards	21-22 December 2017	Destiny Cafe, National Road No.5, Poipet Municipality, Banteay Meanchey Province	PMU	1	2	3
				PIU BB	2	2	4
				PIU PP	1	3	4
				PIU NL	1	3	4
				PIU BV	-	4	4
				Total	5	14	19
10.2	Monitoring Compliance of Social and Environmental Safeguards	29-30 November 2017	Khemera Battambang 1 Hotel, Chhrey Kourng Village, Sla Kaet Commune, Battambang District, Battambang Province.	PMU	-	2	2
				PIU BB	2	3	5
				PIU PP	2	2	4
				PIU NL	1	4	5
				PIU BV	-	4	4
				Total	5	15	20
10.1	PPMS Training, Physical and Financial Progress Reporting	27-28 November 2017	Khemera Battambang 1 Hotel, Chhrey Kourng Village, Sla Kaet Commune, Battambang District, Battambang Province.	PMU	-	2	2
				PIU BB	2	3	5
				PIU PP	2	2	4
				PIU NL	1	4	5
				PIU BV	-	4	4
				Total	5	15	20
4.4	Human Resource Development	16-17 November 2017	Mittapheap Hotel, House No.01, National Road No.11, Prey Veng City	PMU	-	-	-
				PIU BB	1	2	3
				PIU PP	-	2	2



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
				PIU NL	-	2	2
				PIU BV	-	2	2
				Total	1	8	9
4.3	Project Administrative Management Procedures	13-15 November 2017	Mittapheap Hotel, House No.01, National Road No.11, Prey Veng City	PMU	1	2	3
				PIU BB	1	2	3
				PIU PP	-	2	2
				PIU NL	-	2	2
				PIU BV	-	2	2
				Total	2	10	12
7.2	Resettlement	27-28 September 2017	Guest house Svay Rieng Red Cross National Road No.1, Svay Rieng City	PMU	1	4	5
				PIU BB	2	2	4
				PIU PP	1	3	4
				PIU NL	1	3	4
				PIU BV	-	2	2
				Total	5	14	19
4.2	Work and Financial Planning	25-26 April 2017	Mittapheap Hotel, House No.01, National Road No.11, Prey Veng City	PMU	-	3	3
				PIU BB	1	1	2
				PIU PP	1	1	2
				PIU NL	-	2	2
				PIU BV	-	2	2
				Total	2	9	11
8.4	Environmental Safeguards on Urban	15-16 Marc 2017	Waikor Hotel in SvayRieng Province	PMU	-	1	1



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
	Infrastructure Investment			PIU BB	2	2	4
				PIU PP	-	3	3
				PIU NL	-	5	5
				PIU BV	-	4	4
				Total	2	15	17
8.3	Climate Resilience Measure	13-14 Marc 2017	Waikor Hotel in SvayRieng Province	PMU	-	3	3
				PIU BB	2	2	4
				PIU PP	-	4	4
				PIU NL	-	6	6
				PIU BV	-	5	5
				Total	2	20	22
9.1	Gender Action Plan	4-5 Jan 2017	Destiny Cafe, National Road No.5, Poipet Municipality, Banteay Meanchey Province	PMU	1	1	2
				PIU BB	2	-	2
				PIU PP	1	3	4
				PIU NL	1	3	4
				PIU BV	-	3	3
				Total	5	10	15
	Refresher Course on Gender Action Plan	8-9 Aug 2018	Khemera Battambang 1 Hotel, Chhrey Kourng Village, Sla Kaet Commune, Battambang District, Battambang Province.	PMU	1	4	5
				PIU BB	2	2	4
				PIU PP	1	3	4
				PIU BV	-	4	4
				GMAG	1	-	1



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
				MoWA	1	-	1
				PDWA	3	-	3
				PHD	2	-	2
				Contractor	-	3	3
				Total	11	16	27
3.1	Town Mapping and Aerial Image Data Collection	05 -09 Dec. 2016	Emerald Hotel, Street 208, Rumchek 4 Village, Ratanak Commune, Battambang District, Battambang	PMU	-	2	2
				PIU BB	-	1	1
				PIU PP	-	1	1
				PIU NL	-	1	1
				PIU BV	-	1	1
				Total	0	6	6
7.1	Poverty and social impact assessment	25 - 27 Oct. 2016	Mittapheap Hotel, House No.01, National Road No.11, Prey Veng City	PMU	-	2	2
				PIU BB	2	2	4
				PIU PP	1	3	4
				PIU NL	1	3	4
				PIU BV	-	4	4
				Total	4	14	18
2.4	Fundamentals of Flood Protection and Drainage	20 -21 Oct. 2016	Destiny Cafe, Palalay Village, National Road No.5, Municipality Poipet, Bantey Mean Chey Province	PMU	1	1	2
				PIU BB	1	2	3
				PIU PP	-	3	3
				PIU NL	-	2	2
				PIU BV	-	2	2



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
				Total	2	10	12
2.3	Fundamentals of Solid Waste Management and Sanitary Landfill	18 -19 Oct. 2016	Waikor Hotel in Svay Rieng Province	PMU	-	3	3
				PIU BB	1	2	3
				PIU PP	-	3	3
				PIU NL	-	2	2
				PIU BV	-	2	2
				Total	1	12	13
1.1	Overview of Urban Infrastructure Development	22-23 Sept. 2016	Khemera Battambang 1 Hotel, Chhrey Kourng Village, Sla Kaet Commune, Battambang District, Battambang Province.	PMU	1	3	4
				PIU BB	2	5	7
				PIU PP	1	8	9
				PIU NL	-	4	4
				PIU BV	-	5	5
				Total	4	25	29
1.3	Gender Sensitization and Awareness	21 Sept. 2016	Khemera Battambang 1 Hotel, Chhrey Kourng Village, Sla Kaet Commune, Battambang District, Battambang Province.	PMU	1	3	4
				PIU BB	2	5	7
				PIU PP	1	8	9
				PIU NL	-	4	4
				PIU BV	-	5	5
				Total	4	25	29
1.2	Coordination and Networking Mechanisms	19-20 Sept. 2016	Khemera Battambang 1 Hotel, Chhrey Kourng Village, Sla Kaet Commune, Battambang District, Battambang Province.	PMU	1	3	4
				PIU BB	2	5	7
				PIU PP	1	8	9



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
				PIU NL	-	4	4
				PIU BV	-	5	5
				Total	4	25	29
2.2	Fundamentals of Wastewater Treatment Systems	08-09 Sept. 2016	Waikor Hotel in Svay Rieng Province	PMU	1	3	4
				PIU BB	0	3	3
				PIU PP	0	3	3
				PIU NL	0	3	3
				PIU BV	0	3	3
				Total	1	15	16
2.1	Fundamentals of Sewer Systems	06 -07 Sept. 2016	Waikor Hotel in Svay Rieng Province	PMU	1	3	4
				PIU BB	-	3	3
				PIU PP	-	3	3
				PIU NL	-	3	3
				PIU BV	-	3	3
				Total	1	15	16
8.2	Updating the Environmental Management Plan	04-05 Aug. 2016	Tonle Basac II, Phnom Penh	PMU	-	2	2
				PIU BB	1	1	2
				PIU PP	-	2	2
				PIU NL	-	2	2
				PIU BV	-	2	2
				Total	1	9	10
8.1	Integration of Environmental	02-03 Aug. 2016	Cambodiana Hotel and Tonle Basac	PMU	-	3	3



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
	Management element into the project cycle		II, Phnom Penh	PIU BB	3	3	6
				PIU PP	-	6	6
				PIU NL	-	5	5
				PIU BV	-	5	5
				Total	3	22	25
24 Modules				Grand Total	78	356	434



Training Course Conducted By PISCD Consultants

Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
07	Refresher Course on Environmental Monitoring, GRM and Reporting	13 March 2020	Bavet PIUs' Office	PIU	1	3	4
				CS	0	2	2
				Cont Bavet	0	3	3
				Cont MRFs	0	3	3
				Commune Council	0	1	1
				Bavet City Hall Official	0	1	1
				Total	1	13	14
06	Environmental Sanitation and Hygiene Promotion	April – May 2019	Students and villagers who are living in the SECTDP areas	Bavet	249	136	385
				BTB	112	47	159
				Poipet	261	143	404
				Total	622	326	948
05	Clinic Training course on EMP and GRM, by ADB	12-13 June 2019 in Poipet	Poipet and Bavet PIUs' Office	PMU	0	1	1
				PIU PP	0	2	2
				PIU BV	1	4	5
				Contractor PP	0	3	3
				Contractor BV	1	3	4
				CS PP	0	1	1



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
				CS BV	0	2	2
				Commune Council PP	0	2	2
				Commune Council BV	0	1	1
				Total	2	19	21
04	Training course on EMP and GRM	12-13 June 2019 in Poipet	Poipet PIUs' Office	PMU	0	1	1
				PIU	1	2	3
				Contractor	0	4	4
				CS	0	1	1
				Total	1	8	9
03	Conducted TOT on Environmental Sanitation and Hygiene Promoter	05-06 in Bavet, 12-13 in BTB and Poipet in 14-15 March 2019	PIUs' Office	PMU	1	5	6
				PIU BB	1	2	3
				PIU PP	1	3	4
				PIU BV	-	3	3
				Sanitation promoters	3	3	6
				PDWA and DoWA	4	1	5
				Total	10	17	27
02	Refresher Course on GAP	08-09 August 2018	Khemera Battambang 1 Hotel, Chhrey Kourng Village, Sla Kaet Commune, Battambang District,	PMU			
				PIU BB			



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
			Battambang Province.	PIU PP PIU NL PIU BV			
				Total	11	16	27
01	Environmental Management and Monitoring Plan	19-20 July 2018	Contractor's campsite in Battambang	PMU	-	2	2
				PIU BB	1	1	2
				PIU PP	1	1	2
				Cont. Road	-	3	3
				PIU BV	-	2	2
				CS	-	1	1
				Cont. MRF	-	1	1
				Cont. Drainage BB	1	3	4
				Total	3	13	16
7 Courses				Grand Total	650	412	1,062



Training Course and Campaign Conducted By Contractors

Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
05	Solid Waste Recycling Skills	11 September 2019	Dumpsite of Battambang Town, Kingdom of Cambodia.	Waste Pickers	30	22	52
				PIU	-	1	1
				PPMS	-	1	1
				Gender Specialist	1	-	1
				COMPED Organization	1	1	2
				CS	-	1	1
				Contractor	1	2	3
				Total	33	28	61
04	Training on Existing Business Improvement for Women	11-15 July 2019 13-14 March 2020	12 villages in Battambang town. 7 villages in Bavet town.	Participants	99	63	162
				Participants	78	18	96
				Total	177	81	258
03	Training on Concrete Works and Painting Skills	25 August 2019	Contractor's office (BEIJING URBAN CONSTRUCTION GROUP CO., LTD), Battambang Town, Kingdom of Cambodia.	Women Workers	31	1	32
				Total	31	1	32
02	Road Safety Awareness	28-19 June 2019	Hun Sen Bavet Primary School, Bavet General and Technical High	Primary School	157	186	343



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
	Campaign in Bavet Town		School, SHEICO Group and ELITE (Cambodia) garment factory and pagoda of Bavet town	High School	82	72	154
				SHEICO Group	2,401	51	2,452
				ELITE	2,447	70	2,517
				4 Villagers	25	17	42
				Total	5,112	396	5,508
01	HIV/AIDs and STIs awareness campaign	01-31 January 2019 in BTB and 22 March-10 Apr 2019 in Bavet	12 villages, 4 Sangkat (Rattanak, Preack Preah Sdach, Anlong Vil and Ou Char)	Battambang			
				Rattanak	67	40	107
				Ou Char	10	11	21
				Prek Preah Sdach	37	42	79
				Anlong Vil	24	20	44
				Sub-Total	138	113	251
				Bavet			
				Sub-Total	89	102	191
				Total	227	215	442
				Poipet			
				Villager	49	38	87



Module	Title	Date	Venue	Agency	Participants		
					Female	Male	Total
				Worker	2	39	41
				Waste Pickers	17	7	24
				Sub-Total	68	84	152
	Training Course Conducted by Contractor			Grand Total	241	110	351
	Awareness Campaign Conducted by Contractor			Grand Total	5,407	695	6102



APPENDIX F ASSESSMENT OF ASSUMPTIONS AND RISKS

MONITORING AND EVALUATION OF ASSUMPTION AND RISKS
GMS: Southern Economic Towns Development Project

M&E Form no. 7A
Version: June 2015

Reporting Date: 31 March 2020
[Quarterly]

Prepared by: PMU/PIUs assisted by Nat'l. M&E Specialist
[PMU/PIUs]

Assumption / Risk for Outputs		Rating (HS,S,PS,U)	Assessment of Current Status
Assumptions:			
1.	Local authorities endorse the SLEDPs and associated budgets	S	Adopted SLEDPs by Battambang adopted on March 2017 Bavet adopted on February 2017 Poipet adopted on June 2018 Neak Loeung on March 2018 The SLEDPs will be updated by Q1 2020
2.	Women's participation in SLEDP preparation increased, women's needs identified through participatory processes and reflected in the SLEDPs	S	SLEDPs were adopted by 2017 and 2018 when women's participation will be encouraged.
3.	Environmental and social risks can be mitigated	S	EMPs and RPs and was addressed in DED & adequately considered in the bid documents.
4.	Priority infrastructure will promote gender equality and/or women's empowerment by improving women's access to, and use of opportunities, services, resources, and assets; and contribute to increased participation in decision making	S	GAP will be addressed in the DED and adequately considered in the bid documents.
5.	Capacity development activities take gender balance into account	PS	20% of women participated in CD activities
6.	Specific training on gender aspects & issues provided to all staff of executing & implementing agencies & project implementing units	S	Specific training on Gender Action Plan & Gender sensitization and awareness provided to all staff, 44 staffs of PMU&PIUs attended in training, 9 out of them are women.
OF			
Risks:		Mitigated (Y/N)	Rating (HS,S,PS,U) Assessment of Current Status



Risks:	Mitigated (Y/N)	Rating (HS,S,PS,U)	Assessment of Current Status
1. Local authorities do not recognize the need for continued capacity development	Y	S	Satisfactory attendance in training
2. Required budgets for sustaining operations are not allocated	-	-	Not due yet as subprojects are in construction
3. Delayed or incomplete settlement of land acquisition and resettlement entitlements	Y	S	Resettlement activities to start in Q1 2017 and ongoing.
4. Lack of municipal quality control and performance evaluation	Y	HS	Construction works to start Q3 2017. CS started activities on Q1 2018

a/ HS = Highly Satisfactory; S = Satisfactory; PS = Progressing Satisfactorily; U = Unsatisfactory

MONITORING AND EVALUATION OF ASSUMPTION AND RISKS
GMS: Southern Economic Towns Development Project

M&E Form no. 7B

June 2015

Reporting Date::31 March 2020
[Quarterly]

Prepared by: PMU/PIUs assisted by Nat'l. M&E Specialist
[PMU/PIUs]

Assumption / Risk for Outcome and Impact		Rating (HS,S,PS,U)	Assessment of Current Status
Outcome: Urban infrastructure improved and climate resilience enhanced in Battambang, Bavet, Neak Loeung, and Poipet - from 2018 to 2022			
Assumptions:			
The government remains committed to sustainable management of urban infrastructure as a national development priority		HS	There is strong support from National and provincial governments.
Risks:	Mitigated (Y/N)	Rating (HS,S,PS,U)	Assessment of Current Status
Government regulations do not fully support sustainable decentralized operation and maintenance of urban infrastructure	-	-	O&M of infrastructure to start by Q1 2020.
Impact: The towns of Battambang, Bavet, Neak Loeung & Poipet will become centers of economic activity in the Southern Economic Corridor - by 2025			
Assumptions:		Rating (HS,S,PS,U)	Assessment of Current Status
Government remains fully committed to the Project			
Risks:	Mitigated (Y/N)	Rating (HS,S,PS,U)	Assessment of Current Status
Corridor towns unable to collect revenue for wastewater treatment plants, sanitary landfill, and solid waste management	-	-	The implementation of these subprojects is deferred and change to new project start in 2020.

a/ HS = Highly Satisfactory; S = Satisfactory; PS = Progressing Satisfactorily; U = Unsatisfactory



APPENDIX G DMF TARGETS VS ACHIEVEMENTS

PROJECT PERFORMANCE MONITORING AND EVALUATION
GMS: Southern Economic Towns Development Project

M&E Form no. 8A
June 2015

Reporting Date: 31 March 2020 [Quarterly]

Prepared by: PMU/PIUs assisted by Nat'l. M&E Specialist
[PMU/PIU member in-charge of M&E/Impact Assessment]

Indicators (with Baseline and Performance Targets)	Baseline	Achievements/Status (as of end of reporting period)	Assessment of Current Progress/ Status & Reason for any Negative Variance
Output 1: SLEDPs adopted and implemented in Battambang, Bavet, Neak Loeung, and Poipet - by 2018			
1.1 SLEDPs with sex-specific and climate-resilience measures incorporated, adopted, & disclosed; updated as required. <i>[Validation with PIUs and corridor towns in Q2 2015 for adoption and Q4 2018 for updating]</i> <i>[Updates on Q1 2020 from PISCD team]</i>	SLEDP of each town prepared in 2011	SLEDPs of the 4 towns has been updated and will be submitted to PMU/ADB by Q2 2020	
1.2 Gender awareness and sensitization training conducted for 30 executing and implementing agency staff. <i>[Updates from Training Implementation Consultant (TIC) upon completion of training in Q3 2016]</i> <i>[Updates from Training on Gender Action Planning on 4-5 January 2017 and Refresher course on GAP on 8-9 August 2018.]</i>	Nil as of 2014	As per the attached training completion report, this training activity was already conducted by the PISCD last September, 2016. Total participants were 36 out of which 31 (86%) men and 5 (14%) women. A training on Gender Action Planning conducted on 4-5 January, 2017. Total number of participants was 14, 9 men (65%) and 5 (35%) women.	



Indicators (with Baseline and Performance Targets)		Baseline	Achievements/Status (as of end of reporting period)	Assessment of Current Progress/ Status & Reason for any Negative Variance
			Refresher course on GAP was conducted on 8-9 August 2018. A total 27 (11 female) participants attended the refresher course.	
Output 2: Priority urban infrastructure investments implemented - Priority infrastructure operational - by 2020				
30% of construction workers hired under the project are female <i>[Updates from CS Consultant from Q3 2017 to Q4 2020]</i>		Nil, as construction starts Q3 2017	13,062 (30%) unskilled laborers women of 43,487 laborers claimed by women under the construction work. Type of activities performance by women included: (i) cutting and bending bar, (ii) cleaning the road, (iii) deliver brick and mixed cement and (iv) flag person, painting and etc	PMU, PIU and CS regularly monitor manpower status with civil works contractors. PMU, PIU and CS compelled civil works contractors to hire more women unskilled laborers.
Battambang				
Wastewater treatment (PPCR)				
2.1	52,000 residents serviced by new and rehabilitated wastewater treatment plants (capacity 2,800 cu m/day) by 2020. Flood events of facility reduced (based on 50-year flood frequency). <i>[Updates from CS Consultant upon completion of infrastructure in Q4 2020, and from infrastructure operator during operation from Q1 2021 onward]</i>	31,000 residents currently connected to existing sewerage system	-	Assessment to start upon completion of construction of storm water drainage canal and upgrade of existing WWTP western part is deferred.
Flood control (PPCR)				
2.2	Flood events of city center, near river, reduced (based on 50-year flood frequency), benefiting 15,120 persons by	"Before-project" number of persons affected by floods	-	The implementation of this flood control subproject is



Indicators (with Baseline and Performance Targets)	Baseline	Achievements/Status (as of end of reporting period)	Assessment of Current Progress/ Status & Reason for any Negative Variance
2018.	is _____ ^{a/}		deferred.
Material recovery facility			
2.3 30 cu m of recyclables per day segregated benefiting 128,000 residents by 2020. <i>[Updates from CS Consultant upon completion of infrastructure in Q1 2019, and from infrastructure operator during operation from Q2 2020 onward]</i>	Nil, as the MRF is a new facility	-	Assessment to start upon operation of MRF in Q2 2020 onwards.
Bavet			
Wastewater treatment (PPCR)			
2.4 29,000 residents serviced by wastewater treatment plant (capacity 255 cu m/day) by 2019. Flood events of facility reduced (based on 50-year flood frequency).	Nil as Bavet has no existing WWT	-	The implementation of this WWT subproject is deferred.
Urban roads			
2.5 6,14 km of main urban road upgraded with drainage structures, benefiting 37,100 residents by 2019. <i>[Updates based on local authorities' statistical data, and on-site verification, from Q2 2020 onward]</i>	"Before-project" number of persons that has access to existing road to be upgraded is _____ ^{a/}	-	Assessment to start upon completion of urban road upgrading in Q2 2020 onwards.
Material recovery facility			
2.6 30 cu m of recyclables per day segregated, benefiting 24,000 residents by 2018. <i>[Updates from CS Consultant upon completion of infrastructure in Q1 2019, and from infrastructure operator during operation from Q2 2019 onward]</i>	Nil as the MRF is a new facility	-	Assessment to start upon operation in Q2 2020.
Neak Loeung			



Indicators (with Baseline and Performance Targets)		Baseline	Achievements/Status (as of end of reporting period)	Assessment of Current Progress/ Status & Reason for any Negative Variance
Flood protection (PPCR)				
2.7	5.4 km flood protection dike constructed; 363 ha of residential and commercial areas protected from annual flooding (based on 50-year flood frequency), benefiting 24,700 residents by 2021.	"Before-project" number of persons residing within the subproject area is ____ ^{a/} .	-	The implementation of this flood protection subproject is under bidding process. Assessment to start upon completion of construction in Q1 2021 onwards.
Poipet				
Wastewater treatment (PPCR)				
2.8	65,000 residents serviced by wastewater treatment plant (capacity 16,400 cu m/day) by 2019. Flood events of facility reduced (based on 50-year flood frequency). [Updates from CS Consultant upon completion of infrastructure in Q3 2020, and from infrastructure operator during operation from Q4 2020 onward]	Nil as Poipet has no existing WWTP	-	WWTP and Sewerage in Poipet proposed Multi-tranches Financing Facility (MFF) for the Water Supply and Sanitation Investment Program in 2020
Solid waste management				
2.9	20 tons/day of solid waste deposited in sanitary landfill, benefiting 58,600 residents by 2019	Nil since the sanitary landfill is a new facility	-	The implementation of this subprojects is deferred.
Material recovery facility				
2.10	30 cu m of recyclables per day segregated, benefiting 58,600 residents by 2018. [Updates from CS Consultant upon completion of infrastructure in Q1 2019, and from infrastructure operator during operation from Q2 2019 onward]	Nil as the MRF is a new facility	-	Assessment to start upon operation in Q2 2020 onwards.
Output 3: Institutional capacity strengthened - by 2020				
3.1	2,000 people trained in project management and implementation, financial management, procurement, and social and environment safeguards;	Nil as of 2014 as training starts Q3 2016	434 PMU and PIUs staffs trained, of which 78 (18%) are woman.	As of 31 December 2019, 35 training modules was conducted by KCC, PISCD



Indicators (with Baseline and Performance Targets)	Baseline	Achievements/Status (as of end of reporting period)	Assessment of Current Progress/ Status & Reason for any Negative Variance
<i>[Updates from TIC [TBD] & from Q3 2015 to Q2 2020]</i> Gender targets achieved: staff quota of 30% women in the PMU and PIU with increased role in decision making. • <i>Updates from PMU/PIUs from Q3 2015 onward]</i> • <i>[Updates from Gender Specialist during discussed refresher course on August 2018]</i>	Nil	Training course conducted by PISCD consultants on social and environmental safeguard and environmental and sanitation and hygiene promotion for two towns, the total of participants is 1048 of which 649 are women. Training course conducted by contractors on Concrete Works and Painting Skills, Solid waste recycling and Existing business in Battambang Town, the total of participants is 351 of which 241 are women. Total PMU staffs are 10; 8 (80%) men and 2 women (20%) women. Total PIU staffs are 31; 24 (74%) men and 8 women (26%) women.	consultants and contractors, the total of participants is 1,737 of which 890 (51%) are women. Road safety and HIV Awareness campaign conducted by contractor in Battambang Town, Bavet Town and Poipet Town, the total of participants and audiences are 6,102 of which 5,407 (89%) are women. Gender action target may not be realized because the PMU has already existing staffs already in place even before start of project implementation.
Gender targets achieved: staff quota of 20% women in the PMU and PIU with increased role in decision making. <i>[Updates from Mid-Term Review Mission 2-30 Nov 2018]</i>	Nil	- 2 staffs (or 20%) of 10 PMU staffs are women - 8 staffs (26%) of 31 PIUs staffs are women. - All PMUs and PIUs staffs received gender	



Indicators (with Baseline and Performance Targets)	Baseline	Achievements/Status (as of end of reporting period)	Assessment of Current Progress/ Status & Reason for any Negative Variance
		sensitization training.	
3.2 Memorandum of agreement signed between implementing agencies and district and corridor town authorities on subproject O&M and climate resilience measures [Validation with PIUs and district and corridor towns, Q3 2017 onward]	As of 2015, no MOA signed as construction starts Q3 2017		Assessment to start upon operation onwards.
3.3 Women hold 30% of overall staff positions and 30% of the management positions in the PMU and PIU. [Updates from PMU/PIUs from Q3 2015 onward]	Nil		
Women hold 20% of overall staff positions and 20% of the management positions in the PMU and PIU. [Updates from Mid-Term Review Mission 2-30 Nov 2018]	Nil	As of Q4 2019, women hold 24% of overall staff positions in PMU & PIUs.	Updates from Mid-Term review mission 2-30 Nov 2018.

a/ To be determined/updated during the preliminary design review to be undertaken by the DED Consultant.

PROJECT PERFORMANCE MONITORING AND EVALUATION
GMS: Southern Economic Towns Development Project

M&E Form no. 8B
June 2015

Reporting Date: _____ 31 March 2020 _____ [Quarterly]

Prepared by: _____ PMU/PIUs assisted by Nat'l. M&E Specialist
[PMU/PIU member in-charge of M&E/Impact Assessment]

Indicators (with Baseline and Performance Targets)	Baseline	Achievements/Status (during reporting period)	Assessment of Current Progress/ Status & Reason for any Negative Variance
Outcome: Urban infrastructure improved and climate resilience enhanced in Battambang, Bavet, Neak Loeung, and Poipet - from 2018 to 2020			
1. Improved access to urban infrastructure affects 558,220 inhabitants (cumulative figure) in four project towns.	In 2015, _____ a/ persons have access to existing infrastructure	-	Assessment to start upon completion of construction of infrastructure in four project town, onwards. The implementation of some subprojects is deferred.



Indicators (with Baseline and Performance Targets)	Baseline	Achievements/Status (during reporting period)	Assessment of Current Progress/ Status & Reason for any Negative Variance
2. Annual economic impact of poor sanitation, accounting for a loss of \$33 in 2005 per capita per year, reduced by 40%.	Value of loss due to poor sanitation was \$32 in 2005	-	Assessment to start upon completion of construction of WWT subprojects, onwards. The implementation of this subprojects is deferred.
3. Urban areas affected by perennial flooding reduced by 30%.	“Before- Project” total urban area affected by perennial flooding in Battambang and Neak Loeung is _____ ^{a/} ha.	-	Assessment to start upon completion of construction of flood control/protection subprojects, onwards. The implementation of this subprojects is deferred.
Impact: The towns of Battambang, Bavet, Neak Loeung & Poipet will become centers of economic activity in the Southern Economic Corridor - by 2025			
1. In project towns (represented by provincial data): (i) trade services increased from 8.4% of GDP in 2007 to 18.4%; (ii) transport and communication services increased from 6.9% of GDP in 2007 to 16.9%; (iii) hotels & restaurant services increased from 4.3% of GDP in 2007 to 14.3%	Growth rates of subsectors in 2012 7.2% 7.6% 16.2%	-	Evaluation will be carried out by 2025 The implementation of this subprojects is deferred. The implementation of this subprojects is deferred. The implementation of this subprojects is deferred.
2. Employment opportunities for women (This refers to female employment in economic growth opportunities generated by the project, including construction, market trading, solid waste management, and recycling.) increased from 52% in 2012 to 53.5% (nationally).	Employment opportunities for women in the service sector was 47.8% in 2013	-	Evaluation will be carried out by 2025



Indicators (with Baseline and Performance Targets)	Baseline	Achievements/Status (during reporting period)	Assessment of Current Progress/ Status & Reason for any Negative Variance
3. Flood-affected population in Battambang and Neak Loeung reduced by 30% of regularly affected population (50,400 in 2012).	“Before-project” flood-affected population is _____ ^{a/} in 2015	-	Evaluation will be carried out by 2025 The implementation of this subprojects is deferred.

^{a/} To be determined/updated during the preliminary design review to be undertaken by the DED Consultant.



APPENDIX H

BASELINE VALUES, PERFORMANCE TARGETS FOR INDICATORS, AND PROJECTED ACHIEVEMENTS

Output 1: SLEDPs adopted & implemented

Indicator 1.1: Baseline: The SLEDPs for Battambang, Bavet, Neak Loeung and Poipet are currently available. These were all prepared in 2011.

Target: SLEDPs with sex-specific and climate-resilience measures incorporated, adopted, & disclosed; updated as required.

Projected Achievement: SLEDPs with sex-specific and climate-resilience measures incorporated, adopted, & disclosed by 2014; and updated by 2018.

Indicator 1.2: Baseline: As of 2014, no gender awareness and sensitization training has been conducted for executing and implementing agency staff.

Target: Gender awareness and sensitization training conducted for 30 executing and implementing agency staff.

Projected Achievement: Gender awareness and sensitization training conducted for 30 executing and implementing agency staff by 3rd quarter 2016.

Output 2: Priority urban infrastructure investment implemented

Battambang

Indicator 2.1: Baseline: Battambang has an existing wastewater treatment plant (WWTP) in Chamkar Samraong serving the west part of the town. The WWTP has a capacity of 2,800 cu.m./day, built in 1994. Since 2014, the system is not functioning due to broken pump facilities and blocked conduits.

Target: 52,000 residents serviced by new and rehabilitated wastewater treatment plants (capacity 2,800 cu m/day) by 2020. Flood events of facility reduced (based on 50-year flood frequency).

Projected Achievement:

- 33,350 residents serviced by new wastewater treatment plant by 2020.
- The capacity of the new WWTP is 7,470 cu.m./day (Stage 1, design year is 2030).
- The new WWTP (completion of infrastructure in June 2020) will be servicing the following in the east part of the town by 2020:

Particular	Sangkat		Total
	Prek Preah Sdech	Rattanak	
Residents/Population	15,900	17,450	33,350
Commercial/Tourism Facilities	15	57	72
Public Facilities	2	4	6
Wastewater Generation (cu.m./day)	2,376	3,110	5,486

Source: PISCD, Battambang Wastewater Treatment Subproject Technical Assessment and Preliminary Design Report, July 2015.

- The rehabilitated WWTP (capacity 2,800 cu.m./day) will be servicing 18,650 residents, in the west part of the town, currently connected to the



existing sewerage system.

- Flood events of facility reduced (based on 50-year flood frequency).

Indicator 2.2: **Flood Control** Baseline: The extent of flooding in the subproject area in Battambang Municipality is as follows:

Sangkat	Total Area (ha)	Affected by Flood During Wet Season		
		% of Total Area	Area (ha)	Population
1. Svay Por	199	25	50	1,516
2. Preah Preah Sdach	294	50	147	7,444
3. Rottanak	505	40	202	8,072
Total			399	17,032

Source: Consolidated Sangkat Report on Flooding in Battambang. 2013

Validated with Chief of Commune Council of each Sangkat on 24 February 2016.

The projected year 2018 total population within the flood-prone areas in the three Sangkats is 18,800.

Target: Flood events of city center, near river, reduced (based on 50-year flood frequency), benefiting 15,120 persons by 2018.

Projected Achievement: Flood events of city center, near river, reduced (based on 50-year flood frequency), benefiting _____* persons by 2018.

The implementation of this Flood Control Subproject has been deferred.

* The reduction of flood events due to the subproject, and the number of persons benefited will be updated/determined during the preliminary design review and detailed engineering design to be undertaken by the DED Consultant.

Indicator 2.3: **Material Recovery Facility** Baseline: The baseline value for the indicator is “nil” since subproject is construction of new MRF.

CINTRI is contracted, since 2010, to provide waste collection and disposal services in the town. A total of 7,249 households are served in 8 out of 11 sangkats. The present tonnage of solid waste that is collected daily is estimated to be 80-90 tons.

Source: Mr. To Thanarith, Operations Manager, CINTRI, Battambang, 24 February 2016.

Target: 30 cu m of recyclables per day segregated benefiting 128,000 residents by 2018.

It is noted that the target of 30 cu m of recyclables per day in the DMF is inconsistent with the value in the Feasibility Study of 60 cu m of recyclable per day.

Projected Achievement: 60 m³ or eight (8) tons of dry, source segregated and non-biodegradable waste processed per day.

Bavet

Indicator 2.4: **Wastewater** Baseline: Bavet has no existing WWTP, hence the baseline value for the indicator is “nil”.



Treatment Target: 29,000 residents serviced by wastewater treatment plant (capacity 255 cu m/day) by 2019. Flood events of facility reduced (based on 50-year flood frequency).

Projected Achievement: 22,990 residents serviced by wastewater treatment plant (capacity 3,950 cu.m./day) by 2019. Flood events of facility reduced (based on 50-year flood frequency).

The new WWTP (completion of infrastructure in December 2018) will be servicing the following in Sangkat Bavet by 2019:

- 22,990 residents/population
- 27 commercial facilities, and
- 10 public buildings

The capacity of the new WWTP is 3,950 cu.m./day (Stage 1, design year is 2025).

Source: PISCD, Bavet Wastewater Treatment Subproject Technical Assessment and Preliminary Design Report, July 2015.

Indicator 2.5: Urban Road Baseline: The subproject will benefit not only the residents of Bavet but also the traffic between Cambodia and Viet Nam.

The projected population of Bavet by 2019 (year of completion of construction) is 40,600.

Source: Subproject Feasibility Study, Bavet Urban Road, ADB TA 7644-REG, May 2012.

Number of persons/year entering Cambodia from Vietnam (2010 to 2015)

2010	2011	2012	2013	2014	2015
547,565	621,010	673,830	680,723	738,441	751,811

Number of persons/year exiting Cambodia to Vietnam (2010 to 2015)

2010	2011	2012	2013	2014	2015
559,074	644,208	725,104	733,451	749,568	775,432

Source: Immigration Office at Bavet Border Check Point. Collected by Mr. Keo Sarornng, Social & Environment Officer, Bavet PIU.

Target: 6, 14 km of main urban road upgraded with drainage structures, benefiting 37,100 residents by 2019.

Note: 37,100 is the population of Bavet in 2010.

Projected Achievement: 6, 14 km of main urban road upgraded with drainage structures, benefiting 40,600 residents by 2019.

Indicator 2.6: Material Baseline: The baseline value for the indicator is “nil” since subproject is construction of new MRF.

Recovery Facility

Hybrid Garbage Co. Ltd. (HGCL) is contracted, since 18 September 2015, to provide waste collection and disposal services in the town. A total of 34,884 residents are served in 4 out of 5 sangkats. The present tonnage of solid waste that is collected daily is estimated to be 20-30 tons. The company collects waste from casinos, hotels, guesthouses, market, households, restaurants, commercial establishments and institutions at the urban sector of Bavet on daily basis (Monday through Sunday).

Source: Mr. Yen Chham, Administration Manager, Hybrid Garbage Co. Ltd, Bavet, 15 February 2016.

Target: 30 cu m of recyclables per day segregated, benefiting 24,000 residents by 2018.



Projected Achievement: 30 m³ or four (4) tons of dry, source segregated and non-biodegradable waste processed per day benefiting ____* residents by 2018.

Source: Subproject Feasibility Study, Bavet Material Recovery Facility, ADB TA 7644-REG.

* The original target value will be validated/updated during the preliminary design review and detailed engineering design to be undertaken by the DED Consultant.

Neak Loeung

Indicator 2.7: **Baseline:** The current population within the subproject area is 9,338 residents, as follows:

No. of Households	No. of Families	Population	Within the Flood Protection Area			
			Percentage	No. of Households	No. of Families	Population
Neak Loeung Commune						
1,538	1,781	8,864	60%	923	1,069	5,318
Prek Khsay Khor Commune						
2,282	2,351	11,485	35%	799	823	4,020
Total						
3,820	4,132	20,349		1,722	1,891	9,338

Source: Mr. Phum Samphorn, Deputy Governor, Peam Ror District, 16 February 2016.

Target: 5.4 km flood protection dike constructed; 363 ha of residential and commercial areas protected from annual flooding (based on 50-year flood frequency), benefiting 24,700 residents by 2019.

Projected Achievement: 3.9 km flood protection dike constructed by 2019; benefiting ____* residents and protecting 355 ha from annual flooding (based on 50-year flood frequency) for development into residential and commercial areas.

The implementation of this Flood Protection Subproject has been deferred.

* The length of the flood protection dike, and the number of residents and the hectareage of the area that will be protected will be updated/determined during the detailed engineering design to be undertaken by the DED Consultant.

Poipet

Indicator 2.8: **Baseline:** Poipet has no existing WWTP, hence the baseline value for the indicator is “nil”.

Target: 65,000 residents serviced by wastewater treatment plant (capacity 16,400 cu m/day) by 2019. Flood events of facility reduced (based on 50-year flood frequency).

Projected Achievement: 45,790 residents serviced by wastewater treatment plant (capacity 7,660 cu m/day) by 2019. Flood events of facility reduced (based on 50-year flood frequency).

The new WWTP (completion of infrastructure in December 2018) will be servicing the following in Sangkat Poipet by 2019:

- 45,790 residents/population, and
- 29 commercial facilities

The capacity of the new WWTP is 7,660 cu m/day (Stage 1, design year is



2020).

Source: PISCD, Poipet Wastewater Treatment Subproject Technical Assessment and Preliminary Design Report, July 2015.

Indicator 2.9: **Solid Waste Management** Baseline: The baseline value for the indicator is “nil” since the sanitary landfill is a new facility.

Poipet Cleaner is contracted, since 2008, to provide waste collection and disposal services in the town. A total of 2,200 households are served in 2 out of 3 sangkats. The present tonnage of solid waste that is collected daily is estimated to be 50-65 tons. Of which, an average of about 28 tons/day are collected from hotels/casino and other business and institutional establishments, and an average of about 35 tons/day are collected from households.

Source: Ms. Sareoung Sophea, Poipet Cleaner, 25 February 2016.

Target: 20 tons/day of solid waste deposited in sanitary landfill, benefiting 58,600 residents by 2019

Projected Accomplishment: ____* tons/day of solid waste deposited in sanitary landfill, benefiting ____* residents by 2019

The implementation of this Solid Waste Management Subproject has been deferred.

* The original targets will be verified/updated during the preliminary design review and detailed engineering design to be undertaken by the DED Consultant.

Indicator 2.10: **Material Recovery Facility** Baseline: The baseline value for the indicator is “nil” since subproject is construction of new MRF.

Target: 30 cu m of recyclables per day segregated, benefiting 58,600 residents by 2018.

Projected Achievement: 60 m³ or eight (8) tons of dry, source segregated and non-biodegradable waste processed per day benefiting ____* residents by 2018.

Source: Subproject Feasibility Study, Poipet Material Recovery Facility, ADB TA 7644-REG, June 2012.

* The original target value will be validated/updated during the preliminary design review detailed engineering design to be undertaken by the DED Consultant.

Output 3: Institutional capacity strengthened

Indicators 3.1, 3.2 & 3.3: Baseline: The SECTDP is considered as the first major urban sector development assistance of the ADB in the GMS that integrates urban environment improvement and economic infrastructure with institutional capacity development for sustained economic growth. Hence the baseline value for these indicators is “nil”.

Target: The performance targets of these indicators are as specified in the DMF.

Outcome: Urban infrastructure improved and climate resilience enhanced in Battambang, Bavet, Neak Loeung, and Poipet

Indicator 1: Baseline: The “before-project” number of inhabitants/individuals that have access to existing urban infrastructure that are to be rehabilitated/upgraded in the subprojects is the total of the baseline values of Output 2 Indicators 2.1 and 2.5, as follows:

Particular	Value
Residents presently connected to existing sewerage system and	18,650



WWTP that will be rehabilitated in Battambang.	
Present traffic volume (residents/individuals) of main urban road to be upgraded in Bavet.	_____ *
Total number of inhabitants/individuals that have access to existing urban infrastructure	_____ *

* To be determined/updated during the preliminary design review and detailed engineering design to be undertaken by the DED Consultant.

Target: Improved access to urban infrastructure affects 558,220 inhabitants (cumulative figure) in four project towns.

Projected Accomplishment: Improved access to urban infrastructure affects _____ inhabitants (cumulative figure) in four project towns.

This is the total of the target number of residents/individuals benefiting from the urban infrastructure subprojects, i.e. total of targets for Indicators 2.1 to 2.10, as follows:

Town/ Indicator no.	Indicator	Updated Target
Battambang		
2.1	No. of residents serviced by new & rehabilitated WWTP	52,000
2.2	No. of persons benefiting from flood control	_____ *
2.3	No. of residents benefiting from MRF	_____ *
Bavet		
2.4	No. of residents serviced by WWTP	22,990
2.5	No. of residents/individuals benefiting from upgraded urban road	_____ *
2.6	No. of residents benefiting from MRF	_____ *
Neak Loeung		
2.7	No. of persons benefiting from flood protection	_____ *
Poipet		
2.8	No. of residents serviced by WWTP	45,790
2.9	No. of residents benefiting from sanitary landfill	_____ *
2.10	No. of residents benefiting from MRF	_____ *
Total inhabitants having improves access to urban infrastructure		_____ *

* To be determined/updated during the preliminary design review and detailed engineering design to be undertaken by the DED Consultant.

Indicator 2: **Baseline:** Economic loss due to poor sanitation was \$32 per capita in year 2005.

Source: *Economic Impacts of Sanitation in Cambodia, Summary. Water and Sanitation Program – East Asia and the Pacific (WSP-EAP). World Bank. 2008*

Target: Annual economic impact of poor sanitation, accounting for a loss of \$33 in 2005 per capita per year, reduced by 40%.

Projected Accomplishment: Annual economic impact of poor sanitation, accounting for a loss of \$32 in 2005 per capita per year, reduced by 40%.

Indicator 3: **Baseline:** The “before-project” total hectarage of urban areas affected by perennial flooding in Battambang and Neak Loeung, is as follows:



Town	Urban areas presently affected by perennial flooding, hectares
Battambang.	_____*
Neak Loeung	335
Total	_____*

* To be determined/updated during the preliminary design review & detailed engineering design to be undertaken by DED Consultant.

Target: Urban areas affected by perennial flooding reduced by 30%.

This is the total of the target hectareage of urban areas (i) benefiting from reduction of flood events, due to the flood control subproject in Battambang; and (ii) protected from annual flooding, due to the flood protection subproject in Neak Loeung. This is expressed as a percentage of the baseline value.

Town/ Indicator no.	“Before-project” (baseline) urban areas affected by perennial flooding Hectare	Urban areas protected from flooding due to flood control/protection subprojects	
		Hectare	% **
Battambang / 2.2	_____*	_____*	_____**
Neak Loeung / 2.7	335	335	100
Total	_____*	_____*	_____**

* To be determined/updated during the preliminary design review and detailed engineering design to be undertaken by the DED Consultant.

** Urban areas protected from flooding due to flood control/protection subprojects as a percentage of “before-project” (baseline) urban areas affected by perennial flooding.



APPENDIX I GRM-COMPLAINT RECORDING FORM

PIU Staff Responsible: (name and role)	
Date: (of this record)	
Date of Complaint:	
Date Resolution Required by (15 days from initial complaint):	
Complaint Made by: (Name & Contact Details)	
Method of Complaint: (direct to PMU, via Contractor, Via Commune People's Council)	
Details of Complaint: (issues, actions taken so far, when did it start – all details needed)	
PMU Actions: (Next steps for PMU to resolve the issue or to move complaint to next level)	
Follow Up Actions Needed and Date: (PMU to follow up on resolution if needed, e.g. check contractor actions)	



APPENDIX J GENDER ACTION PLAN (GAP) MONITORING TABLE

Gender Action Plan Progress and Review Indicators Date of Update: 1 January - 31 March 2020

Project Title:	Greater Mekong Sub-region Southern Economic Corridor Towns Development Project ¹
Country:	Cambodia
Project No.	43319-033
Type of Project (Loan/Grant/TA):	Loan 2983
Approval and Timeline:	Approval 10 December 2012
Gender Category:	Effective Gender Mainstreaming (EGM)
Project Officer:	Mr. Ratha Sann
Project Impact:	The towns of Battambang, Bavet, Neak Loeung, and Poipet will become centers of economic activity in the Southern Economic Corridor
Project Outcome:	Urban infrastructure improved and climate resilience enhanced in Battambang, Bavet, Neak Loeung, and Poipet

Document 1: Progress of Gender Action Plan Implementation

Document 2: Status of Compliance with DMF

¹ The project was approved by the board on 10 December 2012, the effective date is on 08 April 2013 and estimated loan closing date on 30 June 2019. The total investment cost is estimated at \$ 54.78 million. Four corridor towns along the Southern Economic Corridor (SEC) were selected as project areas based on their economic potential, infrastructure constraints, and expressed commitment: Battambang, Bavet, Neak Leung, and Poipet.



1) Progress of Gender Action Plan Implementation

Gender Action Plan (GAP Activities, Indicators and Targets, Timeframe and Responsibility)	Progress to Date This should include information on period of actual implementation, sex-disaggregated quantitative updates (e.g. number of participating women, women beneficiaries of services, etc.), and qualitative information. However, some would be on-going - so explain what has happened so far towards meeting the target.	Issues and Challenges Please include reasons why an activity was not fully implemented, or if targets fall short, or reasons for delay, etc., and provide recommendations on ways to address issues and challenges
Output 1 (GAP): Strategic Local Economic Development Plan (SLEDP) adopted and implemented		
1.1. GAP Component 1 - Institutional Strengthening for Gender and Development (funded under capacity development and training)		
Gender issues reflected and mainstreamed in planning documents including socio-economic development plans and master plans Action1: On- Track DMF indicator	SLEDPs of the 4 towns include sections on gender issues and measures to address these. Gender issues cited in the SLEDPs: • School dropped out for poor girls to find job to support family; • Gender-based violence; • Women particularly the female heads of households are not economically empowered and are not involved in decision-making in the community; because of low education; and much time spent in housework performing both tasks of men and women; • Women, especially young girls are at risk to human trafficking and the core labor issues;	Comment: SLEDPs have been updated, so please update what are the gender issues mainstreaming into the updated SLEDPs



	• Women do not occupy leadership positions in the community; • Rural pregnant women have low knowledge on maternity health. Action in SLEDP: • Disseminating information on preventive anthelmintic treatment; • Disseminating law on gender-based violence; • Disseminating and promoting women and children's right; • Disseminating law on human trafficking; • Provide food nutrition to women and children; • Promote gender equality, women empowerment and provide legal assistance for women and girls; • Promote women's decision making in politics and public work. The new SLEDP under compiling after the integration workshop, it can be completed and shared by February 2020, (Q1-20 updated) The new SLEDP is on the process, the gender issues mainstreaming into the updated SLEDPs will provide inputs when it completed,	
PIS consultant's gender specialists will collect sex-disaggregated data on EA/IAs staffing and technical designation as baseline and monitoring of gender targets for overall staff and management positions to refine the gender awareness training inputs	• As of October 2019, 2 women (or 20%) of the 10 PMU staffs are female • 8 women (25%) of the 32 PIU staffs in the four towns are women Table 1: Sex-disaggregated data of project staffs at PMU and PIUs by year:	



Action 2: On-track	Year	PMU		PIUs	
		Male	Female	Male	Female
	2015	8	2	36	8
	2016	8	2	36	8
	2017	8	2	26	5
	2018	8	2	25	7
2019	8	2	32	8	
Provide gender awareness and sensitization training for 30 EA/IA staff (each province); gender awareness training for managers and staff to increase sensitivity to different needs of women and men. Action 3: On-track DMF indicator	98 participants including 21 women (21%) from PMUs, PIUs, provincial department of women's affairs and contractors received gender sensitization including GAP orientation. - The project conducted three gender sensitization trainings. The training contents included: (i) gender mainstreaming policy in Cambodia, (ii) ADB gender policy and requirement, (iii) gender concepts (iv) GAP orientation, (v) Developing or integrating gender into work plan, (vi) roles and responsibilities of project staffs in GAP implementation, (vii) collecting sex-disaggregated data and (viii) challenges and solution to GAP implementation. - The refresher training on GAP will be done for PIUs Neak Leung. It plan in the first quarter of 2020. (Q1-20 Updated) The refresher training on GAP will be done for PIUs Neak Leung. It can be done when COVID19 status improves				
Output 2 (DMF & GAP output is the same): Priority urban infrastructure investments implemented					
GAP Component 2 - Empowerment for Women in Urban Community Development and Skills Training (funded under capacity development and					



training) Market assessment survey undertaken indicating current demand and economic growth areas in towns. Target 1: Achieved	- The market assessment study was conducted using desk review and consultation with local NOGs, authorizes, PDOWA and women beneficiaries in the project including small-scale business owner in the project area, waste picker and construction workers. The consultation has been done with 101 women. - Below are the findings and the recommendations from the study: (i) The majority of women consulted prefer skill on their existing business and work, so they can improve their current business and performance. (ii) To ensure inclusive growth, skill training should include the poor and vulnerable women (waste picker, construction workers and small-scale business operators) (iii) for small-scale home-based and street vendors, training should cover business plan, product/good packaging, sanitation, marketing skill. National Employment Agency and Caritas could be the best agencies for this training, (iv) For waste pickers, the skill should be on solid waste recycling skills. This skill can be provided by SCARO organization that have years of experience waste picker on dumpsite.	
Training for women to better position their entry in the growing employment demand areas arising from project interventions, targeting at least 150 women per town.	- 154 women including construction workers, waste pickers and small-scale home-based and street vendors in Battambang province received skill trainings to increase their job performance	



Target 2: On-track	and opportunities for the growing market. The types of skill selected for training is based on the consultation with women on their preference skills and has been customized according to different types of participants. - Female construction workers received the training on concrete and painting work. The female waste pickers received the training on waste segregation, recycling and compost making. The small-scale home-based and street vendors received skill training on business plan, benefit and cost analysis, sanitation and marketing. - at least 80 women of small-scale home-based and street vendors from 7 villages of Bavet where construction activities are done will receive skill training on business plan, benefit and cost analysis, sanitation and marketing. The training will conduct in January 2020. - (Q1-20 Updated) the training session on exiting business improvement for woman conducted on March 12-14, 2020 with engaged a total of 96 persons as existing business women (78 Females) from 7 villages in 3 Communes/Sangkat of Bavet. These kind of training will be conducted by sub-contractor of USS company when COVID19	
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	status improves,	
A target of 40% women for employing existing informal waste pickers in the material recovery facilities (MRFs) funded under the project, including skills upgrade training. Target 3: On-track	- All MRFs construction were fully completed, it is not yet operated. Currently, it is in the process to handover to municipality to manage the operation. - PMU agreed that all existing workers in current dumping site will be employed in MRFs. The condition to employ all existing waste pickers will be included in the term and agreement of MRFs handover. - For Battambang, MRF has handed over to Battambang municipality but there still need to build extra, there also no clear direction whether to hire to private company or keep under municipality, - For Poi Pet and Bavet not yet due, - 30 out of 52 waste pickers received training on Solid Waste Recycling Skills. The number of female waste pickers attended the training less than 40 as planned because they were busy with their cooking and look after the children. A clause "Operator should target at least 40% women for employing existing informal waste picker in the MRF" included in the O&M agreement. - (Q1-2020 Updated): the work can be continue after COVID190 status improved.	Comment: please collect sex-disaggregation of waste picker in MRFs and record how many female waste picker received skill training.
Construction phase employment, construction workers will be 30% female; contractor records to be sex disaggregated for monitoring purposes.	- 13,062 (30%) days of 43,487 of unskilled laborers claimed by women under the construction work. Type of activities performance by women included: (i) bending bar, (ii) cleaning the road, (iii) deliver brick and mixed cement and (iv) flag person, painting and	



Target 4: On-track DMF indicator	etc. Female unskilled workers received training from the company on concrete work, painting work, bending, installing rebar to enable their work in the construction. - Women unskilled laborers receive \$7/day. The company provide equal pay for equal work. The different scale of pay is depending level and type of work. - Sex-disaggregated labor monitoring sheet was developed and use by contractors and reported to PMU monthly. - There is no child labor employed in the construction.	
GAP component 3 - HIV awareness and prevention (funded by construction companies)		
Awareness training provided by external HIV organizations and/or NGOs subcontracted by contractors during workforce mobilization for laborers and community surrounding construction locales Action 4: On-track	- 271 women (43%) of 630 participants attended the awareness raisin on HIV/AIDs and STIs in Battambang province. The participants consist of construction workers, and entertainment workers, entertainment workers, waste pickers, and villagers. - 3 days awareness campaign on HIV/AIDs in Poipet engaged 160 citizens (68 females). Even campaign's time a bit short but audience mostly remember about the HIV/AIDS prevention, particularly "the parent have to ask groom in advance six-months to get blood-tested before getting their children's married". Such things they have not aware at all before campaign. - (Q1-2020 Updated) the trainings completed in Battambang and Poipet.	Comment: Please include what are the brief results of training?
GAP component 4 - sanitation, health and hygiene Program (funded under capacity development and training)		



Training 2 health and sanitation promoters (male and female) in each town through a training of trainers (TOT) program Target 5: On-track	- 8 women (30%) of 27 participants from the four towns attended a training of trainer on environmental sanitation and hygiene. The participants consist of 6 from commune health and sanitation promoter, 5 from Provincial Department of Women's Affairs (PDWA), 6 from PMU, 10 from PIUs of the four towns. - With coordinated by trained PIUs and PDoWA, the Sanitation Promoters used provided IECs materials to conduct Environmental and Sanitation to target villagers, it engaged total 948 (622 females) at target villagers. - (Q1-2020 Updated) – will approach trained participant for interview when COVID19 improves.	Comment: Please provide brief outcome of the training.
Establish and train 2 MoWA staff as facilitators for IEC completion in each town. Target 6: Achieved	- 11 participants (6 female) of the TOT from Sangkat council and PDoWA assigned as sanitation and hygiene promoter in the towns. For the next step, With supported from PIU, Health and Sanitation Promoter continues to conduct Environmental Sanitation and Hygiene Promotion by using IEC material (two posters: 1). focus on hygiene, 2). focus on environmental sanitation) to a total 948 (622 females) students and villagers who are living in the SECTDP areas and send report to SECTDP. 1). Bavet: conduct Environmental Sanitation and Hygiene Promotion to approximately 385 villagers (249 Females). 2). Battambang: conduct Environmental Sanitation and Hygiene Promotion to approximately 159 villagers (112 Females). 3). Poipet: conduct Environmental Sanitation and	Comment: how many women and men among 11 facilitators? What kinds of IEC material do they use, please describe.



	Hygiene Promotion to approximately 404 villagers (261 Females)	
GAP component 5 - road safety campaign (funded under capacity development and training)		
Target girls as well as boys in school awareness campaigns Action 5: On-track	- 4,848 women (98%) of 4,969 participants attended awareness raising on road safety program. The participants are from school children, communities and garment factories workers. - Active participation from school children, garment workers and local authorities. Most of participants requested for more campaigns as it can mitigate road accidents and proper road usage. - (Q1-2020 Updated) will approach participants for interview when COVID19 improves.	Comment: Please give brief results of the program? In the following quarter,
Output 3 (DMF & GAP output is the same): Institutional capacity strengthened		
GAP component 6 - institutional strengthening for gender and development (cost included in project output 1)		



Ensure that 20% of the overall staff positions and 20% of the management positions in the Project Management Units and Project Support Units to be female

Target 7: Achieved

DMF indicator

- 2 staffs (or 20%) of 10 PMU staffs are women. 1 woman is in management position and another woman is in support office.
- 8 staffs (25%) of 32 PIUs staffs are women.

Table 2: Number of project staffs at PIUs

PIUs	Male	Female	Total staff	% female
Battambang	6	3	9	33%
Piopat	7	2	9	22%
NeakLoeung	5	2	7	29%
Bavet	6	1	7	14%
Total	24	8	32	25%

Note: All position at PIUs are technical level with some are at decision-making level.



2) Status of Compliance with Design and Monitoring Framework (DMF)

Design Summary	Performance Targets and Indicators	Progress to Date This should include information on period of actual implementation, sex-disaggregated quantitative updates (e.g. number of participating women, women beneficiaries of services, etc.), and qualitative information. However, some would be on-going - so explain what has happened so far towards meeting the target.
Output 1: SLEDs adopted and implemented in Poipet, Battambang, Bavet, and Neak Loeung	GAP implementation focuses on the SLEDs thrusts on poverty, gender and ethnicity; more attention is given to the employment and livelihood issues of female heads of households; also, on the social issues confronting young girls along education, employment in the tourism and service sectors.	Gender action targets in the GAP are continuously implemented and monitored using gender performance monitoring tools.
Output 2. Priority urban infrastructure Investments implemented	30% of construction workers hired as unskilled laborers are women.	To date, 33% of total construction workers are women;
Output 3: Institutional capacity strengthened	2,000 people trained in project management and implementation, financial management, procurement, and social and environment safeguards, sanitation and hygiene,	Total 7,682 people trained and 6,136 (80%) women in the PMU and PIU with increased role in decision making.



Design Summary	Performance Targets and Indicators	Progress to Date
		This should include information on period of actual implementation, sex-disaggregated quantitative updates (e.g. number of participating women, women beneficiaries of services, etc.), and qualitative information. However, some would be on-going - so explain what has happened so far towards meeting the target.
	road safety, HIV awareness, gender target achieve: Staff quota of 20% women in the PMU and PIU with increased role in decision making	
	Women hold 20% of overall staff positions and 20% of the management positions in the PMU and PIU	A total 10 members with 8 men and 2 women (20% women) as staff of PMU. A total 32 PIU staffs of the four towns, and 8 are women which is 25% of the management position.
Training 2 health and sanitation promoters (male and female) in each town through a training of trainers (TOT) program	Training 2 health and sanitation promoters (male and female) in each town through a training of trainers (TOT) program Establish and train 2 MoWA staff as facilitators for IEC completion in each town.	Conducted TOT on Environmental Sanitation and Hygiene Promoter to 27 participants, 8 females (30% of female) including selected 6 health and sanitation promoters, 5 PDWA and DoWA, 6 PMU, and 10 PIUs of the 3 towns (Poipet, Battambang, and Bavet).

Comments/ Remarks (conclusion of status of GAP implementation and suggestion/recommendation for improvement):

Accomplished by: Houth Ratanak, Social Safeguard/ Gender Specialist

Date Accomplished: 30 September 2019



APPENDIX K

STATUS OF COMPLIANCE WITH LOAN COVENANTS

No.	Covenant	Reference in LA	Status of Compliance
1.	Implementation Arrangements The Borrower shall ensure that the Project is implemented in accordance with the detailed arrangements set forth in the PAM. Any subsequent change to the PAM shall become effective only after approval of such change by the Borrower and ADB. In the event of any discrepancy between the PAM and this Loan Agreement, the provisions of this Loan Agreement shall prevail.	Schedule 5, Para. 1	Complied
2.	Environment The Borrower shall ensure, and cause MPWT to ensure, that the preparation, design, construction, implementation, operation and decommissioning of the Project comply with: (a) all applicable laws and regulations of the Borrower relating to environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements set forth in the IEEs, the EMPs and any corrective or preventative actions set forth in a Safeguards Monitoring Report. The Borrower shall ensure, and cause MPWT to ensure, that the foregoing is applied and implemented for all Parts of the Project, regardless of the financing source.	Schedule 5, Para. 2	Ongoing
3.	The Borrower shall ensure that Bavet and Poipet municipalities pass regulation requiring that no untreated waste water is discharged by industrial companies within 36 months of the Effective Date.	Schedule 5, Para. 3	Not yet due
4.	Land Acquisition and Involuntary Resettlement The Borrower shall ensure, and cause each Project province to ensure, that all land and all rights-of-way required for the Project are made available to the Works contractor in accordance with the schedule agreed under the related Works contract and all land acquisition and resettlement activities are implemented in compliance with: (a) all applicable laws and regulations of the Borrower relating to land acquisition and involuntary resettlement; (b) the Involuntary Resettlement Safeguards; and (c) all measures and requirements set forth in the RPs, and any corrective or preventative actions set forth in the Safeguards Monitoring Report. Without limiting the generality of the foregoing, the Borrower shall ensure, and cause each Project province to ensure, that prior to the commencement of Works a clear land title (which is free of any kind of encumbrance) shall be provided for the implementation of Parts 3, 6 and 10 of the Project.	Schedule 5, Para. 4	Partly complied
5.	Without limiting the application of the Involuntary Resettlement Safeguards or the RPs, the Borrower shall cause MPWT to ensure that no physical or economic displacement takes place in connection with the Project until: (a) compensation and other entitlements have been provided to affected people in accordance with the RPs; and	Schedule 5, Para. 5	Partly complied



No.	Covenant	Reference in LA	Status of Compliance
	(b) a comprehensive income and livelihood restoration program has been established in accordance with the RPs.		
6.	Indigenous Peoples No impact on indigenous people is expected for the Project. In the event that there is any such impact, the Borrower shall cause MPWT to ensure that it adheres to applicable laws and regulations of the Borrower and the SPS.	Schedule 5, Para. 6	Complied
7.	Human and Financial Resources to Implement Safeguards Requirements The Borrower shall make available, and cause MPWT to make available, necessary budgetary and human resources to fully implement the EMPs and the RPs.	Schedule 5, Para. 7	Complied. Budget has been allocated
8.	Safeguards – Related Provisions in Bidding Documents and Works Contracts The Borrower shall ensure, and cause MPWT to ensure, that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractor set forth in the IEEs, the EMPs and the RPs (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set forth in a Safeguards Monitoring Report; (b) make available a budget for all such environmental and social measures; and (c) provide the Borrower with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the IEEs, the EMPs and the RPs.	Schedule 5, Para. 8	a. Partly Complied. Bidding documents contains IEE&EMPs should be updated b. Complied. c. Complied.
9.	Safeguards Monitoring and Reporting The Borrower shall do the following: (a) submit semiannual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEEs, the EMPs and the RPs, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; (c) no later than the commencement of land acquisition and resettlement activities, engage qualified and experienced external monitoring organization(s)	Schedule 5, Para. 9	Partly complied Semi-annual monitoring reports (internal monitoring by GDR/DIMDM) have not been provided yet The external monitoring organization



No.	Covenant	Reference in LA	Status of Compliance
	under terms of references acceptable to the Borrower and ADB, to verify information produced through the Project monitoring process and facilitate the carrying out of any verification activities; and report any actual or potential breach of compliance with the measures and requirements set forth in the EMPs and the RPs promptly after becoming aware of the breach.		(EMO) has been engaged. The EMO inception report has been reviewed, comments provided and the final version pending submission. The next safeguards report is pending submission
10.	Prohibited List of Investments The Borrower shall ensure that no proceeds of the Loan are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the SPS.	Schedule 5, Para. 10	Complied
11.	Labor Standards and Health The Borrower shall ensure, and cause MPWT to ensure that, all Works contractors: (a) comply with all applicable labor laws of the Borrower; (b) use their best efforts to employ women and local people, including disadvantaged people, living in the vicinity of the Project; (c) disseminate information at worksites on health safety for those employed during construction; (d) provide equal pay to men and women for work of equal type; (e) provide safe working conditions and separate culturally appropriate facilities for male and female workers; and (f) abstain from child labor.	Schedule 5, Para. 11	Ongoing
12.	Gender and Development The Borrower shall ensure, and cause MPWT to ensure, that: (a) the gender action plan developed for the Project is implemented in accordance with its terms; (b) the bidding documents include relevant provisions for contractors to comply with the measures set forth in this plan; (c) adequate resources are allocated for the implementation of this plan; and (d) key gender outcome and output targets (notably: (i) gender awareness and sensitisation training to be carried out for 30 staff from MPWT and the implementing agencies; (ii) 30 percent of the construction workers hired by the Works contractors should be female; (iii) 30 percent of the total staff in the project management unit and the project implementation units of the Project shall be female; and (iv) within 24 months of the Effective Date, 20 percent of the total management positions in the project management unit and the project implementation units of the Project shall be occupied by female) are monitored regularly and achieved.	Schedule 5, Para. 12	Complied
13.	The Borrower shall ensure, and cause MPWT to ensure that, the stakeholder communication strategy developed for the	Schedule 5, Para. 13	Ongoing



No.	Covenant	Reference in LA	Status of Compliance
	Project is implemented in a timely manner.		
14.	Sector Development The Borrower shall cause MPWT to: (a) adopt a business plan for achieving full cost recovery (to cover operation and maintenance expenditures) of the facilities developed under Parts 1, 4 and 8 of the Project prior to their physical completion; and (b) commit to making up shortfall through budget allocations to cover operation and maintenance expenditures.	Schedule 5, Para. 14	Not yet due
15.	Governance and Anticorruption The Borrower shall: (a) comply with ADB's Anticorruption Policy (1998, as amended to date) and acknowledge that ADB reserves the right to investigate directly, or through its agents, any alleged corrupt, fraudulent, collusive or coercive practice relating to the Project; and (b) cooperate with any such investigation and extend all necessary assistance for satisfactory completion of such investigation.	Schedule 5, Para. 15	Complied
16.	The Borrower shall ensure, and cause MPWT to ensure, that the anticorruption provisions acceptable to ADB are included in all bidding documents and contracts, including provisions specifying the right of ADB to audit and examine the records and accounts of the executing and implementing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the Project.	Schedule 5, Para. 16	Complied
17.	The Borrower shall cause MPWT to prepare and effectively implement a good governance framework, in a form and substance acceptable to ADB during Project implementation.	Schedule 5, Para. 17	Complied
18.	The Borrower shall: (i) maintain separate accounts and records for the Project; (ii) prepare annual financial statements for the Project in accordance with accounting principles acceptable to ADB; (iii) have such financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with international standards for auditing or the national equivalent acceptable to ADB; (iv) as part of each such audit, have the auditors prepare a report (which includes the auditors' opinion on the use of the Loan proceeds and compliance with the financial covenants of this Loan Agreement as well as on the use of the procedures for imprest fund and statement of expenditures) and a management letter (which sets out the deficiencies in the internal control of the Project that were identified in the course of the audit, if any); and (v) furnish to ADB, no later than 6 months after the end of each related fiscal year, copies of such audited financial statements, audit report and management letter, all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.	Article IV, Section 4.02 (a)	Complied
19.	ADB shall disclose the annual audited financial statements for the Project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on ADB's website.	Article IV, Section 4.02 (b)	Complied
20.	The Borrower shall enable ADB, upon ADB's request, to	Article IV,	Complied



No.	Covenant	Reference in LA	Status of Compliance
	discuss the financial statements for the Project and the Borrower's financial affairs where they relate to the Project with the auditors appointed pursuant to subsection (a)(iii) hereinabove, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB. This is provided that such discussions shall be conducted only in the presence of an authorized officer of the Borrower unless the Borrower shall otherwise agree.	Section 4.02 (c)	
21.	The Borrower shall enable ADB's representatives to inspect the Project, the Goods and Works, and any relevant records and documents.	Article IV, Section 4.03	Complied
22.	General The procurement of Goods, Works and Consulting Services shall be subject to and governed by the procurement Guidelines, and the consulting Guidelines, respectively.	Schedule 4, Para. 1	Complied
23.	All terms, used in this schedule and not otherwise defined in this loan agreement have the meanings provided in the Procurement Guidelines and/or the Consulting Guidelines, as applicable.	Schedule 4, Para. 2	Complied
24.	Goods and Works Except as ADB may otherwise agree, Goods and works shall only be procured on the basis of the methods of procurement set forth below: (a) International Competitive Bidding; and (b) National Competitive Bidding	Schedule 4, Para. 3	Complied
25.	The methods of procurement are subject to, among other things, the detailed arrangements and threshold values set forth in the Procurement Plan. The Borrower may only modify the methods of procurement or threshold values with the prior agreement of ADB, and modifications must be set out in updates to the Procurement Plan.	Schedule 4, Para. 4	Complied
26.	Domestic Preference The Borrower may grant a margin of preference in the evaluation of bids under international competitive bidding in accordance with paragraphs 2.55(a) and 2.56 of the Procurement Guidelines for domestically manufactured Goods, and paragraphs 2.55(b) and 2.56 of the Procurement Guidelines for domestic Works.	Schedule 4, Para. 5	Complied
27.	National Competitive Bidding The Borrower and ADB shall ensure that, prior to the commencement of any procurement activities under national competitive bidding, the Borrower's national competitive bidding procedures are consistent with the Procurement Guidelines. Any modifications or clarifications to such procedures agreed between the Borrower and ADB shall be set out in the Procurement Plan. Any subsequent change to the agreed modifications and clarifications shall become effective only after approval of such change by the Borrower and ADB.	Schedule 4, Para. 6	Complied
28.	Conditions for Award of Contract	Schedule 4,	Complied



No.	Covenant	Reference in LA	Status of Compliance
	The Borrower shall not award any Works contract which involves environmental impacts until MPWT has: (a) Obtained the final approval of the IEE from the appropriate authority of the Borrower; and (b) Incorporated the relevant provisions from the EMP into the Works contract.	Para. 7	
29.	The Borrower shall not award any Works contract which involves involuntary resettlement impacts, until the Borrower has prepared and submitted to ADB the final RP based on the detailed design, and obtained ADB's clearance of such RP.	Schedule 4, Para. 8	Complied
30.	Consulting Services Except as ADB may otherwise agree, the Borrower shall apply quality- and cost-based selection for selecting and engaging Consulting Services.	Schedule 4, Para. 9	Complied
31.	The Borrower shall apply the following method for selecting and engaging the specified Consulting Services, in accordance with among other things the procedures set forth in the Procurement Plan: Consultant Qualification Selection for (a) detailed design and construction supervision; and (b) independent monitoring.	Schedule 4, Para. 10	Complied
32.	The Borrower shall recruit the individual consultants for such services as agreed with ADB in accordance with procedures acceptable to ADB for recruiting individual consultant.	Schedule 4, Para. 11	Complied
33.	Industrial or Intellectual Property Rights (a) The Borrower shall ensure that all Goods and Works procured (including without limitation all computer hardware, software and systems, whether separately procured or incorporated with other goods and services procured) do not violate or infringe any industrial property or intellectual property right or claim of any third party. (b) The Borrower shall ensure that all contracts for the procurement of Goods and Works contain appropriate representations, warranties and, if appropriate, indemnities from the contractor or supplier with respect to the matters referred to in subparagraph (a) of this paragraph.	Schedule 4, Para. 12	Complied
34.	The Borrower shall ensure that all ADB-financed contracts with consultants contain appropriate representation, warranties and, if appropriate, indemnities from the consultants to ensure that Consulting Services provided do not violate or infringe any industrial property or intellectual property right or claim of any third party.	Schedule 4, Para. 13	Complied
35.	ADB's Review of Procurement Decisions Contracts procured under international competitive bidding procedures and contracts for Consulting Services shall be subject to prior review by ADB, unless otherwise agreed between the Borrower and ADB and set forth in the Procurement Plan.	Schedule 4, Para. 14	Complied



APPENDIX L

RISK ASSESSMENT AND RISK MANAGEMENT PLAN (RARMP)

No.	Risk/Issue	Assessment without Mitigation	Action to Mitigated Risk	Responsibility	Target/Monitoring	Status as at (Dec 2018)	Supporting Evidence
Element 1: Procurement							
1.a	Irregularities relating to leaking prior or post procurement information before the contract award, collusion during the bidding process, and bid evaluation.	High	EA/IAs to establish PRC under the project in accordance with SOP/PM which are in line with ADB guidelines. EA/IAs shall ensure that the Declarations of Fraud and Ethical Conduct (DFEC) for PRC members and bidders (contractors, suppliers and consultants) are signed for each transaction. A copy of the declarations of winning bidders shall be part of the awarded contracts.	EA/IAs	All procurement transactions. EA/IA to monitor, ADB to verify during review missions, prior reviews and post reviews	PRC established on 22 November 2014. DFEC signed for each transaction, and copies of DFEC of winning bidders made part of awarded contracts.	PRC minutes of meetings. DFEC in awarded contracts.
1.b	Insufficient compliance with procedures	High	EA/ IAs are to adhere strictly to the procedures and guidelines set forth in the Loan Agreement, ADB's Procurement Guidelines, and SOP/PM that also cover ICB, NCB and shopping.	EA/IAs MEF monitors compliance with LA, ADB Procurement Guidelines and SOP/PM	All procurement transactions. EA/IA to monitor, ADB to verify during review missions, prior reviews and post reviews	Sufficient adherence/ compliance to procurement procedures and guidelines by EA/IAs, as monitored by MEF.	Bid Evaluation Committee (BEC) / Consultant Evaluation Committee (CEC) Reports & Recommendation. PRC minutes of meetings.
1.c	Weak procurement capacity.	High	EA/ IAs will receive continued hands-on training and technical assistance from consultants recruited under the project. SOP/PM will be used under the project.	ADB	Throughout Project duration	Training conducted by ADB in Dec. 2016. Inquiries on procurement can be directly made through ADB's procurement clinic.	PMU/ADB records.



Ministry of Public Works and Transport, Kingdom of Cambodia
GMS: Southern Economic Corridor Towns Development Project

No.	Risk/Issue	Assessment without Mitigation	Action to Mitigated Risk	Responsibility	Target/Monitoring	Status as at (Dec 2018)	Supporting Evidence
			Recruitment of a well-experienced procurement officer and website officer in PMU to avoid procurement and eventual implementation delays	EA/IAs	Throughout Project duration	Procurement Specialist contracted in Aug 2014 by PISCD and in June 2016 by PMU. Website officer is a PMU member.	Copies of contracts with PMU.
			Closely monitor and review procurement conduct, and where necessary, take measures to improve procedures based on lessons learnt from each successive procurement activity.	EA, MEF and ADB	Throughout Project duration	EA/MEF monitoring and reviewing the conduct of procurements.	BEC and CEC reports. PRC minutes of meetings.
			EA/IAs will recruit additional national and/or national procurement staff if required.	EA/IAs		No additional procurement staff required.	-
1.d	Delayed execution of schedules in the Procurement Plans and failure to track to procurement transactions.	High	Preparation of realistic annual Procurement Plan, tied to annual work plan and budget. EA/IAs will maintain Procurement Monitoring and Tracking Forms as defined in the SOP/PM, and take actions to address delays through additional consultant inputs, if necessary.	EA/IAs to prepare updated procurement plans and procurement tracking form.	Update procurement plan and monitor procurement tracking form during review missions as required	Procurement plan updated in 23 April 2018. Procurement Monitoring & Tracking Forms maintained.	Updated Procurement Plan. Filled out Procurement Monitoring & Tracking Forms.
1.e	Informal payments by contractors, suppliers and consultants	High	All contractors, suppliers and consultants – firms or individuals, national and international – bidding for contracts under the project shall sign the Declaration on Ethical Conduct and Fraud and Corruption in the SOP/ procurement manual.	EA/IAs and MEF	Throughout Project duration	Signed DFECs included in bids.	Signed DFECs.
Element 2: Financial Management							
2.a	Weak internal controls	High	EA/IAs to follow the financial management procedures specified in: (i) the Project Financing Agreement; (ii) the government's SOP and FMM.	EA/IAs; MEF to ensure compliance with SOP/ FMM, Loan	Throughout Project duration	Specified fin'l. management procedures followed since 31	Quarterly Report and PMU reports to MEF and ADB.



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No.	Risk/Issue	Assessment without Mitigation	Action to Mitigated Risk	Responsibility	Target/Monitoring	Status as at (Dec 2018)	Supporting Evidence
				Agreement and ADB's Anticorruption Policy		Dec 2015 and ongoing.	
2.b	Weak financial management capacity	High	EA/IAs to receive continued hands-on training from consultants recruited under the project. The SOP/FMM will be used under the project, as well as relevant provisions of the Loan Agreement and ADB's guidelines on procurement and consulting services. Project to closely monitor and review financial management conduct and make necessary improvements as required.	EA and IAs and ADB EA and IAs	Throughout Project duration, conducted as a part of capacity building activities in the project	Hands-on-training ongoing. CapDev training scheduled. Monitoring & review since Dec 2015 and ongoing	CapDev Plan and training modules. Supported by Financial Management Specialist
2.c	Minimize cash transactions	High	Project to make all progress payments to contractors, suppliers and consultants – firms, individuals, national and international – by check or transfer to bank accounts, and retain evidence for audit and donor supervision missions.	MEF, EA and IAs	Throughout Project duration	Payments by check or bank transfer complied and ongoing.	Project Financial Statements
2.d	Delayed or non-existent reconciliation of advances for operating costs and expenses	High	Project to reconcile advances for operating expenses to staff or field offices within one week of the end of each month. No further advances to be paid until previous advance reconciled and cleared against documentary evidence.	EA and IAs	Throughout Project duration Project director to monitor and ADB to verify during review missions.	Reconciliation of advances complied and ongoing.	Project Financial Statements
Element 3 : Disclosure							
3.a	Possible conflict of interest among Project staff	Extremely High	Project staff to disclose private and public affiliations or personal interest before becoming involved in any project-related transaction, such as contract award. EA to prepare a declaration statement for staff's signature.	EA/IAs to ensure all Project staff sign the disclosures	Throughout Project duration Project director to ensure all project staff signs the disclosures.	Internal rules of the project updated and provided for avoidance of conflict of interest. Written disclosure is retained on file.	Internal rules of project for project staffs (PMU and PIUs)



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No.	Risk/Issue	Assessment without Mitigation	Action to Mitigated Risk	Responsibility	Target/Monitoring	Status as at (Dec 2018)	Supporting Evidence
3.b	Inadequate transparency and disclosure	High	Project to agree information to be disclosed on the project and EA/IA websites biannually, with hard copies available for public inspection on request. At a minimum, the Project will disclose the information required by the Loan Agreement.	EA and ADB to agree the final list. Project director to arrange disclosure	Throughout Project duration.	Development of project website to be completed in February 2017. Information will then be uploaded to the website. Project information and grievance redress mechanism disclosed in target towns on 19, 21 and 22 June 2018 Bid documents was advertised by Phnom Penh Post newspaper and Project website	Project website. EMPs report and quarterly report Bid Evaluation Report (BER)
Element 4: Complaints and Remedies Mechanism							
5.a	Inadequate complaints and remedies mechanisms		Project to build well-defined complaints and remedies mechanism into project documents. Complaints procedures regarding procurement to follow process set out in Loan Agreement and SOP/PM. Following established publication of evaluation and awards, debriefing mechanism is also necessary not only to enhance transparency but also for the losing bidders to know their weak points.	EA/IAs EA and IAs in consultation with ADB	At effectiveness	To be complied with. PMU provides all bidders with copies of the evaluation and awards through email.	- Copies of emails from PMU
Element 5: Code of Ethical Conduct							
6.a	Poor enforcement of the Code of		Project to provide copies of the relevant laws and articles on Code of Conducts for civil	EA and IAs	Throughout Project duration	The Department of Human	Signed receipts available with the



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No.	Risk/Issue	Assessment without Mitigation	Action to Mitigated Risk	Responsibility	Target/Monitoring	Status as at (Dec 2018)	Supporting Evidence
	Conduct for civil servants		servants to all project staff, including contracted staff. Project will maintain signed declaration of receipt of these documents by all project staff, including contracted staff. Similarly, all members of the procurement committee undertaking the evaluation shall sign the Declaration on Ethical Conduct.			Resources provides copies of Code of Conducts for Civil Servants to Ministry personnel upon employment.	Department of Human Resources.
Element 6: Sanctions							
7.a	Inadequate sanctions for fraudulent and corrupt activity by Project staff, contractors, suppliers and consultants		The Project to identify and apply sanctions available under current law and regulations of Cambodia, ADB's Loan Regulations, the Loan Agreement, and ADB's Procurement Guidelines and Consulting Guidelines. Sanctions for individuals may include transfer of duties, retraining, suspension, dismissal, re-grading, and prosecution under Cambodian Law. Sanctions for firms may include: termination of contract, debarment or blacklisting under ADB's Procurement Guidelines and Consulting Guidelines, or prosecution under Cambodian Law	EA and IAs, and in consultation with ADB	Effectiveness	Sanctions for firms included in termination of contract	Bidding document
Element 7: Project Specific Elements							
7.a	Poor enforcement of contract terms and need to conduct contractors performance evaluation		EA to ensure that contract terms are strictly enforced and the loan consultant will be a party to ensuring quality control of contract outputs, include acceptance of completion of works and services.	EA and IAs	Throughout Project duration	Contract terms for previous DED Consultant enforced, with the assistance of PISCD.	Evaluation of DED Consultant's output.
7.b	Poor quality of design and works construction		EA and IAs to ensure that approved infrastructure's design standards and specification developed by the respective agencies are utilized for the design of	EA and IAs, and with ADB NOL	Throughout Project duration	DED to be carried out by PISCD and CS Consultants.	DED reports and bid documents.



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No.	Risk/Issue	Assessment without Mitigation	Action to Mitigated Risk	Responsibility	Target/Monitoring	Status as at (Dec 2018)	Supporting Evidence
			structures under the project. Project to recruit experienced detailed design consultant on a timely basis to assist the project.		Contract signed immediately after effectiveness	DED to be carried out by PISCD and CS Consultants.	V.O. no. 6 to PISCD contract, and CS contract.
7.c	Risk of low quality construction and supervision		Project to recruit experienced site supervision consultants to assist EA/IAs.. Regular technical audit is to be undertaken with any adverse findings to be acted upon immediately. Project to evaluate contractors' performance with poor performing contractors declared ineligible to bid for at least one year.	EA and IAs, and with ADB NOL EA and IAs EA and IAs, and with ADB NOL	Prior to award of first works contract. Throughout Project duration. Annually	Construction Supervision Consultant recruited To be complied during construction. To be complied during construction.	CS contract document. - -



APPENDIX M
SUPPORT DOCUMENTS OF LAND ACQUISITION



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

ក្រសួងសេដ្ឋកិច្ច និង ហិរញ្ញវត្ថុ

លេខ ៤៧/២០១៩ ប.ហវ. ០១៩៩

ថ្ងៃពុធ ២៩ ខែ ឧសភា ឆ្នាំ ២០១៩ ស.ស. ២៥៦២

រាជធានីភ្នំពេញ, ថ្ងៃទី ៣១ ខែ ឧសភា ឆ្នាំ ២០១៩

សូមគោរពជូន

ឯកឧត្តមនាយករដ្ឋមន្ត្រី រដ្ឋមន្ត្រីក្រសួងសាធារណការ និងដឹកជញ្ជូន

កម្មវត្ថុ៖ ការប្រគល់ទីតាំងដីដែលគណៈកម្មការអន្តរក្រសួងបានធ្វើលទ្ធកម្មរួច សម្រាប់គម្រោងអភិវឌ្ឍន៍ក្រុងរបៀង
ខាងត្បូងដែលបានទទួលហិរញ្ញប្បទានសហប្រតិបត្តិការពីធនាគារអភិវឌ្ឍន៍អាស៊ី (ADB)។

យោង៖ លិខិតលេខ ១៨៧៩ សក/អក ចុះថ្ងៃទី ២៨ ខែ ឧសភា ឆ្នាំ ២០១៥ របស់ក្រសួងសាធារណការ និងដឹកជញ្ជូន
- លិខិតលេខ ២០៤២ សក ចុះថ្ងៃទី ១០ ខែ មិថុនា ឆ្នាំ ២០១៣ របស់ក្រសួងសាធារណការ និងដឹកជញ្ជូន។

សេចក្តីដូចមានចែងក្នុងកម្មវត្ថុ និងយោងខាងលើ ខ្ញុំសូមគោរពជម្រាបជូនឧត្តមនាយករដ្ឋមន្ត្រី មេត្តាជ្រាបដ៏
ខ្ពង់ខ្ពស់ថា៖ តាមសំណើរបស់ក្រសួងសាធារណការ និងដឹកជញ្ជូន គណៈកម្មការអន្តរក្រសួងដោះស្រាយផលប៉ះពាល់
សហការជាមួយក្រសួងសាធារណការ និងដឹកជញ្ជូន និងអនុគណៈកម្មការខេត្តស្វាយរៀង, ខេត្តបាត់ដំបង និងខេត្ត
បន្ទាយមានជ័យ បានចុះពិនិត្យ ពិគ្រោះយោបល់ និងធ្វើលទ្ធកម្មដីសម្រាប់សាងសង់អាងប្រព្រឹត្តិកម្ម និងស្ថានីយបូមប្រោះ
សម្អាតទឹកកខ្វក់ នៃគម្រោងខាងលើរួចរាល់ហើយ។

ហេតុដូច្នេះនេះ គណៈកម្មការអន្តរក្រសួងដោះស្រាយផលប៉ះពាល់ សូមប្រគល់ទីតាំងដីដែលបានធ្វើលទ្ធកម្មរួច
ជូនក្រសួងសាធារណការ និងដឹកជញ្ជូន ដើម្បីផ្តល់លទ្ធភាពឱ្យក្រុមហ៊ុនសាងសង់ដំណើរការការងារវិស្វកម្មតាមផែនការ
និងបន្តគ្រប់គ្រងនិងប្រើប្រាស់ទីតាំងដីទាំងនេះស្របតាមច្បាប់ និងលិខិតបទដ្ឋានគតិយុត្តជាធរមាន ចាប់ពីថ្ងៃប្រគល់-
ទទួលឯកសារនេះតទៅ។

ទីតាំងដីដែលបានធ្វើលទ្ធកម្មរួច រួមមានដូចខាងក្រោម៖

ល.រ	ខេត្ត/ ក្រុង	បរិយាយ	ទំហំដី	ទីតាំងភូមិសាស្ត្រ	លិខិតផ្ទេរសិទ្ធិកាន់កាប់ប្រើប្រាស់ ដីធ្លី និងប័ណ្ណសម្គាល់សិទ្ធិកាន់ កាប់អចលនវត្ថុ
១	ខេត្តបាត់ដំបង	អាងប្រព្រឹត្តិកម្ម	១០១ ៥៦៩ ម ^២	- ឃុំនា ស្រុកសង្កែ - ឃុំនា ស្រុកសង្កែ - ឃុំនា ស្រុកសង្កែ - ឃុំនា ស្រុកសង្កែ	- ក្បាលដីលេខ÷Bx 0074 - ក្បាលដីលេខ÷Bx 0075 - ក្បាលដីលេខ÷Bx 0108 - ក្បាលដីលេខ÷Bx 0110 ចុះថ្ងៃទី ១២- ឧសភា- ២០១៥

ទំព័រទី១នៃ២



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២			១ ៧៤០ ម ^២	-ភូមិបេង, ឃុំអន្លង់វិល, ស្រុកសង្កែ	-ក្បាលដីលេខ០០៦ យអវ ចុះថ្ងៃទី ០៤-មករា-២០១៧
៣	ខេត្តបាត់ដំបង	ស្ថានីយបូមប្រោះទឹកកខ្វក់	២ ៤៦៦ ម ^២	-ភូមិរំចេក២, សង្កាត់ រតនៈ, ក្រុងបាត់ដំបង	-ក្បាលដីលេខ០៥៤១ ចុះថ្ងៃទី ២៦-កុម្ភៈ-២០១៦
៤		អាងប្រព្រឹត្តិកម្ម	១០០ ០៦០ ម ^២	-ភូមិកូនដំរី, សង្កាត់និមិត្ត, ក្រុងប៉ោយប៉ែត	-ក្បាលដីលេខ០៩៣២ កបប ចុះថ្ងៃទី ១១-មីនា-២០១៤
៥	ក្រុងឈោយប៉ែត	ស្ថានីយបូមប្រោះទឹកកខ្វក់	១ ៣៥៨ ម ^២	-សង្កាត់ផ្សារកណ្តាល, ក្រុងប៉ោយប៉ែត	-ក្បាលដីលេខ០ I 0682 ចុះថ្ងៃទី ២៧-កក្កដា-២០១៧
៦	ក្រុងបាត់ដំបង	ស្ថានីយបូមប្រោះទឹកកខ្វក់	១ ៤៥៦ ម ^២	-ភូមិច្រកលាវ, សង្កាត់បារិត	-ក្បាលដីលេខ០៨៨/១៧ ចុះថ្ងៃទី ១៧-កុម្ភៈ-២០១៧

អាស្រ័យដ្ឋានបានគោរពជម្រាបជូនខាងលើ សូមឯកឧត្តមទេសរដ្ឋមន្ត្រី មេត្តាជ្រាប និងចាត់ចែង តាមការគួរ។
 សូមឯកឧត្តមទេសរដ្ឋមន្ត្រី មេត្តាទទួលនូវការគោរពដ៏ខ្ពង់ខ្ពស់ ពីខ្ញុំ

អនុរដ្ឋលេខាធិការក្រសួងសេដ្ឋកិច្ច និងហិរញ្ញវត្ថុ
និងជាប្រធានគណៈកម្មការក្រសួងដោះស្រាយផលប៉ះពាល់
ដោយគោរពប្រោសអភិវឌ្ឍន៍


ព្យាង្គ ឡាន

បម្រុងជូន៖

- អគ្គនាយកដ្ឋានទ្រព្យសម្បត្តិរដ្ឋ និង
- ចំណូលមិនមែនសារពើពន្ធ កសហវ
- ឯកសារ-កាលប្បវត្តិ

ទំព័រទី២នៃ២



គំរូសប្បាយ
ពីតាំង កន្លែងបែងចែកសំរាម



ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

ខេត្តបន្ទាយមានជ័យ
រដ្ឋបាលក្រុងប៉ោយប៉ែត
លេខ: ៩៥០/លក
១៩

ថ្ងៃចុះហត្ថលេខា: ថ្ងៃទី ០១ ខែ ឧសភា ឆ្នាំ ២០២០
ក្រុងប៉ោយប៉ែត ថ្ងៃទី ០១ ខែ ឧសភា ឆ្នាំ ២០២០

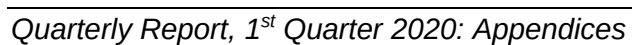
លិខិតបញ្ជាក់
អំពីការ តែងតាំងអំពីការក្រុងប៉ោយប៉ែត

សូមបញ្ជាក់ថា

- ក្បាលដីលេខ ៖ ៦៨៥ សងក
- ទំហំ ៖ ៣ ២០០ (បីពាន់ពីររយម៉ែត្រការ៉េ)
- ទីតាំងស្ថិតនៅ ៖ ភូមិ ទួលពង្រ សង្កាត់ ផ្សារកណ្តាល ក្រុងប៉ោយប៉ែត ខេត្តបន្ទាយមានជ័យ

ពិតជាទ្រព្យរដ្ឋ ស្ថិតក្នុងបញ្ជីសាលាស្ថាប័នរដ្ឋបាលក្រុងប៉ោយប៉ែតប្រាកដមែន។
រដ្ឋបាលក្រុងប៉ោយប៉ែត ចេញលិខិតបញ្ជាក់នេះ ដើម្បីស្នើសុំធ្វើការបន្តប្រកាសតាមអចលនវត្ថុ។


អំពីការក្រុងប៉ោយប៉ែត
អំពីការក្រុងប៉ោយប៉ែត
ឧប ឫទ្ធិ





ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

ខេត្តស្វាយរៀង
រដ្ឋបាលក្រុងបាទីត
លេខ.១១៣៤...រក

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សូមគោរពជូន

**ឯកឧត្តម ចៀ ពិសិដ្ឋ អគ្គនាយករង នៃអគ្គនាយកដ្ឋានសាធារណការ
និងជា នាយក គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុងរៀងខាងត្បូង
នៃក្រសួងសាធារណការ**

កម្មវត្ថុ: ករណីដី ២០ ហិកតា សម្រាប់គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុងរៀងខាងត្បូង ស្ថិត
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តាមកម្មវត្ថុខាងលើ ខ្ញុំសូមគោរពជម្រាបជូន **ឯកឧត្តម** នាយកគម្រោង មេត្តា
ជ្រាបថា ចំពោះដីទំហំ២០ហិកតា សម្រាប់ផ្តល់ជូនក្នុងការអភិវឌ្ឍន៍គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ច
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ប្រតិបត្តិកម្មទឹកស្អុយ ។

សេចក្តីដូចបានគោរពជម្រាបជូនខាងលើ សូម **ឯកឧត្តម** នាយកគម្រោង មេត្តា
ជ្រាបដឹងខ្ពង់ខ្ពស់ ។

សូម **ឯកឧត្តម** ទទួលនូវការគោរពរាប់អានដ៏ស្មោះអំពីខ្ញុំ ។


រដ្ឋបាលក្រុងបាទីត
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APPENDIX N
AGREED ACTION PLAN, AS OF 31 MARCH 2020

Loan 2983 (SF)/8265 (SCF), Grant 0334 (UEIF)/0335 (SCF)-CAM: GMS Southern
Economic Corridor Towns Development Project
Review Mission, 21 October – 6 November 2020

SUMMARY OF AGREED TIME-BOUND ACTIONS PLAN

No.	Activity	Responsibility	Schedule	Updated Status
1.	Update and disclose SLEDPs	PMU/PISCD	Q1 2020	Not yet due; but need to start activities by Q4 2019 In progress. Start updating the SLEDP
2.	Complete additional works of 3 MRFs	Contractor	25-Apr-20	Construction of 3 MRFs are in progress -The steel frames are fabricated workshop in PP and were transported to respective sites. Overall progress 50%
3.	- Complete current scope of CW-05 (Bavet Urban Road) - Apply liquidated damage clause if works could not be completed by 31-Dec-19	Contractor PMU, MEF	31-Dec-19 01-Jan-20	VO2 was approved on 7 Feb 2020 The contract period was extended until 30 April 2020.
4.	Submit an official request for additional works under CW-05, including upgrading 170m (PK159+000 – PK159+170) missing link and overlaying another layer of AC wearing course for entire length (6.31km)	PMU	15-Nov-19	VO2 was approved on 7 Feb 2020 The contract period was extended until 30 April 2020.
5.	- No-objection to proceed civil works of L2-1, L2-2, and L2-5 under CW-06 - Apply liquidated damage clause if works of CW-06 could not be completed by 31-Dec-19	ADB PMU, MEF	08-Nov-19 01-Jan-20	Done; Completed the works on 31 Dec 2019. The subproject is under the defect liability period.
6.	- Increase 3 additional teams and equipment (6 teams in total) under CW-07 (PP storm drainage) - Apply liquidated damage clause if works could not be completed by 20-May-20	Contractor PMU, MEF	08-Nov-19 21-May-20	Done Construction Works is in progress at the site The contractor requests VO1 due to the change of the alignment L2. The cost of VO was approved. NOL VO1 on 3 Apr 2020; Subproject was extended to 31 Aug 2020.
7.	Start works of CW-08 (Bavet Storm Drainage)	PMU, SC, Contractor	15-Dec-19	Done; Mobilized 22 Nov 19



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8.	Triparty site check to identify sections free of IR impact for the contractor to proceed works	PMU, PISCD, SC, local authorities, Contractor, GDR, ADB	22-Nov-19	Done ADB/NOL to allow the contractor to proceed civil work on section free of IR (5,655m) on 13 Dec 2019.
9.	Complete and approve DED of CW-10	PISCD, PMU	30-Nov-19	Done; Submission to EA in Jan 2020. ADB NOL on 25 Feb 2020.
10.	Complete remaining 3 trainings	PISCD	Q1 2020	Only two training sessions are required because Battambang and Poipet were combined. Two Trainings were conducted on 4-6 Feb and 11-13 Feb for Battambang/Poipet; and Bavet respectively; Training Report was submitted and approved by EA on 06 Mar 2020
11.	Include interest charge in the 2019 APFS	PMU, MEF, Auditor	30-Jun-20	Done Discosed ADB website on 12 August 19.
12.	Resolve compliance of withholding tax paid to individual consultants and consulting firms mentioned in the ML with MEF	PMU, MEF	30-Jun-20	Done MEF issues a letter on 04 Feb 2020
13.	Enforce quality assurance and site safety as well as EMP/CEMP implementation	SC	Routine	Site engineers and field inspectors are working day to day to ensure the quality of the same.
14.	Aware of Col of all subprojects and status of compensations	SC	Routine	COI was provided to all parties and following the same at the Sub projects.
15.	Coordinate with relevant agencies and authorities to ensure that the discharge water from the rehabilitated storm drainage at Battambang will not affect paddy fields and report to ADB	PMU	31-Dec-19	In progress Sewerage System will be constructed under TS2 CW01 lot2.
16.	Submit the request for change in scope based on MTR, reallocations of Loans/Grant proceeds, proposed creation of new category/subcategory if needed and revised disbursement percentage for each category/subcategory, including proposal to finance additional works of 3 MRFs	MEF	15-Dec-19	Done; ADB approved on 11 Mar 2020
17.	Provide an orientation training on the contract management to the contractor, CS Consultant and EA staff	ADB	15-Dec-19	First Session is done on 19-21 Nov 19 in Phnom Penh at Himawari hotel. The Second Session was conducted on 27 Jan 2020 - on Bavet Storm Drainage at ADB CAM.
18.	Monitor the limit for sub-	SC, PMU	Routine	The contractor (HSC) has no sub-



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	contractors (30% of contract price and subject to prior Employer's approval) under CW-08			contractor.
19.	Disclose the CW-08 contract award	PMU	15-Dec-19	Done; Disclose on the project website.
20.	Submit draft bidding documents of CW-10 for ADB's review	PMU, PISCD	31-Dec-19	Draft bidding documents were submitted to ADB in early January. Final Bidding documents were submitted to ADB on 19 Feb 2020. ADB NOL on 25 Feb 2020. Bid opening on 22 Apr 2020;
21.	Provide feedback on proposed VO No.2 of SC contract	ADB	14-Nov-19	Done VO2 for CS was signed on 23 Dec. 2019
22.	Submit procurement tracking form to MEF and ADB	PMU	Quarterly	Done It was included in the Q4 2019 report.
23.	Continue strengthening effective and efficient coordination among stakeholders	PMU, PISCD, SC, Contractors	Routine	Done Good coordination after the new Project Manager was appointed;
24.	Continue improving their consultancy performances	PISCD, SC	Routine	Routine
25.	Improve their performances to ensure that works will be completed on time, and site safety measures and EMP/CEMP implementation during construction	Contractors	Immediately	Done Site inspection is conducted regularly to ensure the compliance to EMP;
26.	Update and approve CEMP for MRFs' additional works	Contractor, SC, PMU	15-Nov-19	Done PISCD gives comments to improve CEMP on 03 Jan 2020 – CEMP was checked and before submitting it to PMU for approval PMU approved on 03 Mar 2020.
27.	Submit ADB the updated IEE and EMP of all towns included CW-10	PMU, PISCD	15-Dec-19	Done ADB NOL on 03 Feb 2020.
28.	Obtain CW-10 EMP approved by MOE	PMU	Before awarding CW-10 contract	In progress of preparing EMP required by MOE by an eligible local firm. Letter clearance of EMP by MOE on 3 Apr 2020.
29.	Move the camps locating close to the explosive storage to a safe area	CW-5 contractor, SC	07-Nov-19	Done It was relocated to a safety area.
30.	Improve the camps for better living environment, providing separated bathing rooms for men and women, and provide additional toilets for workers under CW-07	CW-07 contractor, SC	Immediately	Done Will be continued to monitor by CS and PMU.
31.	Provide refresher training on GRM monitoring and reporting	External Environmental	20-Dec-19	CW-05, CW06, CW07, CW-08 -Done



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	procedures and document in safeguard monitoring reports	Monitor Specialist		CW-10-Will provide after the contract signing.
32.	Prepare and approve CEMP for CW-08 before the commencement of works	CW-08 contractor, SC, PMU	13-Dec-19	Done CEMP was approved on 20 Dec 19
33.	Disclose EMR N.4	ADB	30-Nov-19	Done
34.	Submit EMR No.5 covering July-December 2019, including progress of corrective actions and GRM	PMU	15-Jan-20	Done The report was resubmitted to ADB after it was commented. The report was disclosed on ADB website.
35.	Disclose DDRs for MRFs	ADB	08-Nov-19	Done
36.	Complete the compensation to all AHs under CW-05	IRC-GDR	30-Nov-19	Done Handover letter to commence civil work on 07 Feb 2020.
37.	Proceed any civil works for the proposed 170 meters extension under CW-05	PMU, SC, Contractor, IRC-GDR, ADB	After AHs received compensation and other entitlements in accordance with the approved updated RP	Done (170 m was included in the URP of Bavet Urban Road) VO was approved on 07 Feb 2020. Civil Work is in progress.
38.	File agreements and other supporting documents of the second-round meeting with the remaining AHs who did not sign on the agreement letters allowing the contractors to start the civil works and receiving compensations later under CW-05 and CW-06	PISCD, PMU	30-Nov-19	Done Second round was conducted on 29 Aug 19.
39.	Complete the compensations payment to AHs under sections with minor IR impact/remaining sections besides L2-1, L2-2, L2-5 under CW-06	IRC-GDR	December 2019	Done ADB NOL on 08 Nov 2019
40.	MEF/government representative will invite concerned stakeholders to discuss about the remaining two cases (one police post and one AH at end section of L3 and L1, respectively) under CW-07	MEF-GDR	ASAP	The meeting for two cases was held on 04 Dec 19 at MEF. Site visit for the police post (L3) and clearing site was held on 12 December 19. • Hand over for the police post was done. • L1 in progress; the committee had meet with the AH at Municipal for arrangement on compensation 03 Apr 2020. • Compensation of L1 was done; • Progressing handover letter;



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41.	Complete compensations to AHs under CW-08, Bavet Strom Drainage.	IRC-GDR	December 2019	Compensation to AHs are completed; Under compiling documents to be submitted for handing over. ADB NOL hand over on 18 Mar 2020. L4- is in progress of negotiation and compensation;
42.	Demarcate the Col for CW-10 and hand it over to IRC/GDR for DMS	PMU	30-Nov-19	Done Completed on 27 Dec 19.
43.	Start the public consultation of CW-10	IRC-GDR	06-Dec-19	Done Completed on 11 Dec 19.
44.	Complete DMS works for CW-10	IRC-GDR	30-Mar-20	In progress COI was submitted to GDR on 25 Sept 2019. DMS data collection is in progress The process the DMS data entry are almost completed (380DMS/524; as 31 Mar 2020). DMS data entry were completed; Progress of preparing update DRP;
45.	International Resettlement Specialist on board and start initial DRP preparation	PMU, PISCD	18-Nov-19	Done; Will be remobilized when DMS data entry is completed;
46.	Conduct a meeting among ADB, EA/consultants and GDR to agree on contents and data/formats in the DRP for CW-10	GDR, PMU/PISCD, ADB	December 2019	Done
47.	Share with ADB the report on safeguard internal monitoring of the resettlement planning and implementation process for all subprojects	DIMDM of GDR	31-Oct-19	In progress
48.	Submit to ADB the revised Q2 EMA report	IRC-GDR	30-Nov-19	Done
49.	Submit Q3 and Q4 EMA reports following the contents and format of the approved Q2 report	IRC-GDR	30-Jan-20	Done; Q3 & Q4 were disclosed on ADB website on 14 Apr 2020.
50.	- Deliver the skill trainings to at least 450 women (150 women in each town) - Deliver awareness raising on HIV/AIDS in other three towns	Contractors, PISCD	29-Feb-20	Done; The final skill training was conducted at Bavet on 13 Mar 2020.
51.	MRFs' Handover note to municipalities including a clause on securing employment for all existing female waste pickers	PMU	Q2 2020	In Progress; Additional Civil Works of MRFs are in progress.



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52.	Mainstream gender into updated SLEDPs	PISCD	Q1 2020	In Progress
53.	Update GAP monitoring report	PISCD	Quarterly	Will be included in the first Quarterly Progress 2020;
54.	Submit Q3 quarterly progress report	PMU	15-Nov-19	Done
55.	Submit the proposed revised DMF reflecting the change in scope	PMU, PISCD	8-Nov-19	Done
56.	Update PAM	PMU, PISCD, ADB	After official approval of change in scope and reallocations of loans/grant proceeds	In Progress
57.	Submit ADB the revised updated Overall Implementation Schedule	PMU, PISCD	30-Nov-19	Done



APPENDIX O

Photos of Project Information Disclosure





APPENDIX P
Training Report on Material Recovery Facility (MRF)
Operation and Maintenance



**Ministry of Public Works and Transport
Kingdom of Cambodia**

GMS: Southern Economic Corridor Towns Development Project

**Loan 2983-CAM(SF), Loan 8265-CAM(SCF)
Grant 0334-CAM (UEIF), Grant 0335-CAM (SCF)**

Training Report on Material Recovery Facility (MRF) Operation and Maintenance



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APPENDIX 5: TRAINING MATERIALS

Executive Summary

This report contains the activities that occurred during the capacity-building training for Battambang/Poipet and Bavet MRFs.

The Battambang/Poipet capacity-building training was conducted in Battambang City (Khemara Battambang I Hotel) on February 4-6, 2020, while the capacity-building training for Bavet MRF was conducted on February 11-13, 2020, which was held in Waikor Hotel, Svay Rieng Municipality.

The capacity-building training for Battambang/Poipet was well-attended, with thirty-four (34) participants while Bavet was attended by eleven (11) participants on the first day. The second day none came in the morning and only one (1) came during the afternoon, because the many of the participants were called back to the office for a high-level meeting. The training was deferred due to the absence of participants.

A supplemental training session was conducted in Bavet City Hall on February 26, 2020, to cover topics that were not addressed on the second day. Eight (8) participants attended the supplemental training session.

During the MRF visits, there were twelve (12) participants who attended the MRF visit in Battambang while there were seven (7) participants, with an MRF owner attending the visit and orientation of MRF in Bavet.

1 Introduction

Section 1 Background

The Royal Government of Cambodia obtained loans and grants from the Asian Development Bank (ADB) towards the cost of the Greater Mekong Sub-Region (GMS) Southern Economic Corridor Towns Development Project (SECTDP). This project aims to enhance the competitiveness of towns along the Southern Economic Corridor (SEC), namely, the corridor towns of Poipet, Battambang, Neak Loeung, and Bavet by transforming them into economic hubs. This goal will be achieved through improving economic and environmental infrastructure and strengthening institutional capacities of provincial and local authorities. Ten (10) infrastructure sub-projects were included in the Project for implementation in the four (4) towns, including three (3) Materials Recovery Facilities (MRFs) constructed in Bavet, Battambang and Poipet.

Solid waste management is a problem in Cambodia, with much of the solid waste uncollected, some accumulating in drainage channels, streams, and rivers or causing problems for residents of communities. Solid waste that is collected is transported to a dump site. It is important to improve solid waste management in Cambodia to improve the living conditions in the Towns, improve sanitation and reduce environmental pollution.

The construction of the Materials Recovery Facility in each of the three (3) towns is an important first step to improve solid waste management. This facility reduces litter and nuisances such as odors in neighborhoods and pollution problems. Equally important, the Material Recovery Facility will provide a livelihood for people, and allow recycling of materials that would otherwise be lost by disposal in a dumpsite. It will also extend the life of the current dumpsite and any future landfills, resulting in cost savings at those facilities.

The MRF subprojects are expected to highlight the 3-R approach of reduce-recycle-reuse and aims to contribute to the improvement of the towns' solid waste management systems via the regularization and formalization of the existing informal waste picking of recyclables.

The three-day training sessions conducted at two locations on operation and maintenance of the MRFs will contribute significantly to the successful and sustainable operation and maintenance of the MRFs.

Section 2 Outline of the Training Plan

The following summarizes the tentative training outline:

Target Audience:	PMU, PIU and Municipality Staff
Number of Sessions:	Two (1 in Battambang/ Poipet, 1 in Bavet)
Number of Days:	Three days of each Session
Number of Participants:	Total =17 • Battambang/ Poipet (5 Battambang, 5 Poipet) • Bavet (2 PMU, 5 Bavet)

- Training Locations:**
- Battambang/ Poipet Session: Khemara Battambang 1 Hotel. (Battambang- lectures/ discussions, site visit MRFs Battambang)
 - Bavet Session: Waiko Hotel, Svay Rieng Town, site visit at Bavet's MRFs

- Training Dates:**
- Battambang Town, 04-06 February, 2020
 - Bavet Town, 11-13 February, 2020

The training plan was adjusted according to various changes on logistics and availability of the attendees. The final execution of the trainings is discussed in the succeeding chapters.

Section 3 Training Schedule

The tentative training schedule for the three-day trainings is as follows:

Table 1: Tentative training schedule

Time		Activities/ Topics	Note
Day 1			
8:00 AM	8:15 AM	Registration	All
8:15 AM	8:25 AM	Introduction of Participants	All
8:25 AM	8:35 AM	Welcome Remarks from PIU	Representative PIU
8:45 AM	8:55 AM	Opening Remarks from PMU	Representative PMU
8:55 AM	9:15 AM	#1: Training Overview	Training Team
9:10 AM	9:30 AM	Group Photos	All
9:30 AM	9:50 AM	Coffee Break	
9:50 AM	11:50 AM	#2: Introduction to Solid Waste Management - Definitions - Causes and Sources - Types and Classifications - What is Solid Waste Management - Reasons for Municipal Solid Waste Management - Governance Aspect - Physical Aspect - Strategies to optimize collection and transport of MSW	Training Team
11:50 PM	12:00 PM	Q&A	All
12:00 PM	1:00 PM	Lunch	
1:00 PM	1:30 PM	#3: Introduction to Recycling (show video on recycling)	Training Team
1:30 PM	1:50 PM	#4: Introduction to MRFs (show video on MRFs)	Training Team
1:50 PM	2:35 PM	#5: Facility Description (Site Characteristics)	Training Team

Time		Activities/ Topics	Note
2:35 PM	2:55 PM	#6: Facility Management and Policies - Part 1 - Designated Authorities - Recommended Operational Hours	Training Team
2:55 PM	3:05 PM	Coffee Break	
3:05 PM	3:55 PM	#6: Facility Management and Policies - Part 2 - Organizational Chart - Roles and Responsibilities - Compliance Agreement	Training Team
3:55 PM	4:15 PM	#7: Operation Process	Training Team
4:15 PM	5:00 PM	#8: Inspection, Weighing and Storage of Recyclable Materials - Part 1 - Waste Acceptance Criteria - Inspection - Unloading	Training Team
Day 2			
8:00 AM	9:20 AM	#8: Inspection, Weighing and Storage of Recyclable Materials - Part 2 - Weighing - Storage - Recording - Vehicular Traffic Plan	Training Team
9:20 AM	9:40 AM	#9: Processing and Storage of Processed Materials	Training Team
9:40 AM	10:00 AM	Q&A	
10:00 AM	10:20 AM	Coffee Break	
10:50 AM	11:20 AM	#10: Releasing of Recovered Materials	Training Team
11:20 AM	12:00 PM	#11: Maintenance - Part 1 - Overview - Check/Inspection Plan - Repair/Maintenance Plan - Replacement Plan	Training Team
12:00 PM	1:00 PM	Lunch	
1:00 PM	1:55 PM	#11: Maintenance - Part 2 - Procurement Plan - Facility Maintenance Plan - Housekeeping Plan - Landscaping Management Plan - Improved Maintenance Plan - Information Management	Training Team
1:55 PM	2:15 PM	#12: Monitoring and Reporting	Training Team
2:15 PM	2:55 PM	#13: Occupational Health and Safety Considerations - Part 1 - Overview - Safety and Response Manual - Personnel Protection Equipment (PPE) - Health Management - Personnel Accidents	Training Team

Time		Activities/ Topics	Note
2:55 PM	3:05 PM	Coffee Break	
3:05 PM	4:00 PM	#13: Occupational Health and Safety Considerations - Part 2 - Emergency/Disaster Preparedness and Response - Fire Prevention - Insurance - Security Management	Training Team
4:00 PM	4:20 PM	#14: Environmental Management	Training Team
4:20 PM	4:30 PM	#15: Resident and Visitor Correspondence	Training Team
4:30 PM	5:00 PM	#16: Lease/Operation and Maintenance Agreement	Training Team
Day 3			
8:00AM	12:00 PM	Tour of MRF	
		Site Visit to the Project MRF	All
		Orientation to the project MRF	All
12:00 PM	1:00 PM	Lunch	
1:00PM	5:00PM	Tour of Commercial MRF	All
		Commercial MRF Tour	All
		Meeting with Commercial MRF Operators	All

The execution of the trainings is discussed in the succeeding chapters.

Section 4 Training Materials

The PISCD Consultants prepared a set of Powerpoint presentations corresponding to each of the topics outlined in the training schedule. These were all based on the Operations and Maintenance manuals for each of the three (3) MRF subprojects. The presentation slides were first prepared in English by the international Solid Waste Management Specialist, and then translated to Khmer by sent to the local counterparts.

The following were the topics prepared:

1. Training Overview
2. Introduction to Solid Waste Management
3. Introduction to Recycling
4. Introduction to MRFs
5. Facility Description (Site Characteristics)
6. Facility Management and Policies
7. Operation Process
8. Inspection, Weighing and Storage of Recyclable Materials
9. Processing and Storage of Processed Materials
10. Releasing of Recovered Materials

- 11. Maintenance
- 12. Monitoring and Reporting
- 13. Occupational Health and Safety Considerations
- 14. Environmental Management
- 15. Resident and Visitor Correspondence
- 16. Lease/Operation and Maintenance Agreement

Topics 5-15 were taken directly from each of their respective chapters in the Operations and Maintenance manuals.

Copies of the training outline, the training schedule, and handout copies of all the presentations in the trainings with Khmer translations were all given as printed sets in plastic document binders to the participants for their convenience.

2 MRF O&M Training and MRF Tour for Battambang and Poipet

Section 1 Introduction

The first capacity-building training was for Battambang/Poipet group, which is situated in Battambang Province in the northwestern part of Cambodia. The city is about 300 kilometers via National Road 5 from the capital city of Phnom Penh, and Poipet, a city in Banteay Province in Western Cambodia, bordering with Thailand. These two (2) cities are neighboring cities so it was decided to hold capacity-building training for these two cities in one site. Capacity Building training was conducted at Khemara Battambang I Hotel on February 4-6, 2020.

Section 2 Attendance

A total of 34 participants attended the three-day training. 28 people attended Day 1, 20 attended Day 2 and 12 attended Day 3.

Among them, 10 attended all three (3) days, 6 attended only two (2) out of the three (3) training days, and 18 attended for only one (1) day.

The breakdown of officials and representatives from the various sectors and institutions are as follows:

- Junk shop – 17 attendees
- Battambang (PIU) – 7 attendees
- Poipet (PIU) – 6 attendees
- Council of Chamkar Somrorng Commune
- Council of Rotanak Commune
- Deputy Director of Administration of Municipality (unspecified)
- Project Manager (PMU)

The full list of attendees is found in Appendix 1.

Section 3 Highlights of the Training

The training was adjusted for pacing in order to better convey important concepts to the participants. The Introduction to Solid Waste Management was discussed and explained in more depth, thus consuming more time than was originally allocated. As a result, the time for the rest of the training modules were adjusted. The training for “Facility Management and Policies” and the other remaining topics for Day 1 were rescheduled to the next day of the training.

Videos sourced from YouTube demonstrating proper solid waste management and different types of MRF processing operations as well as recycling of certain materials such as plastic, glass and concrete were shown at various points of the training.

Aside from the many different clarifications on the technical concepts of solid waste management in general, some of the participants had concerns regarding the business aspect of the MRF. They were worried about the repercussions in case the business of the operator leasing the MRF will not do well. There was an inquiry on which stakeholder should be engaged to support the private sector. This was recommended to be considered in the business strategy, based on the market needs as well as capacity building for PPP to the local government units.

Section 4 Pre- and Post-Tests

The pre-test and post-test showed surprising test results. For the pre-test, twenty (20) people took the test and one got a low score, one (1) got a score of eight (8) points, and one (1) got a score of nine (9) points. One (1) person got a perfect score. Twelve (12) people got a score of ten (10) points and four (4) got a score of 11 out of 12 questions.

The post-test also showed surprising results. Either they got confused during the lecture or they were not listening. The lowest scorer (#19) added one (1) point to her score, the highest scorer still got the perfect score (12/12). Two (2) people got an additional score, while numbers 21 & 22 were not there during the pre-test but number 21 got 11/12 and number 22 got 8/12. For some they got either the same score or lower than the pre-test.

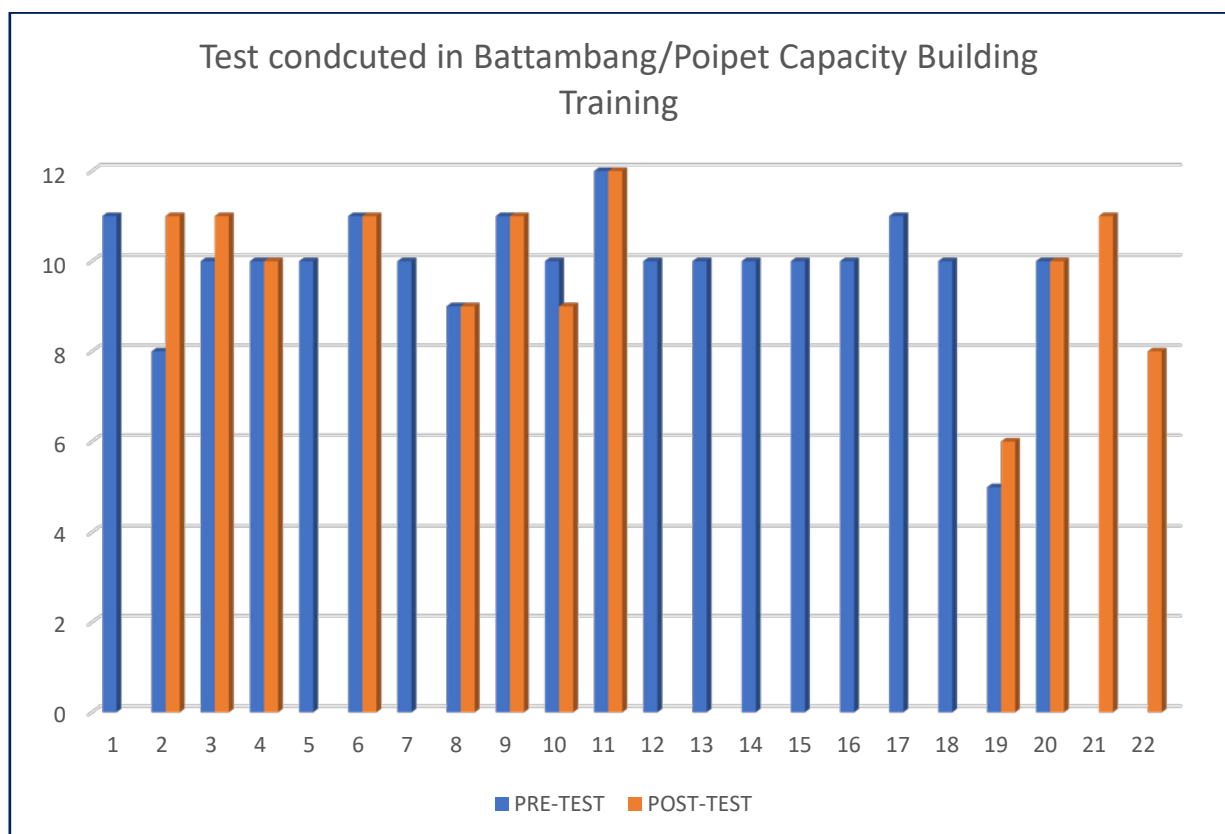


Figure 1. Pre-and post-test scores in Battambang/Poipet Capacity-building Training.

Section 5 Tour of Project MRF

On the third day, the participants were given a tour at the Battambang MRF. They were oriented on how the inspection, processing and transport of recyclable waste must be done

within the facility.

Construction work was ongoing at the site as there were some modifications to the original design of the facility.

They were also taken to the composting facility of COMPED adjacent to the MRF to see how organic market waste (mostly vegetables) is processed into compost. COMPED is a German-supported non-government organization that is involved in the waste processing activities in Battambang.

Salient points are the following:

- The market area is sometimes turned into an urban dumping site by the locals. Market guard gives a fine to those who add their own waste to the market dump.
- There were concerns on how to facilitate proper waste segregation and how to coordinate proper collection within the community. Management strategies of the administration as well as financial incentives and penalties may need to be revised to better regulate the occurrences of unsanitary management of waste, as there seems to be a mismatch of understanding between the members of the community and the waste collectors and local government. Irregular collections commonly occur.
- The participants, as stakeholders, must inform the public that garbage has value.
- Since there are no provisions for weighing at the MRF, it was supposed that the operator to be in charge of the facility must have their own equipment. The operator can also have bins as containers to better facilitate weighing of recyclable materials.
- Feedback was received regarding the need for two (2) kinds of trucks: one to manage biodegradable (organic) waste and one to manage non-biodegradable (inorganic) waste.
- A suggested strategy was to charge commercial establishments lower for collection of source-separated waste, and to charge higher for waste not separated at the source.
- It was not clarified thoroughly during the training that the MRF is designed to accept only dry recyclable waste, so there was a question regarding the management of liquids that may leak out of the recyclables during the baling process.
- Since the local government acquired the facility “for free”, they can charge operators only a small amount of lease (enough for maintenance of the machineries), with the condition that the operator must maintain the cleanliness of the facility.
- COMPED was discussed to be a possible candidate for sending a proposal to, for them to operate the facility.
- Compared to the Feasibility Study period for the site, there is now easier access to electricity and water at the location of the facility.
- There may be a need for strategies to determine different ways of waste collection during different climate seasons. It is easier to perform regular collection of waste in the dry season. In the rainy season, there is a higher likelihood of irregular collection of waste.

- Compost from the COMPED composting facility are sold at \$6 per sack, or \$130 per ton.

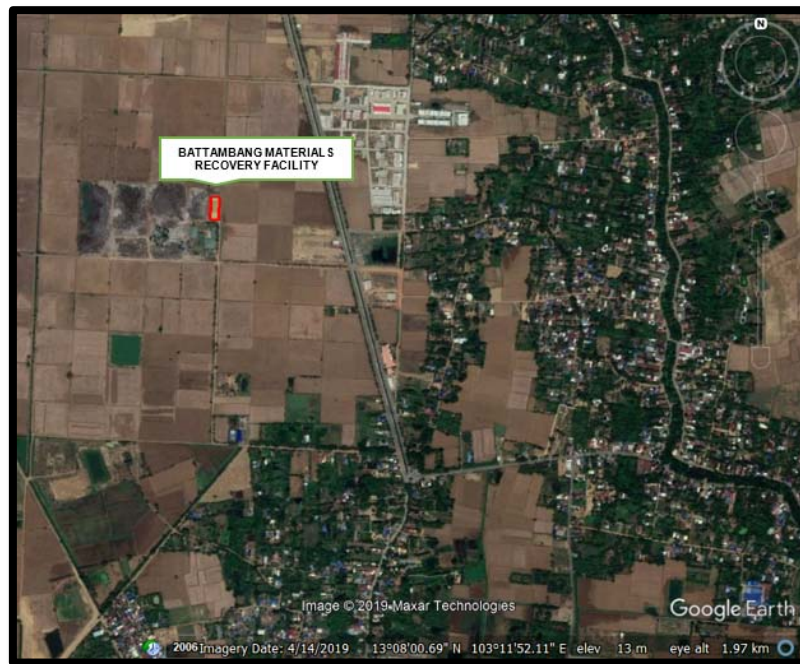


Figure 2: Location of the Battambang MRF of the Project.
(coordinates 13° 8'12.43"N, 103°11'33.76"E)

Section 6 Tour of Commercial MRF

The training participants and the training team visited a large commercial MRF (about 0.75 hectares) located along National Highway 5, to the southwest of the Project MRF.

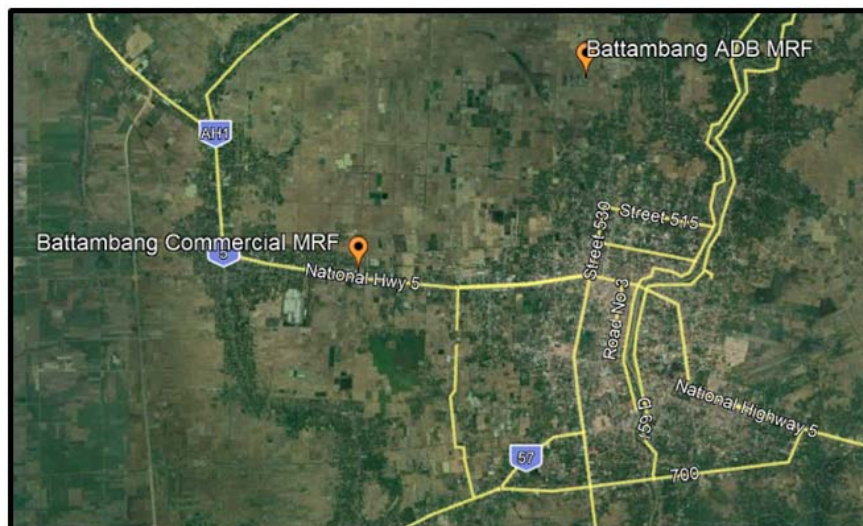


Figure 3: Locations of the Project MRF and the commercial MRF within the vicinity of Battambang.

The owner of a local commercial MRF business in Battambang was interviewed regarding the operations undertaken in her facility. The business was started by the mother of the

current owner back in 1993. Since 2013, the current owner has been running the business under her own name, Soung Kimsuo.

The commercial MRF has regular scrap metal buyers from Phnom Penh, but currently, the scrap metal in the facility is currently unmarketable.

Steel is priced at around \$0.15 per kilogram. Aside from steel, PET bottles, aluminum cans and tin cans (steel cans) are also bought by the MRF business. Certain glass bottles are bought as well, specifically wine bottles and sauce bottles (chili sauce and tomato sauce), and those are sold to companies in Phnom Penh for manufacturers to refill. They do not accept plastic sheets/bags.

The business owner does not keep any record of the daily transactions. Transactions are generally done by counting the quantity of materials. After the materials pass inspection, the business owner buys the recyclables but does not keep any record of the transaction, as recording will slow down the daily business with several customers in a day.

There are recycling centers in Vietnam and Thailand that buy PET bottles and aluminum cans from the commercial MRF business. Recently, there haven't been many buyers of recyclables from the commercial MRF. The prices of recyclables have recently gone down, according to the business owner.

The market price of paper is very cheap at 100 Riel (\$0.02) per kilo. This will not give the commercial MRF business much profit, so the owner does not buy paper. However, she accepts cardboard boxes.



Figure 4: Aerial view of the commercial MRF visited in Battambang.
(coordinates 13° 6'29.10"N, 103° 9'29.01"E)

The participants as well as the training team were given a tour around the facility to observe the daily operations for processing and storing different types of recyclable materials.

There are at least four (4) different machines at the facility that compress and bale different types of recyclables: one for aluminum cans, one for cardboard (boxes), one for scrap metal and one for PET bottles.

PET bottles are sorted according to the color of the bottle. The contents and the label are also removed prior to storage and baling. Harder plastics (general use) are also sorted by color and stored in large sacks.

Various photos taken at the commercial MRF visited at Battambang are shown in Appendix 2.

3 MRF O&M Training and MRF Tour for Bavet

Section 1 Introduction

Training was conducted for Bavet, located in Svay Rieng Province in the northwestern part of Cambodia. Bavet is the largest city in Svay Rieng Province and is an international border gate between Cambodia and Vietnam about 226.8 kilometers via National Road 8 from the capital city of Phnom Penh. The training was held on February 11-13, 2020.

Section 2 Attendance

A total of 12 participants attended the three-day training. 11 people attended Day 1, one attended Day 2 and 7 attended Day 3.

Among them, 1 showed up on all three (3) days. Five (5) attended two (2) out of the three (3) training days and 6 attended for only one (1) day.

The breakdown of officials and representatives from the various sectors and institutions are as follows:

- Junk shop – 5 attendees
- Bavet (PIU) – 5 attendees
- Hybrid (waste collection company) – 2 attendees

The full list of attendees is found in Appendix 1.

Section 3 Highlights of the Training

Taking a cue from the previous training, the concept of public-private partnership and on how potential business partners will be selected was discussed early on in the training, before the O&M manual was introduced.

A comment was made by a participant that the “transfer” of the MRF from the city government to the private sector must conform to the sub-decrees of Cambodia on solid waste management, as well as other recently enacted relevant sub-decrees. He also informed all attendees that the Bavet municipal administration has just reorganized and has created a new organizational chart in response to a requirement for local government to create a new office concerning public works and waste management, and is set to fully implement the reorganization this year.

Videos sourced from YouTube demonstrating proper solid waste management and different types of MRF processing operations as well as recycling such as those shown in the Battambang/Poipet training were shown in various points of the training.

The training on Day 1 was adjusted for pacing in order to better convey important concepts to the participants. The Introduction to Solid Waste Management was discussed and explained in more depth, thus consuming more time than was originally allocated. As a result, the time for the rest of the training modules were adjusted. The training for “Operation Process” and the other following topics for Day 1 were rescheduled to the next

day of the training.

However, the Day 2 of the training proper was deferred due to the sudden unavailability of the participants, some due to other meetings. The sole attendee in the afternoon of Day 2 was instead instructed to study the handouts, and to inform the training team of consultants of any questions.

A supplemental training session was conducted in Bavet City Hall on February 26, 2020, to cover topics that were not addressed on the second day. Eight (8) participants attended the supplemental training session. The participants included four (4) PIU members and four (4) representatives from the Office of the Mayor.

Section 4 Pre- and Post-Tests

For Bavet, only the pre-test was conducted since the participants were busy the next day and was not able to attend the training. One person did not submit his pre-test. The scores are shown in the figure below:

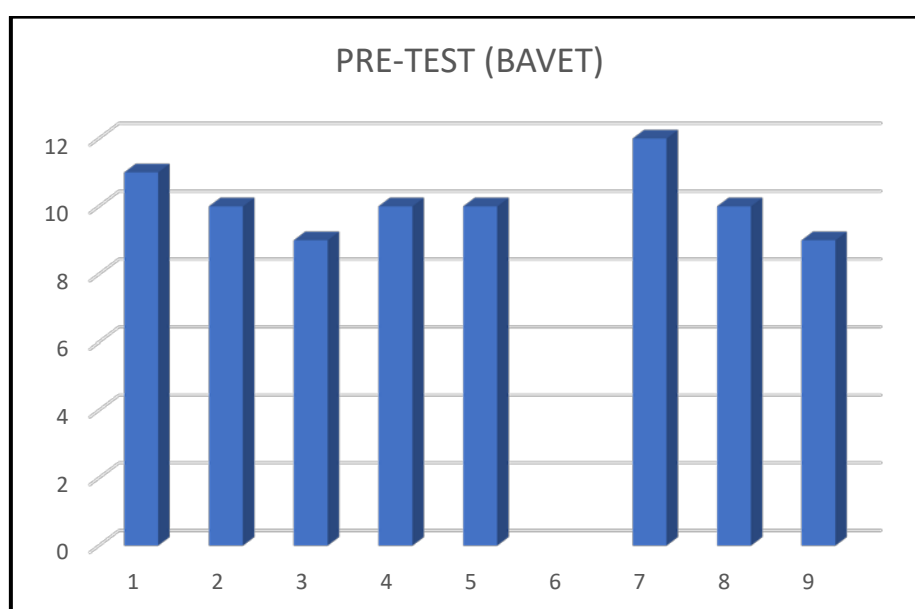


Figure 5. Pre-test for Bavet participants.

The post-test was administered to the participants in the supplemental training session. Six (6) of participants submitted completed post-tests. It is difficult to compare the results of the pre- and post-tests, because some of the individuals that were tested were different than those that submitted a completed pre-test. However, in the cases of PIU members that submitted both tests, the results were comparable to those achieved by the participants in the Battambang/Poipet training session.

The six (6) participants that were administered the post-test at the end of the supplemental training session in Bavet were also asked to complete a post-evaluation assessment of the Training Session, to receive feedback from the participant about the quality of the training. The results of this assessment by the participants are presented in Appendix 4. The results of the assessment were generally favorable. A similar post-evaluation was not done in the previous training session for Battambang/Poipet, because the group was in the field making site visits to MRFs on the third day.

Section 5 Tour of the MRF.

Interested participants were shown around the MRF of Bavet. They were oriented on how the inspection, processing and transport of recyclable waste must be done within the facility. The participants did not raise any questions about the facility and its expected operations. Construction work was ongoing at the site as there were some modifications to the original design of the facility.



***Figure 6: Location of the Bavet MRF of the Project.
(coordinates 11° 2'44.90"N, 106° 6'33.89"E)***

Section 6 Tour of Commercial MRF

The training participants and the training team visited two (2) commercial MRFs, both of which are situated along National Road 1, to the west of the Project MRF.



Figure 7: Locations of the Project MRF and the commercial MRFs within the vicinity of Bavet.



**Figure 8: Aerial view of the first commercial MRF visited in Bavet.
(coordinates 11° 3'0.21"N, 106° 4'42.21"E)**

According to the business owner of the first commercial MRF visited, he acquires

recyclables from the nearby factories and companies, and sells to Vietnamese clients. Sometimes the recyclables are hauled to the clients, but other times, the client arrives to pick up the recyclables.

There were no PET bottles found to be stored at the facility during the site visit. It was explained that PET bottles are accepted at the facility but are also sold immediately.

The facility is not connected to any water supply yet, so groundwater is currently being used.

The table below shows the price list dictated by the business owner of the first commercial MRF visited. Glass bottles are not accepted by the business.

Table 2: Price list from the first commercial MRF visited in Bavet

Recyclable Material	Price (per kilo)
Paper	\$0.10
Plastic bottles	Around \$0.10 to \$0.12
Aluminum steel	\$0.70
Plastic sheets	Around \$0.10 to \$0.15
Textile	\$0.10
Steel cans/barrels	Around \$0.15 to \$0.20



Figure 9: Aerial view of the second commercial MRF visited in Bavet.
(coordinates 11° 2'47.77"N, 106° 4'19.87"E)

The second commercial MRF visited was further to the west of the first commercial MRF visited, also along National Road 1.

Similar to the first commercial MRF, companies also go to the second commercial MRF to sell their recyclable waste. The business owner's children accompany her to assist in managing transactions and hauling of the recyclables.

Their business also markets to Vietnamese clients, but as of the time of the site visit, the recyclables were only stored and were not being sold until further notice because of trade and travel precautions against coronavirus.

The price of the blue plastic barrels (blue industrial plastic drum) at the second commercial MRF, bought per piece, is around \$7.50 per barrel. The removable plastic/metal rings of the barrels are stored and sold separately.

Various photos taken at the first and second commercial MRFs are shown in Appendix 3.

APPENDIX 1: TRAINING ATTENDANCE

ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

Battambang Training

04 February 2020

GMS, Southern Economic Corridor Towns Development Project
ADB Loan 2983-CAM (SF), Loan 8265-CAM (SCF),
Grant No. 0334-CAM (UEIF), Grant No. 0335-CAM (SCF)

បញ្ជីវត្តមាន

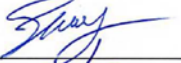
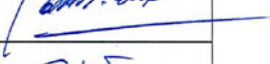
Attendance List

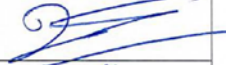
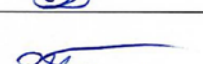
Meeting on

Training on Operation and Maintenance Materials Recovery Facility in Battambang

At Khemara Battambang I Hotel , Date: 04 February 2020 in Battambang Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	សាវ សុភាព	♂	ជំនួយការ	ឯកជន	089996579		សាវ សុភាព
2	សាវ សុភាព	♂	ជំនួយការ	ឯកជន			សាវ សុភាព
3	GRACE P. SAPUAY	F	CONSULTANT	NJS		gpsapuary@gmail.com	Grace P. Sapuay
4	Jam Sapuay	F	Assistant Consultant	NJS		mpsapuary@gmail.com	Jam Sapuay
5	SEK PENHANNHME	M	PIU	Poi Pet	092800899		SEK PENHANNHME
6	CHUM VANNA	M	ឧបនាយកប្រឹក្សា	Poi Pit	012808848		CHUM VANNA
7	Sophal Leapha	F	PIU	Poi Pet	014622240		Sophal Leapha
8	Non duharuvanna	M	PIU	ឧបនាយកប្រឹក្សា	017260560		Non duharuvanna

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	គូ ចំរើន	ប	គោលការណ៍សង្គម	ពាណិជ្ជកម្ម	០៩៣៣៩៩៨៦	nouchamroeun86@gmail.com	
10	អន. ស៊ីង	ប	ប្រធានការ. សុខាភិបាល	អគ្គ. គោលការណ៍សង្គម Po. Post	០១២៦៨៦១៩៦		
11	សែម. ឌីម៉ា ជ័យ	ប	ប្រធានការសង្គម	PMU	០៩១ ៦១៨៧៧៨	seukimchouen@gmail.com	
12	សា សុខា ជ័យ	ប	គ្រូបង្រៀន PUA	Pu. Post	០១២២០០១៥		
13	កឹម ឈុយ ឌីម៉ា	ស	គ្រូបង្រៀនសង្គម	PUA - BTB	០១២ ៨១៨០១៧	thearny2015@gmail.com	
14	លី វ៉ាន់ ឌីម៉ា	ប.	គ្រូបង្រៀនសង្គម	គ្រូ ប.ប	០៨១២៧៧៧១	veasna85@yahoo.com	
15	វ៉ែន ព័ន្ធុ ឌីម៉ា	ប	គ្រូបង្រៀនសង្គម	គ្រូបង្រៀន	០៨១ ២៥ ៨១៧២		
16	ហ៊ុយ ឌីម៉ា		គ្រូបង្រៀនសង្គម	គ្រូបង្រៀន II	០៩១ ៨១៨១៧៧		
17	វ៉ែន. ឌីម៉ា	ប	គ្រូបង្រៀនសង្គម	គ្រូបង្រៀនសង្គម	០១៦-៤៤១៥៩៦		
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19	ឈុយ. ព័ន្ធុ ឌីម៉ា	ប	គ្រូបង្រៀនសង្គម	គ្រូបង្រៀនសង្គម	០១៧៨៤៦១០០៧		
20	ឈុយ ឌីម៉ា	ប	គ្រូបង្រៀនសង្គម	គ្រូបង្រៀនសង្គម	០១២៤៤៤៨៨០		
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22	ឈុយ ឌីម៉ា	ប	គ្រូបង្រៀនសង្គម	គ្រូបង្រៀនសង្គម	០១៦៩៩៧៣៩៩៨		
23	ឈុយ ឌីម៉ា	ប	គ្រូបង្រៀនសង្គម	គ្រូបង្រៀនសង្គម	០៧៧៨៧០៧២		

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	ហួន សៀង	ស្រី	អ្នកគ្រប់គ្រងគម្រោង	វិទ្យាស្ថាន	017 810853		
10	សោត ស្រី ជិន សុខុម	ស្រី	អ្នកគ្រប់គ្រងគម្រោង	វិទ្យាស្ថាន			
11	ស៊ី តា វ៉េ	ស្រី	អ្នកគ្រប់គ្រងគម្រោង	វិទ្យាស្ថាន			
12	ធុន សុខ លក្ខណ៍	ប	បេក្ខជន	KCC	011979752		
13	ស៊ី ឡាន	ប	អ្នកគ្រប់គ្រងគម្រោង	KCC	012723510		
14	សេនា ឌី	ស្រី	Project Assistant	GMS1	011 787371	chendatap2@gmail.com	
15	Chiep Piseth	M	DTL	GMS1	012 961242		
16	Yim Mongtorun	M	Solid Waste Export	GMS1	012 463788		
17	កឹន ឈិន	ស្រី	អ្នកគ្រប់គ្រងគម្រោង	វិទ្យាស្ថាន			
18	សុខា ធានៀន	ស្រី	អ្នកគ្រប់គ្រងគម្រោង	វិទ្យាស្ថាន	0977880200		
19	សោត ឃុន កុមារ	ប		GMS1	012 463788419 155		
20	ស្រី - ស៊ីវ	ប	PIU	ធាតុអ៊ីយ៉ូត	012 975250		
21	ហ៊ុន ស៊ីវ៉ា	ប	គ្រូបង្រៀន	GMS1	077722570		
22	សុខ ឌីនណា	ប	PIU	V.U	012 479030		
23							

ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

Battambang Training

05 February 2020

GMS, Southern Economic Corridor Towns Development Project
ADB Loan 2983-CAM (SF), Loan 8265-CAM (SCF),
Grant No. 0334-CAM (UEIF), Grant No. 0335-CAM (SCF)

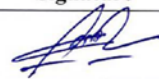
បញ្ជីវត្តមាន

Attendance List

Meeting on

Training on Operation and Maintenance Materials Recovery Facility in Battambang

At Khemara Battambang I Hotel , Date: 05 February 2020 in Battambang Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	ជេង វិជ័យ	ប.	គ្រូបង្រៀន/ស្រាវជ្រាវ	សាកលវិទ្យាល័យ	016441596		
2	សេង ឌីងហាវ	ប	គ្រូបង្រៀន/ស្រាវជ្រាវ	សាកលវិទ្យាល័យ	077826072		
3	សម-ឌីមជ័យ	ប.	បេក្ខជនបោះឆ្នោត	PMU	09 618 77 8		
4	សុខ សោយាណា	ប	PIU	ក្រុមហ៊ុនស្រាវជ្រាវ	092800899		
5	យុទ្ធ កុមារ	ប	គ្រូបង្រៀន	GMS 1	016419155		
6	ស៊ី ភីតា	ប	គ្រូបង្រៀន	GMS 1	077722572	syphachea@gmail.com	
7	Jan Sapunay	F	Assistant Consultant	NJS	N/A	mpsapunay@gmail.com	
8	Grace P. Sapunay	F	Consultant	NJS		gpsapunay@gmail.com	

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	ស៊ី ច. ឈន់	ប្រុស	អគ្គនាយក	ប្រាសាទបាវ			
10	ស៊ី ប៊ុន ឈន់	ប្រុស	អគ្គនាយក	ប្រាសាទបាវ			
11	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	KLL	012723570		
12	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	បាវ	089244471		
13	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	បាវ	012808848		
14	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	បាវ	0978469007		
15	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	KCC	012463788		
16	Chiep Piseth	ប្រុស	DTL	GMSA	012961242		
17	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	កំពង់ស្រឡៅ	012571616		
18	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	បាវ	012260560		
19	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	បាវ	012775250		
20	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	KCC	011979752		
21	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	បាវ	012686296		
22	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	បាវ	012220015		
23	ស៊ី ឈន់ ឈន់	ប្រុស	អគ្គនាយក	បាវ	0977880200		

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	ឈឹម សាវី	ស្រី	អ្នកប្រកាសព័ត៌មាន	ស្ថាប័ន			ឈឹម
10	ស្រីស្រី	ស្រី	អ្នកប្រកាសព័ត៌មាន	ស្ថាប័ន			ឈឹម
11	សាវី ឈឹម	ស្រី	អ្នកប្រកាសព័ត៌មាន	GMS 1	011 787377		ឈឹម
12	សុផល ឈឹម	ប	PIU	Portet	017622240		ឈឹម
13	ឈឹម ឈឹម	ប	អ្នកប្រកាសព័ត៌មាន	ឈាណា ឈឹម	092818017	deany2015@quest.com	ឈឹម
14	សុខ ឈឹម	ប	PIU	U-V	012 479030		ឈឹម
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ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

Battambang Training

06 February 2020

GMS, Southern Economic Corridor Towns Development Project
ADB Loan 2983-CAM (SF), Loan 8265-CAM (SCF),
Grant No. 0334-CAM (UEIF), Grant No. 0335-CAM (SCF)

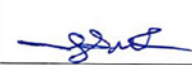
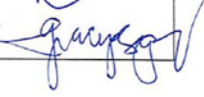
បញ្ជីវត្តមាន

Attendance List

Meeting on

Training on Operation and Maintenance Materials Recovery Facility in Battambang

At Khemara Battambang I Hotel , Date: 06 February 2020 in Battambang Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	សំគឹម គឹមជ័យ	ប	ប្រធានគម្រោង	PMU /MPWT	089 618778	semkamchoeur@gmail.com	
2	សិរីសុខ ឈន់ធាន	ប	ឃុំភ្នំ	PIU	014622270		
3	ទីន័យ ខ៊ីថុន	ប.	ក្រុមប្រឹក្សាសង្កាត់	ភ្នំពេញ	016 441596		
4	សោយ គឹមហារ	ប.	ក្រុមប្រឹក្សាសង្កាត់	សង្កាត់	077 876072		
5	សុខ សាវណ្ណសោន	ប	PIU	Poi Pet	092800899		
6	សុខ សាវណ្ណ	ប	ក្រុមប្រឹក្សាសង្កាត់	ក្រុមប្រឹក្សាសង្កាត់	0978469004		
7	Jam Sany	F	Assistant Consultant	NJS		mpsany@gmail.com	
8	GRACE P. SANY	F	CONSULTANT	NJS		gpsany@gmail.com	

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	CHEA Sypha	M	វិស្វករ	GMS1	077722572	syphachea@gmail.com	- Sypha
10	Chiep Piseth	M	DTL	PISC D	012961242	piseth.chiep4@gmail.com	C. Pie
11	Tep Chunda	F	Project Assistant	GMS1	011787377		Tep Chunda
12	ឆែង ចាន់	M	ឧបនាយក	KBC	092723510		Chh
13	គុំ សុផាន់	M	គ្រូបង្រៀន PIU	Poi Pet	012226015		Pi
14	អ៊ិន. ស៊ី. ហា	M.	គ្រូបង្រៀន PIU	Poi Pet	012686196		Am
15	ឌី. វណ្ណ	M	គ្រូបង្រៀន	Poi Pet	012808848		Hms
16	ឌុក សុខ លុណា		គ្រូបង្រៀន	KCE	016979752		2
17	លី ច័ន្ទី	M	គ្រូបង្រៀន	គោត្តក្រុង	097339986		Li
18	Xim Mengbeun	M	Solid Waste Ex	GMS1	0121663788		Xim
19	សុខា ឆាន់ឡឹក	M	អ្នកគ្រប់គ្រងគម្រោង ស្រះចាក់		0977880200		Sokha
20	សុខ ក្រីសាន	M	PIU	U-T	02479030		Sokha
21							
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ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

Bavet Training

11 February 2020

GMS, Southern Economic Corridor Towns Development Project
ADB Loan 2983-CAM (SF), Loan 8265-CAM (SCF),
Grant No. 0334-CAM (UEIF), Grant No. 0335-CAM (SCF)

បញ្ជីវត្តមាន

Attendance List
Meeting on

Training on Operation and Maintenance Materials Recovery Facility in Bavet

At Waiko Hotel , Date: 11 February 2020 in Svay Rieng Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	ស្រី ឡានណា	ស្រី	PIU	ឯកស័ក	0884412888		South
2	ហ៊ុន វិសុ	ប្រុស	PZU.	ក្រុមហ៊ុន	0974811801		Lot
3	យ៉ែ ជ័យត្រី	ស្រី	ADB solid waste Expert	ADB	012463788		Ngat
4	យ៉ែ កុមារ	—	Team mbers		016419155		90
5	ស៊ី ស៊ីនា	M	ទីស្តីការ	ADB	077722572	syphachea@gmail.com	S-20-
6	GRACE P. SAPUAY	F	Int'l Consultant	NJS		gsapuary@gmail.com	gsapuary
7	Jam Sapuay	F	Associate Consultant	NJS		mpsapuary@gmail.com	mpsapuary
8	Chiep Piseth	M	DTL	PISCD	012961242	C. Piseth.chiep4@gmail.com	C. Piseth

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	Tep Chinda	F	Project Assistant	PPSCD	011 72 73 77	chinda.tep@gmail.com	
10	SOK SO PHAL	្រុំស្រី	ឧបាយកល		097-7516364		
11	OEUN BORN	M	ស្រីស្រាវជ្រាវ	KCC	012 923 510		
12	KEO SARANG	M	ឧបាយកល	BAVET	0886440544		
13	YUN RAKSMEY	M	PIU	DPWT	012 533 588		
14	កែវ សុភាព	F	អគ្គនាយកដ្ឋានសហគមន៍	ទីស្តីការគណៈរដ្ឋមន្ត្រី	0712936273		
15	Kao Sunbo	M	អគ្គនាយកដ្ឋានសហគមន៍	ទីស្តីការគណៈរដ្ឋមន្ត្រី	0913963338		
16	ស៊ី ឈុន		អគ្គនាយកដ្ឋានសហគមន៍	ក្រុមប្រឹក្សាភិបាល	094 8880123		
17	គឹម ឈុន	M	នាយក	ក្រុមប្រឹក្សាភិបាល	088 777 566		
18	គឹម ចាន់	M	អគ្គនាយក	ក្រុមប្រឹក្សាភិបាល			
19	ស្រី សំឡី	M	អគ្គនាយក	ក្រុមប្រឹក្សាភិបាល	097 3966670		
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ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

Bavet Training

12 February 2020

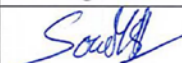
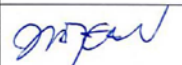
GMS, Southern Economic Corridor Towns Development Project
ADB Loan 2983-CAM (SF), Loan 8265-CAM (SCF),
Grant No. 0334-CAM (UEIF), Grant No. 0335-CAM (SCF)

បញ្ជីវត្តមាន

Attendance List
Meeting on

Training on Operation and Maintenance Materials Recovery Facility in Bavet

At Waiko Hotel , Date: 12 February 2020 in Svay Rieng Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	Chien Sovannary		PIU	ក្រសួង	0884412888		
2	Chiep Piseth	M	DTL	PISCD	012 961 242	piseth.chiep1@gmail.com	C. Piseth
3	YIM MONGTOEUN	M	SWM expert	PISCD	012463788		
4	CHEA Sypha	M	ទីប្រឹក្សា	PISCD	077722572	syphachea@gmail.com	-S.Sy-
5	GRACE P. SAPUAY	F	Int'l SWM Consultant	NJS		gpsapway@gmail.com	
6	Phum Saroun	M	Translator	Khmer World	092 423 646	sarounghand@gmail.com	
7	យ៉ុង កុមារ	M	Team member		816419155		
8	Jan Sapuay	F	Associate Consultant	NJS		mpsapway@gmail.com	

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	OEON-BORD	M	និស្សិត	KLL	012723510		
10	Tep-Chinda	F	Project Assistant	PISC	011787377	chindatep@gmail.com	
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ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

Bavet Training

13 February 2020

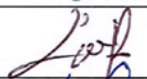
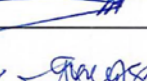
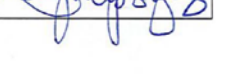
GMS, Southern Economic Corridor Towns Development Project
ADB Loan 2983-CAM (SF), Loan 8265-CAM (SCF),
Grant No. 0334-CAM (UEIF), Grant No. 0335-CAM (SCF)

បញ្ជីវត្តមាន

Attendance List
Meeting on

Training on Operation and Maintenance Materials Recovery Facility in Bavet

At Waiko Hotel , Date: 13 February 2020 in Svay Rieng Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	ឈី វិជ្ជា	ៀន	ITU.	ក្រសួងកសិកម្ម	0974811801		
2	សិរី ធីតា	M	✓	✓	0886440544		
3	ហ៊ុន គីសា	M	ទីតាំង	ADB	077722572	syphachrea@gmail.com	
4	ស៊ុន ភិក្ខុ	ប្រុស	និស្សិត	ក្រសួងសេដ្ឋកិច្ច	0938880123		
5	លី ឈី	ប្រុស	និស្សិត	ក្រសួងសេដ្ឋកិច្ច	097888886		
6	ស៊ុន គីសា	ប្រុស	និស្សិត	ក្រសួងសេដ្ឋកិច្ច	0887022269		
7	ឈី គី	ប្រុស	និស្សិត	DPWT	012 533 584		
8	GRACE P. SAPUNY	F	Int'l SWM Specialist	NJS		gpsapuny@gmail.com	

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	YIM MONKHORON	♂	swm expert	Kee	012463788		
10	OENI BORD	M	Signer	KCE	0123423510		
11	Tep Chinda	F	Project Assistant		0178 7377		
12	Jam Sapuay	F	Assistant Consultant	NJS		mpsapay@gmail.com	
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ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

GMS, Southern Economic Corridor Towns Development Project
ADB Loan 2983-CAM (SF), Loan 8265-CAM (SCF),
Grant No. 0334-CAM (UEIF), Grant No. 0335-CAM (SCF)

បញ្ជីវត្តមាន

Attendance List

Meeting on

.....
Training on O and M of MRF
At..... PIU Bavet, Date: 26 / 02 / 2020

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	ស្រី ឡាន ឡាន	ស្រី	គ្រូបង្រៀន	គណៈកម្មាធិការ	099506777		Savitha
2	វិក័ត ធានី	ប្រុស	បេក្ខជន + PIU	✓	0886440544		Victor
3	ហ៊ុន វិចិត្រ	ប្រុស	PIU	ក្រុមហ៊ុន	0976788787		Hun
4	សុខ - សុខ សែន	ប្រុស	PIU	ក្រុមហ៊ុន	097-7516364		Sok
5	ស៊ី ឈាញ	ស្រី	អគ្គនាយក	—	0887813781		Sy
6	ស៊ី ឈាញ	ស្រី	អគ្គនាយក	—	0977757422		Sy
7	ស៊ី ឈាញ	ស្រី	អគ្គនាយក	—	0883853566		Sy
8	ស៊ី ឈាញ	ស្រី	អគ្គនាយក	—	0965090226		Sy

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	ស៊ីវ ពិសិដ្ឋ	ប	DTL/PISCD	GMS1	012961242	piseth-chiriet@gmail.com	C. P.
10	ស៊ី ភីសា	ប	Consultant	GMS1	077722572	syphachea@gmail.com	-S. S.
11	ស៊ី ឡាន	ប	Signor	WU	012723510		
12	ស៊ី ឌីណា	ប	SWM expert	GMS1	012463788		Mayte
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ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

6

**GMS, Southern Economic Corridor Towns Development Project
ADB Loan 2983-CAM (SF), Loan 8265-CAM (SCF),
Grant No. 0334-CAM (UEIF), Grant No. 0335-CAM (SCF)**

បញ្ជីវត្តមាន

Attendance List

Meeting on

Training on Operation and Maintenance Materials Recovery Facility in Battambang

At Khemara Battamabang Hotel, Date: 4 February 2020 in Battambang Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	SAY Sopheap	F	Junk Shop	Doun Tav	089 996 579		
2	EANG Ngeat	F	Junk Shop	ChreyKaong			
3	GRACE P. Sapuay	F	Consultant	NJS		gpsapuay@gmail.com	
4	JAM Sapuay	F	Assistant Consultant	NJS		mpsapuay@gmail.com	
5	SOK PENHNANE	M	PIU	POIPET	092 800 899		
6	CHUM Vanna	M	Chief of Environmental Bureau	POIPET	012 808 848		
7	SOPHAL Leaphea	F	PIU	POIPET	017 622 270		
8	NOU Chhaivivam	M	PIU	BTB	017 260 560		

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
9	NOU Chamroeun	M	Deputy Director of Administration	Municipality	017 339 986	nouchamroeun84@gmail.com	
10	ON Siphea	M	Chief of Drainage office	DPWT (POIPET)	012 686 196		
11	SEM Kimchoeun	M	Project Manager	PMU	089 618 778	semkimchoeun@gmail.com	
12	CHEA SovannThoun	M	Chief of PIU	POIPET	012 220 015		
13	KHEM Sokuntheary	F	Vice President of Department	DPWT (BTB)	092 818 017	theary2015@gmail.com	
14	LEANG Veasna	M	Deputy Major	BTB	089 277 771	veasna85@yahoo.com	
15	PEN Saravuth	M	Junk Shop	OU Ta Kam Bei	081 25 79 72		
16	HANG Rotana	M	Junk Shop	Ou Ta Kam Pi	089 89 89 47		

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	កូនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
17	PEN Vutty	M	Council	Rotanak Commune	016 441 596		
18	SOEUN Chamrong	M	Aesthetic Sub-office	BTB	093 595 936		
19	VEANG Saret	M	Junk Shop	Kravat Krong	097 846 9007		
20	SIN Sovichea	M	Junk Shop	Phum Ochar	012 444 786		
21	CHHEANG Chamroeun	M	Junk Shop	Khum Ou Mas	012 497 078		
22	SARE Kakada	M	Junk Shop	Phum Ang	096 99 73 998		
23	SENG Khemhav	M	Council	Chamkar Somrong Commune	077 87 60 72		

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
24	HOUN Hoeun	F	Junk Shop	Chrey Kaong	017 810 853		
25	NIN Sokhom	F	Junk Shop	Chrey Kaong			
26	CHEY Sary	F	Junk Shop	Chrey Kaong			
27	Mot Sokleak	M	Driver	KCC	011 97 97 52		
28	OEUN Bora	M	Assistant	KCC	012 723 510		
29	TEP Chenda	F	Project Assistant	GMS 1	011 78 73 77	chendatep2@gmail.com	
30	CHIEP Piseth	M	DTL	GMS 1	012 961 242	piseth.chiep1@gmail.com	
31	YIM Mongtoeun	M	Solid Waste Expert	GMS 1	012 463 788		

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
32	KENG Yin	F	Junk Shop	Chrey Kaong			
33	SOKHA Sareun	M	Junk Shop	Chrey Kaong	097 788 0200		
34	KHUN Kumar	M	Team Member	GMS 1	016 419 155		
35	SONG Serng	M	PIU	BTB	012 975 250		
36	CHEA Sypha	M	Consultant	GMS 1	077 72 25 72	syphachea@gmail.com	
37	SOK Kinna	F	PIU	BTB	012 47 90 30		

Date: 5 February 2020 in Battambang Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	PEN Vutty	M	Council	Rotanak Commune	016 441 596		
2	SENG Khemhav	M	Council	Chamkar Somrong Commune	077 876 072		
3	SEM Kimchoeun	M	Project Manager	PMU	089 618 778	semkimchoeun@gmail.com	
4	SOK Penhnorn	M	PIU	POIPET	092 880 899		
5	KHUN Kumar	M	Team Member	GMS 1	016 419 155		
6	CHEA Sypha	M	Consultant	GMS 1	077 72 25 72	syphachea@gmail.com	
7	JAM Sapuay	F	Assistant Consultant	NJS		mpsapuay@gmail.com	
8	GRACE P. Sapuay	F	Consultant	NJS		gpsapuay@gmail.com	
9	SIM Yoeun	M	Junk Shop	Chrab Krasaing			
10	HENG Try	M	Junk Shop	Chrab Krasaing			
11	OEUN Bora	M	Assistant	KCC	012 723 510		
12	LEANG Veasna	M	Deputy Major	BTB	089 277 771	veasna85@yahoo.com	

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
13	CHUM Vanna	M	Chief of Environmental Bureau	POIPET	012 808 848		
14	VEANG Savet	M	Junk Shop	Kravat Krong	097 846 9007		
15	YIM Mongtoeun	M	Solid Waste Expert	GMS 1	012 463 788		
16	CHIEP Piseth	M	DTL	GMS 1	012 961 242	piseth.chiep1@gmail.com	
17	TRY Seav Eng	F	Junk Shop	Kampong KraBey	012 571 616		
18	NON Vivann	M	PIU	BTB	017 260 560		
19	SONG Serng	M	PIU	BTB	012 975 250		
20	MOT Sokleak	M	Driver	KCC	011 97 97 52		
21	ON Siphea	M	Chief of Drainage office	DPWT (POIPET)	012 686 196		
22	CHEA Sovannthun	M	Chief of PIU	POIPET	012 220 015		
23	SOKHA Sareun	M	Junk Shop	Chrey Kaong	097 788 0200		
24	CHEY Sary	F	Junk Shop	Chrey Kaong			
25	Sreynung	F	Junk Shop	Chrey Kaong			
26	TEP Chenda	F	Project Assistant	GMS 1	011 78 73 77	chendatep2@gmail.com	

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
27	SOPHAL Leaphea	F	PIU	POIPET	017 622 270		
28	KHEM Sokuntheary	F	Vice President of Department	DPWT (BTB)	092 818 017	theary2015@gmail.com	
29	SOK Kinna	F	PIU	BTB	012 479 030		

Date: 6 February 2020 in Battambang Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	SEM Kimchoeun	M	Project Manager	PMU	089 618 778	semkimchoeun@gmail.com	
2	SOPHAL Leaphea	F	PIU	POIPET	017 622 270		
3	PEN Vutty	M	Council	Rotanak Commune	016 441 596		
4	SENG Khemhav	M	Council	Chamkar Somrorng Commune	077 876 072		
5	SOK Penhnorn	M	PIU	POIPET	092 880 899		
6	VEANG Savet	M	Junk Shop	Kravat Krong	097 846 9007		
7	JAM Sapuay	F	Assistant Consultant	NJS		mpsapuay@gmail.com	
8	GRACE P. Sapuay	F	Consultant	NJS		gpsapuay@gmail.com	
9	CHEA Sypha	M	Consultant	GMS 1	077 72 25 72	syphachea@gmail.com	
10	CHIEP Piseth	M	DTL	GMS 1	012 961 242	piseth.chiep1@gmail.com	
11	TEP Chenda	F	Project Assistant	GMS 1	011 78 73 77	chendatep2@gmail.com	
12	OEUN Bora	M	Assistant	KCC	012 723 510		

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
13	CHEA Sovannthun	M	Chief of PIU	POIPET	012 220 015		
14	ON Siphea	M	Chief of Drainage office	DPWT (POIPET)	012 686 196		
15	CHUM Vanna	M	Chief of Environmental Bureau	POIPET	012 808 848		
16	MOT Sokleak	M	Driver	KCC	011 97 97 52		
17	NOU Chamroeun	M	Deputy Director of Administration	Municipality	017 339 986	nouchamroeun84@gmail.com	
18	YIM Mongtoeun	M	Solid Waste Expert	GMS 1	012 463 788		
19	SOKHA Sareun	M	Junk Shop	Chrey Kaong	097 788 0200		
20	SOK Kinna	F	PIU	BTB	012 479 030		

បញ្ជីវត្តមាន

Attendance List

Meeting on

Training on Operation and Maintenance Materials Recovery Facility in Bavet

At Waiko Hotel, Date: 11 February 2020 in Svay Rieng Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	ក្នុងនាម Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	CHOUN Sovannary	F	PIU	Bavet	088 441 2888		
2	KHAM Rithy	M	PIU	Bavet	097 48 11 801		
3	YIM Mongtoeun	M	Solid Waste Expert	GMS 1	012 463 788		
4	KHUN Kumar	M	Team Member	GMS 1	016 419 155		
5	CHEA Sypha	M	Consultant	GMS 1	077 72 25 72	syphachea@gmail.com	
6	JAM Sapuay	F	Assistant Consultant	NJS		mpsapuay@gmail.com	
7	GRACE P. Sapuay	F	Consultant	NJS		gpsapuay@gmail.com	
8	CHIEP Piseth	M	DTL	GMS 1	012 961 242	piseth.chiep1@gmail.com	
9	TEP Chenda	F	Project Assistant	GMS 1	011 78 73 77	chendatep2@gmail.com	
10	SOK Sophal	M	PIU		097 751 6364		

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
11	OEUN Bora	M	Assistant	KCC	012 723 510		
12	KEO Sarang	M	PIU	Bavet	088 644 0544		
13	YUN Raksmeay	M	PIU	DPWT	012 533 588		
14	SOMOEUN Khapheary	F	Junk Shop	Prey Phdov	071 293 6273		
15	KAO Sambo	M	Junk Shop	Prey Phdov	097 396 3338		
16	NEANG Seiha	M	Administration Assistant	Hybrid	097 888 0123		
17	KHEM Leng	M	Director	Hybrid	088 7777 566		
18	NOU Thann	M	Junk Shop	Bavet	088 702 2269		
19	SOUS Phally	M	Junk Shop	Bavet	097 39 666 70		

Date: 12 February 2020 in Svay Rieng Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	CHOUN Sovannary	F	PIU	Bavet	088 441 2888		
2	CHIEP Piseth	M	DTL	GMS 1	012 961 242	piseth.chiep1@gmail.com	
3	YIM Mongtoeun	M	Solid Waste Expert	GMS 1	012 463 788		
4	CHEA Sypha	M	Consultant	GMS 1	077 72 25 72	syphachea@gmail.com	
5	GRACE P. Sapuay	F	Consultant	NJS		gpsapuay@gmail.com	
6	PHUM Sareun	M	Translator		092 423 646	sareunphum@gmail.com	
7	KHUN Kumar	M	Team Member	GMS 1	016 419 155		
8	JAM Sapuay	F	Assistant Consultant	NJS		mpsapuay@gmail.com	
9	OEUN Bora	M	Assistant	KCC	012 723 510		
10	TEP Chenda	F	Project Assistant	GMS 1	011 78 73 77	chendatep2@gmail.com	

Date: 13 February 2020 in Svay Rieng Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	ក្នុងនាម Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	KHAM Rithy	M	PIU	Bavet	097 48 11 801		
2	KEO Sarang	M	PIU	Bavet	088 644 0544		
3	CHEA Sypha	M	Consultant	GMS 1	077 72 25 72	syphachea@gmail.com	
4	NEANG Seiha	M	Administration Assistant	Hybrid	097 888 0123		
5	REACH Sam Ath	M	Junk Shop		097 398 8886		
6	NOU Thann	M	Junk Shop	Bavet	088 702 2269		
7	YUN Raksmeay	M	PIU	DPWT	012 533 588		
8	GRACE P. Sapuay	F	Consultant	NJS		gpsapuay@gmail.com	
9	YIM Mongtoeun	M	Solid Waste Expert	GMS 1	012 463 788		
10	OEUN Bora	M	Assistant	KCC	012 723 510		
11	TEP Chenda	F	Project Assistant	GMS 1	011 78 73 77	chendatep2@gmail.com	
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ព្រះរាជាណាចក្រកម្ពុជា
ជាតិ សាសនា ព្រះមហាក្សត្រ

6

**GMS, Southern Economic Corridor Towns Development Project
ADB Loan 2983-CAM (SF), Loan 8265-CAM (SCF),
Grant No. 0334-CAM (UEIF), Grant No. 0335-CAM (SCF)**

បញ្ជីវត្តមាន

Attendance List

Meeting on

Training on Operation and Maintenance Materials Recovery Facility in Bavet

At Bavet City Hall, Date: 26 February 2020 in Bavet Town

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
1	CHOUN Sovannary	F	PIU	Bavet	099 506 777		
2	KEO Sarang	M	PIU	Bavet	088 644 0544		
3	KHAM Rithy	M	PIU	Bavet	097 67 88 787		
4	SOK Sophal	M	PIU	Bavet	097 751 6364		
5	KHEM Sanh	M	Vice President of Finance	Bavet	088 78 15 781		
6	KEO Samnang	M	Chief of Public Work and Transportation	Bavet	097 77 57 422		
7	MA Sarun	M	Vice President of PWT	Bavet	088 38 53 566		

ល.រ No	នាមនិងគោត្តនាម Name	ភេទ Sex	តួនាទី Occupation	អង្គភាព/ស្ថាប័ន Institutions	ទូរស័ព្ទ Phone	អ៊ីមែល E-Mail	ហត្ថលេខា Signature
8	ORM Kheamrin	M	Minister of Social	Bavet	096 50 90 226		
9	CHIEP Piseth	M	DTL	GMS 1	012 961 242	piseth.chiep1@gmail.com	
10	CHEA Sypha	M	Consultant	GMS 1	077 72 25 72	syphachea@gmail.com	
11	OEUN Bora	M	Assistant	KCC	012 723 510		
12	YIM Mongtoeun	M	Solid Waste Expert	GMS 1	012 463 788		
13							
14							

**APPENDIX 2:
PHOTOS OF BATTAMBANG/POIPET
TRAINING AND MRF TOUR**

Training Proper



Photo 2 - 1: Group picture of the training attendees and trainers on Day 1 of the Battambang training



Photo 2 - 2: The banner of the Battambang training



Photo 2 - 3: Day 1 morning session in Battambang.



Photo 2 - 4: Day 1 in Battambang, morning session, watching the video presentation.

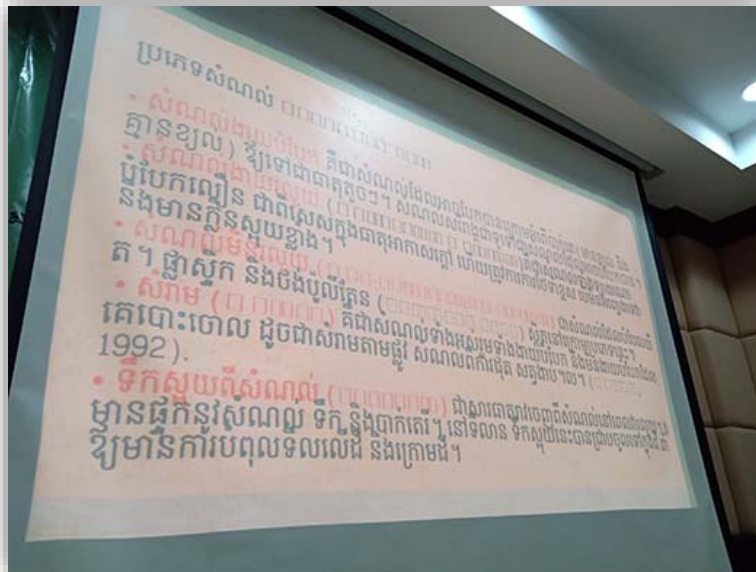


Photo 2 - 5: Powerpoint presentation.



Photo 2 - 6: Giving the capacity-building training, Day 1 afternoon session.



Photo 2 - 7: Dr. Yim Mongteun giving his explanations about a topic, day 2 afternoon session in Battambang.

Tour of Project MRF



Photo 2 - 8: Discussions outside the Battambang MRF.



Photo 2 - 9: Still having discussions outside the Battambang MRF.



Photo 2 - 10: Discussions regarding the hydraulic baler and other things inside the Battambang MRF



Photo 2 - 11: Orientation outside the Battambang MRF.



Photo 2 - 12: COMPED, an NGO, doing composting beside the dumpsite near the Battambang MRF.



Photo 2 - 13: People doing the composting, members of COMPED.



Photo 2 - 14: Composting, windrow type.



Photo 2 - 15: Composting, windrow type outside, near the dumpsite.



Photo 2 - 16: Windrow composting. Battambang MRF in the background.

Tour of Commercial MRF



Photo 2 - 17: Metals outside the huge commercial MRF in Battambang.



Photo 2 - 18: Bottles in sacks outside the commercial MRF in Battambang.



Photo 2 - 19: Meeting with the owner of the commercial MRF in Battambang.



Photo 2 - 20: Baling of aluminum cans at the commercial MRF in Battambang.



Photo 2 - 21: Sacks of aluminum cans waiting to be bales in Battambang commercial MRF.



Photo 2 - 22: A man baling the aluminum cans in the commercial MRF of Battambang.



Photo 2 - 23: Baled aluminum cans.



Photo 2 - 24: Baled cardboard materials.



Photo 2 - 25: Baling the cardboard materials.



Photo 2 - 26: Metals of all sorts waiting to be baled.



Photo 2 - 27: Metals and other aluminum cans waiting to be baled.



Photo 2 - 28: Metals being baled.



Photo 2 - 29: Other recyclable metals (from engines)



Photo 2 - 30: Photo just to show the size of the commercial MRF in Battambang.



Photo 2 - 31: Baled plastic materials



Photo 2 - 32: Baled plastic materials, mostly PET bottles.



Photo 2 - 33: Various kinds of plastic materials separated by type.



Photo 2 - 34: Various plastic materials separated by type.



Photo 2 - 35: PET Bottles.



Photo 2 - 36: A woman removing labels in PET bottles.



Photo 2 - 37: Other materials outside the main warehouse.



Photo 2 - 38: Various materials waiting to be baled.



Photo 2 - 39: Group photo at Battambang MRF with the owners (in the middle)

APPENDIX 3:
PHOTOS OF BAVET TRAINING AND
MRF TOUR

Training Proper



Photo 3 - 1: The training team with the participants pose for a group photo after the introductions in the morning.



Photo 3 - 2: Banner of the Capacity-building training.



Photo 3 - 3:DTL Piseth explaining about the MRF.



Photo 3 - 4: Start of capacity building training, giving the overview of the training.



Photo 3 - 5: Giving the overview of the training.



Photo 3 - 6: Head of Urban Planning in Svay Rieng, asking questions.



Photo 3 - 7: Dr. Yim Mongteun explaining about the graph on the differences between low-high income countries based on population and solid waste generation.



Photo 3 - 8: Participants for Bavet Capacity-building Training, afternoon session, day 1.



Photo 3 - 9:Capacity-building training for Bavet at Waikor Hotel, Svay Rieng Municipality, Day 1.



Photo 3 - 10:



Photo 3 - 11: Capacity-building in Bavet (Waikor Hotel), day 1



Photo 3 - 12: Powerpoint presentation.

Tour of Project MRF



Photo 3 - 13: Group at the entrance of Bavet MRF.



Photo 3 - 14: Showing the Bavet MRF to participants.



Photo 3 - 15: Inside the Bavet MRF, for the orientation of participants.



Photo 3 - 16: Inside the Bavet MRF



Photo 3 - 17: Dr. Yim Mongteun explaining the purpose of the primary loading/storage area to the participants in Bavet.

Tour of Commercial MRF 1



Photo 3 - 18: HDPE at commercial MRF 1



Photo 3 - 19: Various recyclables at commercial MRF 1.



Photo 3 - 20: Plastic sheets and textiles in sacks at commercial MRF 1.



Photo 3 - 21: Plastic sheets in sacks at commercial MRF 1.



Photo 3 - 22: Baled cardboards and textiles (in sacks) at commercial MRF 1



Photo 3 - 23: Baled cardboards at commercial MRF 1.



Photo 3 - 24: discussions about recyclables in commercial MRF 1.



Photo 3 - 25: Photo with owner and his staff at commercial MRF 1

Tour of Commercial MRF 2



Photo 3 - 26: Baled cardboard at commercial MRF 2.



Photo 3 - 27: More baled cardboard at commercial MRF 2.



Photo 3 - 28: A different type of paper material.



Photo 3 - 29: Participant (from PIU) on the right side at commercial MRF 2



Photo 3 - 30: Entrance to the main warehouse of commercial MRF 2 showing textiles and papers in sacks.



Photo 3 - 31: Entrance to commercial MRF 2



Photo 3 - 32: Barrels being sold in commercial MRF 2



Photo 3 - 33: Recyclable materials, mostly cardboard in commercial MRF 2.



Photo 3 - 34: Books and office paper stored in sacks in commercial MRF 2.



Photo 3 - 35: Textiles and cardboard materials in commercial MRF 2



Photo 3 - 36: Textile materials at commercial MRF 2



Photo 3 - 37: Textiles in commercial MRF 2 being stored since Vietnam is currently not accepting recyclable materials due to corona virus.



Photo 3 - 38: Recyclable Materials in commercial MRF 2.



Photo 3 - 39: Photo of commercial MRF 2 in Bavet showing metals from an upper cover of plastic barrel.



Photo 3 - 40: Photo with the owner of commercial MRF 2 in Bavet.

APPENDIX 4:
POST-EVALUATION ASSESSMENT
FOR TRAINING ON MRFs

ការសាកល្បងវាយតម្លៃ ក្រោយពេលទទួលបានការបណ្តុះបណ្តាលលើ
ការកសាងសមត្ថភាពក្នុងទីលានចែកសំរាម

POST-EVALUATION ASSESSEMENT FOR CAPACITY
BUILDING TRAINING ON MRFS

1. តើការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍សម្រាប់ការងារអ្នកដែរឬទេ?

Was the overall training Course beneficial to your job?

- a. មាន (Yes) b. មិនមាន (No)

Because all the lessons are in line with the city's current implementation plans as well as the needs of local authorities and businesses.
សូមធ្វើការពន្យល់បកស្រាយ (Please explain)

↑ ចម្លើយ: ការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍សម្រាប់ការងារអ្នក ព្រោះវាផ្តល់នូវចំណេះដឹង និងបទពិសោធន៍ ក្នុងការគ្រប់គ្រងសំណល់រឹង និងបែងចែកសំរាម ដល់អ្នកបណ្តុះបណ្តាល។

2. តើអ្នកនឹងពិពណ៌នាការបណ្តុះបណ្តាលវគ្គនេះយ៉ាងដូចម្តេច?

How would you describe this Capacity-Building Training?

a. ខ្ញុំទទួលបានចំនេះដឹងជាច្រើនពីការគ្រប់គ្រងសំណល់រឹង និងសំរាមកែច្នៃឡើងវិញ

I learned a lot about solid waste management (SWM) and Recycling

b. ខ្ញុំទទួលបានចំនេះដឹងពីរបៀបក្នុងការបែងចែកសំរាម

I learned how to operate and MRF

c. ខ្ញុំទទួលបានចំនេះដឹងពីរបៀបក្នុងការគ្រប់គ្រងសំណល់រឹង និងបែងចែកសំរាម

I learned how to manage solid waste and MRF

d. ការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍ជាច្រើនសម្រាប់ការងាររបស់ខ្ញុំ

This training is useful for my career

3. តើអ្នកនឹងរៀបរាប់ពីការបណ្តុះបណ្តាលវគ្គនេះយ៉ាងដូចម្តេច (សូមគូសរង្វង់លើចម្លើយខាងក្រោម)?

How would you describe the Training (Please encircle your answer)?

1 – មិនល្អសោះ: Terrible

2 – មិនល្អ: Bad

3 – មធ្យម: Average

4 – ល្អ Good

☒ 5 – ល្អណាស់ Very Good

6 – ល្អបំផុត Excellent

4. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរមុនពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much did you know about these subjects before taking the Training?

1 – មិនធ្លាប់ដឹងសោះពីមុខវិជ្ជានេះ (Know nothing about the subjects)

☒ 2 – ដឹងខ្លះពីមុខវិជ្ជានេះ (Know some about these subjects)

3 – ធ្លាប់បានដឹងច្រើនពីមុខវិជ្ជានេះ (Know a lot about these subjects)

5. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរក្រោយពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much do you know about the subjects after participating in the Training?

1 – ទទួលបានចំនេះដឹងតិចតួច (Learned a little)

2 – ទទួលបានចំនេះដឹងមួយចំនួន (Learned some)

☒ 3 – ទទួលបានចំនេះដឹងយ៉ាងច្រើន (Learned a lot)

6. តើអ្នកនឹងប្រើប្រាស់ជំនាញដែលទទួលបានពីវគ្គបណ្តុះបណ្តាលនេះ?

How likely are you to use the skills gained after the Training?

☒ 1 – ទំនងជាមិនប្រើប្រាស់ (Not likely)

2 – ទំនងជាប្រាស់តិច (Less likely)

3 – ទំនងជាប្រើប្រាស់បន្តិចបន្តួច (Use a little)

4 – ប្រើប្រាស់ច្រើន (Use a lot)

7. សូមវាយតម្លៃសកម្មភាពដែលបានធ្វើ៖

Please rate the activities conducted

1 – មិនល្អ (poor)

2 – គ្រាន់បើ (fair)

3 – ល្អ (good)

☒ 4 – ល្អណាស់ (very good)

5 – ល្អបំផុត (excellent)

8. សូមរៀបរាប់ចម្លើយអ្នក។ បើការវាយតម្លៃសកម្មភាពរបស់អ្នកតិចជាង4 តើអ្វីខ្លះដែលយើងត្រូវធ្វើអោយប្រសើរជាងមុន?

Please explain your answer. If less than 4 how else can we improve it?

ល្អណាស់ (Very Good)

9. តើក្នុងវគ្គបណ្តុះបណ្តាខ្លះផ្នែកណាដែលល្អបំផុត?

What was the best part of the Training?

ការគ្រប់គ្រងសំណល់រឹង
Solid Waste Management

10. តើចំណុចមួយណាដែលគួរតែធ្វើអោយប្រសើរជាងមុន?

What was the one thing that could be improved the most?

គ្រប់រយៗទាំងអស់ (All Lessons)

11. តើអ្នកគិតថាបន្ទាប់ពីទទួលបានការបណ្តុះបណ្តាននេះ សកម្មភាពការងាររបស់អ្នកនឹងប្រសើរជាងមុនទេ?

Do you think that your performance in your work will improve after this Training?

1. ☒ ប្រសើរខ្លាំង (Large extent)
2. ☐ ប្រសើរខ្លះៗ (Some extent)
3. ☐ មិនមានអ្វីប្រសើរសោះ (Not at all)

12. បើសិនអ្នកគិតថាមិនមានអ្វីប្រសើរសោះ សូមពន្យល់ខាងក្រោម:

If you answered "not at all", please explain:

ល្អណាស់ (Excellent)

13. តើចំនួនប្រធានបទត្រូវបានគ្រប់គ្រាន់ដែរឬទេ?

Was an appropriate amount of topic covered?

1. ☒ គ្រប់គ្រាន់ (Yes)
2. ☐ មិនគ្រប់គ្រាន់ (NO)

14. សូមវាយតម្លៃពីជំនាញនិងសមត្ថភាពរបស់គ្រូបណ្តុះបណ្តាល (សូមគូសរង្វង់លើលេខខាងក្រោម)

Please rate the Trainers' Skills and Capabilities (Please encircle the number of your answer)

5 - ល្អបំផុត Excellent

4 - ល្អណាស់ Very good

3 - ល្អ Good

2 - គ្រាន់បើ Fair

1 - មានភាពខ្វះខាត Poor

ការសាកល្បងវាយតម្លៃ ក្រោយពេលទទួលបានការបណ្តុះបណ្តាលលើ
ការកសាងសមត្ថភាពក្នុងទីលានចែកចាយសំរាម

POST-EVALUATION ASSESSEMENT FOR CAPACITY
BUILDING TRAINING ON MRFS

1. តើការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍សម្រាប់ការងារអ្នកដែរឬទេ ?

Was the overall training Course beneficial to your job?

- a. មាន (Yes) b. មិនមាន (No)

សូមធ្វើការពន្យល់បកស្រាយ (Please explain)

2. តើអ្នកនឹងពិពណ៌នាការបណ្តុះបណ្តាលវគ្គនេះលើការកសាងសមត្ថភាពក្នុងការបែងចែកសំរាមនេះ
យ៉ាងដូចម្តេច ?

How would you describe this Capacity-Building Training?

a. ខ្ញុំទទួលបានចំនេះដឹងជាច្រើនពីការគ្រប់គ្រងសំណល់រឹង និងសំរាមកែច្នៃឡើងវិញ

I learned a lot about solid waste management (SWM) and Recycling

b. ខ្ញុំទទួលបានចំនេះដឹងពីរបៀបក្នុងការបែងចែកសំរាម

I learned how to operate and MRF

c. ខ្ញុំទទួលបានចំនេះដឹងពីរបៀបក្នុងការគ្រប់គ្រងសំណល់រឹង និងបែងចែកសំរាម

I learned how to manage solid waste and MRF

d. ការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍ជាច្រើនសម្រាប់ការងាររបស់ខ្ញុំ

This training is useful for my career

3. តើអ្នកនឹងរៀបរាប់ពីការបណ្តុះបណ្តាលវគ្គនេះយ៉ាងដូចម្តេច (សូមគូសរង្វង់លើចម្លើយខាង
ក្រោម) ?

How would you describe the Training (Please encircle your answer)?

1 – មិនល្អសោះ Terrible

2 – មិនល្អ Bad

3 – មធ្យម Average

4 – ល្អ Good

5 – ល្អណាស់ Very Good

6 – ល្អបំផុត Excellent

4. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរមុនពេលទទួលបានការបណ្តុះបណ្តាលវគ្គខ្លី?

How much did you know about these subjects before taking the Training?

1 – មិនធ្លាប់ដឹងសោះពីមុខវិជ្ជានេះ (Know nothing about the subjects)

2 – ដឹងខ្លះពីមុខវិជ្ជានេះ (Know some about these subjects)

3 – ធ្លាប់បានដឹងច្រើនពីមុខវិជ្ជានេះ (Know a lot about these subjects)

5. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរក្រោយពេលទទួលបានការបណ្តុះបណ្តាលវគ្គខ្លី?

How much do you know about the subjects after participating in the Training?

1 – ទទួលបានចំនេះដឹងតិចតួច (Learned a little)

2 – ទទួលបានចំនេះដឹងមួយចំនួន (Learned some)

3 – ទទួលបានចំនេះដឹងយ៉ាងច្រើន (Learned a lot)

6. តើអ្នកនឹងប្រើប្រាស់ជំនាញដែលទទួលបានពីវគ្គបណ្តុះបណ្តាលខ្លី?

How likely are you to use the skills gained after the Training?

1 – ទំនងជាមិនប្រើប្រាស់ (Not likely)

2 – ទំនងជាប្រាស់តិច (Less likely)

3 – ទំនងជាប្រើប្រាស់បន្តិចបន្តួច (Use a little)

4 – ប្រើប្រាស់ច្រើន (Use a lot)

7. សូមវាយតម្លៃសកម្មភាពដែលបានធ្វើ៖

Please rate the activities conducted

1 – មិនល្អ (poor)

2 – គ្រាន់បើ (fair)

3 – ល្អ (good)

4 – ល្អណាស់ (very good)

5 – ល្អបំផុត (excellent)

8. សូមរៀបរាប់ចម្លើយអ្នក។ បើការវាយតម្លៃសកម្មភាពរបស់អ្នកគិតជាង4 តើអ្វីខ្លះដែលយើងត្រូវធ្វើអោយប្រសើរជាងមុន ?

Please explain your answer. If less than 4 how else can we improve it?

9. តើក្នុងវគ្គបណ្តុះបណ្តាខ្លីនេះផ្នែកណាដែលល្អបំផុត ?

What was the best part of the Training?

សំខាន់ៗ វគ្គបណ្តុះបណ្តាលនេះ គ្រប់ច្បាប់ (Very good all chapter)

10. តើចំណុចមួយណាដែលគួរតែធ្វើអោយប្រសើរជាងមុន ?

What was the one thing that could be improved the most?

How Solid Waste Management and store waste.
គ្រប់គ្រង គាត់ ជំនាញ របស់ ទស្សនៈ គណនេយ៍

11. តើអ្នកគិតថាបន្ទាប់ពីទទួលបានការបណ្តុះបណ្តាលនេះ សកម្មភាពការងាររបស់អ្នកនឹងប្រសើរជាងមុនដែរ ?

Do you think that your performance in your work will improve after this Training?

1. ប្រសើរខ្លាំង (Large extent)
2. ប្រសើរខ្លះៗ (Some extent)
3. មិនមានអ្វីប្រសើរសោះ (Not at all)

12. បើសិនអ្នកគិតថាមិនមានអ្វីប្រសើរសោះ សូមពន្យល់ខាងក្រោម៖

If you answered "not at all", please explain:

13. តើចំនួនប្រធានបទត្រូវបានគ្រប់គ្រាន់ដែរឬទេ ?

Was an appropriate amount of topic covered?

1. ☐ គ្រប់គ្រាន់ (Yes)
2. ☐ មិនគ្រប់គ្រាន់ (NO)

14. សូមវាយតម្លៃពីជំនាញនិងសមត្ថភាពរបស់គ្រូបណ្តុះបណ្តាល (សូមគូសវង់លើលេខខាងក្រោម)

Please rate the Trainers' Skills and Capabilities (Please encircle the number of your answer)

5 - ល្អបំផុត Excellent

4 - ល្អណាស់ Very good

3 - ល្អ Good

2 - ត្រូវបើ Fair

1 - មានភាពខ្វះខាត Poor

ការសាកល្បងវាយតម្លៃ ក្រោយពេលទទួលបានការបណ្តុះបណ្តាលលើ
ការកសាងសមត្ថភាពក្នុងទីលានចែកចាយសំរាម

POST-EVALUATION ASSESSEMENT FOR CAPACITY
BUILDING TRAINING ON MRFS

1. តើការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍សម្រាប់ការងារអ្នកដែរឬទេ?

Was the overall training Course beneficial to your job?

a. មាន (Yes) ✓ b. មិនមាន (No)

សូមធ្វើការពន្យល់បកស្រាយ (Please explain)

មានប្រយោជន៍ (Good Explain)

2. តើអ្នកនឹងពិពណ៌នាការបណ្តុះបណ្តាលវគ្គនេះលើការកសាងសមត្ថភាពក្នុងការបែងចែកសំរាមនេះ
យ៉ាងដូចម្តេច?

How would you describe this Capacity-Building Training?

a. ខ្ញុំទទួលបានចំណេះដឹងជាច្រើនពីការគ្រប់គ្រងសំណល់រឹង និងសំរាមកែច្នៃឡើងវិញ ✓

I learned a lot about solid waste management (SWM) and Recycling

b. ខ្ញុំទទួលបានចំណេះដឹងពីរបៀបក្នុងការបែងចែកសំរាម ✓

I learned how to operate and MRF

c. ខ្ញុំទទួលបានចំណេះដឹងពីរបៀបក្នុងការគ្រប់គ្រងសំណល់រឹង និងបែងចែកសំរាម

I learned how to manage solid waste and MRF

d. ការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍ជាច្រើនសម្រាប់ការងាររបស់ខ្ញុំ ✓

This training is useful for my career

3. តើអ្នកនឹងរៀបរាប់ពីការបណ្តុះបណ្តាលវគ្គនេះយ៉ាងដូចម្តេច (សូមគូសរង្វង់លើចម្លើយខាង
ក្រោម)?

How would you describe the Training (Please encircle your answer)?

1 – មិនល្អសោះ Terrible

2 – មិនល្អ Bad

3 – មធ្យម Average ✓

4 – ល្អ Good

5 – ល្អណាស់ Very Good ✓

6 – ល្អបំផុត Excellent

4. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរមុនពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much did you know about these subjects before taking the Training?

1 – មិនធ្លាប់ដឹងសោះពីមុខវិជ្ជានេះ (Know nothing about the subjects)

2 – ដឹងខ្លះពីមុខវិជ្ជានេះ (Know some about these subjects)

3 – ធ្លាប់បានដឹងច្រើនពីមុខវិជ្ជានេះ (Know a lot about these subjects) ✓

5. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរក្រោយពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much do you know about the subjects after participating in the Training?

1 – ទទួលបានចំនេះដឹងតិចតួច (Learned a little)

2 – ទទួលបានចំនេះដឹងមួយចំនួន (Learned some)

3 – ទទួលបានចំនេះដឹងយ៉ាងច្រើន (Learned a lot) ✓

6. តើអ្នកនឹងប្រើប្រាស់ជំនាញដែលទទួលបានពីវគ្គបណ្តុះបណ្តាលនេះ?

How likely are you to use the skills gained after the Training?

1 – ទំនងជាមិនប្រើប្រាស់ (Not likely)

2 – ទំនងជាប្រើប្រាស់តិច (Less likely)

3 – ទំនងជាប្រើប្រាស់បន្តិចបន្តួច (Use a little)

4 – ប្រើប្រាស់ច្រើន (Use a lot) ✓

7. សូមវាយតម្លៃសកម្មភាពដែលបានធ្វើ៖

Please rate the activities conducted

1 – មិនល្អ (poor)

2 – គ្រាន់ប៉ុណ្ណោះ (fair)

3 – ល្អ (good)

4 – ល្អណាស់ (very good) ✓

5 – ល្អបំផុត (excellent)

8. សូមរៀបរាប់ចម្លើយអ្នក។ បើការវាយតម្លៃសកម្មភាពរបស់អ្នកគិតជាង4 តើអ្វីខ្លះដែលយើងត្រូវធ្វើអោយប្រសើរជាងមុន ?

Please explain your answer. If less than 4 how else can we improve it?

ខ្លាំងណាស់ (Very Good)

9. តើក្នុងវគ្គបណ្តុះបណ្តាខ្លះណាដែលល្អបំផុត ?

What was the best part of the Training?

ល្អណាស់ (Very Good)

10. តើចំណុចមួយណាដែលគួរតែធ្វើអោយប្រសើរជាងមុន ?

What was the one thing that could be improved the most?

ការយល់ដឹងបានច្រើន (a lot of understanding)

11. តើអ្នកគិតថាបន្ទាប់ពីទទួលបានការបណ្តុះបណ្តានេះ សកម្មភាពការងាររបស់អ្នកនឹងប្រសើរជាងមុនទេ ?

Do you think that your performance in your work will improve after this Training?

1. ប្រសើរខ្លាំង (Large extent) ✓
2. ប្រសើរខ្លះៗ (Some extent)
3. មិនមានអ្វីប្រសើរសោះ (Not at all)

12. បើសិនអ្នកគិតថាមិនមានអ្វីប្រសើរសោះ សូមពន្យល់ខាងក្រោម៖

If you answered "not at all", please explain:

13. តើចំនួនប្រធានបទត្រូវបានគ្រប់គ្រាន់ដែរឬទេ ?

Was an appropriate amount of topic covered?

1. ☒ គ្រប់គ្រាន់ (Yes)
2. ☐ មិនគ្រប់គ្រាន់ (NO)

14. សូមវាយតម្លៃពីជំនាញនិងសមត្ថភាពរបស់គ្រូបណ្តុះបណ្តាល (សូមគូសរង្វង់លើលេខខាងក្រោម)

Please rate the Trainers' Skills and Capabilities (Please encircle the number of your answer)

5 - ល្អបំផុត Excellent

4 - ល្អណាស់ Very good

3 - ល្អ Good

2 - ត្រឹមត្រូវ Fair

1 - មានភាពខ្វះខាត Poor

**ការសាកល្បងវាយតម្លៃ ក្រោយពេលទទួលបានការបណ្តុះបណ្តាលលើ
ការកសាងសមត្ថភាពក្នុងទីលានចែកសំរាម**

**POST-EVALUATION ASSESSEMENT FOR CAPACITY
BUILDING TRAINING ON MRFS**

1. តើការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍សម្រាប់ការងារអ្នកដែរឬទេ?

Was the overall training Course beneficial to your job?

- a. មាន (Yes) b. មិនមាន (No).

In short training, this is useful for daily work and preparation in ADB project.

សូមធ្វើការពន្យល់បកស្រាយ (Please explain)

គ្រឹះស្ថានបណ្តុះបណ្តាលនេះមានប្រសិទ្ធភាពខ្ពស់ក្នុងការកសាងសមត្ថភាពក្នុងការងារប្រចាំថ្ងៃ និងការរៀបចំការងារសម្រាប់គម្រោង ADB

2. តើអ្នកនឹងពិពណ៌នាការបណ្តុះបណ្តាលវគ្គនេះលើការកសាងសមត្ថភាពក្នុងការបែងចែកសំរាមនេះ
យ៉ាងដូចម្តេច?

How would you describe this Capacity-Building Training?

- a. ខ្ញុំទទួលបានចំណេះដឹងជាច្រើនពីការគ្រប់គ្រងសំណល់រឹង និងសំរាមកែច្នៃឡើងវិញ

I learned a lot about solid waste management (SWM) and Recycling

- b. ខ្ញុំទទួលបានចំណេះដឹងពីរបៀបក្នុងការបែងចែកសំរាម

I learned how to operate and MRF

- c. ខ្ញុំទទួលបានចំណេះដឹងពីរបៀបក្នុងការគ្រប់គ្រងសំណល់រឹង និងបែងចែកសំរាម

I learned how to manage solid waste and MRF

- d. ការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍ជាច្រើនសម្រាប់ការងាររបស់ខ្ញុំ

This training is useful for my career

3. តើអ្នកនឹងរៀបរាប់ពីការបណ្តុះបណ្តាលវគ្គនេះយ៉ាងដូចម្តេច (សូមគូសរង្វង់លើចម្លើយខាង
ក្រោម)?

How would you describe the Training (Please encircle your answer)?

1 – មិនល្អសោះ Terrible

2 – មិនល្អ Bad

3 – មធ្យម Average

4 – ល្អ Good

☒ 5 – ល្អណាស់ Very Good

6 – ល្អបំផុត Excellent

4. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរមុនពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much did you know about these subjects before taking the Training?

1 – មិនធ្លាប់ដឹងសោះពីមុខវិជ្ជានេះ (Know nothing about the subjects)

☒ 2 – ដឹងខ្លះពីមុខវិជ្ជានេះ (Know some about these subjects)

3 – ធ្លាប់បានដឹងច្រើនពីមុខវិជ្ជានេះ (Know a lot about these subjects)

5. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរក្រោយពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much do you know about the subjects after participating in the Training?

1 – ទទួលបានចំនេះដឹងតិចតួច (Learned a little)

☒ 2 – ទទួលបានចំនេះដឹងមួយចំនួន (Learned some)

3 – ទទួលបានចំនេះដឹងយ៉ាងច្រើន (Learned a lot)

6. តើអ្នកនឹងប្រើប្រាស់ជំនាញដែលទទួលបានពីវគ្គបណ្តុះបណ្តាលនេះ?

How likely are you to use the skills gained after the Training?

1 – ទំនងជាមិនប្រើប្រាស់ (Not likely)

2 – ទំនងជាប្រាស់តិច (Less likely)

3 – ទំនងជាប្រើប្រាស់បន្តិចបន្តួច (Use a little)

☒ 4 – ប្រើប្រាស់ច្រើន (Use a lot)

7. សូមវាយតម្លៃសកម្មភាពដែលបានធ្វើ៖

Please rate the activities conducted

1 – មិនល្អ (poor)

2 – គ្រាន់បើ (fair)

☒ 3 – ល្អ (good)

4 – ល្អណាស់ (very good)

5 – ល្អបំផុត (excellent)

8. សូមរៀបរាប់ចម្លើយអ្នក។ បើការវាយតម្លៃសកម្មភាពរបស់អ្នកគិតជាង4 តើអ្វីខ្លះដែលយើងត្រូវធ្វើអោយប្រសើរជាងមុន ?

Please explain your answer. If less than 4 how else can we improve it?

9. តើក្នុងវគ្គបណ្តុះបណ្តាលខ្លះនេះផ្នែកណាដែលល្អបំផុត ?

What was the best part of the Training?

+ ការបំបែកសំណល់ (Separation Waste)

10. តើចំណុចមួយណាដែលគួរតែធ្វើអោយប្រសើរជាងមុន ?

What was the one thing that could be improved the most?

+ កិច្ចព្រមព្រៀង (Agreement)

11. តើអ្នកគិតថាបន្ទាប់ពីទទួលបានការបណ្តុះបណ្តាលនេះ សកម្មភាពការងាររបស់អ្នកនឹងប្រសើរជាងមុនទេ ?

Do you think that your performance in your work will improve after this Training?

1. ប្រសើរខ្លាំង (Large extent)

2. ប្រសើរខ្លះៗ (Some extent)

3. មិនមានអ្វីប្រសើរសោះ (Not at all)

12. បើសិនអ្នកគិតថាមិនមានអ្វីប្រសើរសោះ សូមពន្យល់ខាងក្រោម៖

If you answered "not at all", please explain:

13. តើចំនួនប្រធានបទត្រូវបានគ្រប់គ្រាន់ដែរឬទេ ?

Was an appropriate amount of topic covered?

1. ☒ គ្រប់គ្រាន់ (Yes)

2. ☐ មិនគ្រប់គ្រាន់ (NO)

14. សូមវាយតម្លៃពីជំនាញនិងសមត្ថភាពរបស់គ្រូបណ្តុះបណ្តាល (សូមគូសរង្វង់លើលេខខាងក្រោម)

Please rate the Trainers' Skills and Capabilities (Please encircle the number of your answer)

5 - ល្អបំផុត Excellent

4 - ល្អណាស់ Very good

☒ 3 - ល្អ Good

2 - គ្រាន់ប៉ុណ្ណោះ Fair

1 - មានភាពខ្វះខាត Poor

ការសាកល្បងវាយតម្លៃ ក្រោយពេលទទួលបានការបណ្តុះបណ្តាលលើ
ការកសាងសមត្ថភាពក្នុងទីលានចែកសំរាម

POST-EVALUATION ASSESSEMENT FOR CAPACITY
BUILDING TRAINING ON MRFS

1. តើការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍សម្រាប់ការងារអ្នកដែរឬទេ ?

Was the overall training Course beneficial to your job?

- a. មាន (Yes) b. មិនមាន (No)

សូមធ្វើការពន្យល់បកស្រាយ (Please explain)

(Get knowledge Clearly)
បានទទួលបានចំណេះដឹងយ៉ាងច្បាស់លាស់

2. តើអ្នកនឹងពិពណ៌នាការបណ្តុះបណ្តាលវគ្គនេះលើការកសាងសមត្ថភាពក្នុងការបែងចែកសំរាមនេះ
យ៉ាងដូចម្តេច ?

How would you describe this Capacity-Building Training?

a. ខ្ញុំទទួលបានចំណេះដឹងជាច្រើនពីការគ្រប់គ្រងសំណល់រឹង និងសំរាមកែច្នៃឡើងវិញ

I learned a lot about solid waste management (SWM) and Recycling

b. ខ្ញុំទទួលបានចំណេះដឹងពីរបៀបក្នុងការបែងចែកសំរាម

I learned how to operate and MRF

c. ខ្ញុំទទួលបានចំណេះដឹងពីរបៀបក្នុងការគ្រប់គ្រងសំណល់រឹង និងបែងចែកសំរាម

I learned how to manage solid waste and MRF

d. ការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍ជាច្រើនសម្រាប់ការងាររបស់ខ្ញុំ

This training is useful for my career

3. តើអ្នកនឹងរៀបរាប់ពីការបណ្តុះបណ្តាលវគ្គនេះយ៉ាងដូចម្តេច (សូមគូសរង្វង់លើចម្លើយខាង
ក្រោម) ?

How would you describe the Training (Please encircle your answer)?

1 – មិនល្អសោះ Terrible

2 – មិនល្អ Bad

3 – មធ្យម Average

4 – ល្អ Good

5 – ល្អណាស់ Very Good

6 – ល្អបំផុត Excellent

4. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរមុនពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much did you know about these subjects before taking the Training?

1 – មិនធ្លាប់ដឹងសោះពីមុខវិជ្ជានេះ (Know nothing about the subjects)

2 – ដឹងខ្លះពីមុខវិជ្ជានេះ (Know some about these subjects)

3 – ធ្លាប់បានដឹងច្រើនពីមុខវិជ្ជានេះ (Know a lot about these subjects)

5. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរក្រោយពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much do you know about the subjects after participating in the Training?

1 – ទទួលបានចំនេះដឹងតិចតួច (Learned a little)

2 – ទទួលបានចំនេះដឹងមួយចំនួន (Learned some)

✓ 3 – ទទួលបានចំនេះដឹងយ៉ាងច្រើន (Learned a lot)

6. តើអ្នកនឹងប្រើប្រាស់ជំនាញដែលទទួលបានពីវគ្គបណ្តុះបណ្តាលនេះ?

How likely are you to use the skills gained after the Training?

1 – ទំនងជាមិនប្រើប្រាស់ (Not likely)

2 – ទំនងជាប្រាស់តិច (Less likely)

3 – ទំនងជាប្រើប្រាស់បន្តិចបន្តួច (Use a little)

✓ 4 – ប្រើប្រាស់ច្រើន (Use a lot)

7. សូមវាយតម្លៃសកម្មភាពដែលបានធ្វើ៖

Please rate the activities conducted

1 – មិនល្អ (poor)

2 – គ្រាន់បើ (fair)

3 – ល្អ (good)

4 – ល្អណាស់ (very good)

✓ 5 – ល្អបំផុត (excellent)

8. សូមរៀបរាប់ចម្លើយអ្នក។ បើការវាយតម្លៃសកម្មភាពរបស់អ្នកតិចជាង4 តើអ្វីខ្លះដែលយើងត្រូវធ្វើអោយប្រសើរជាងមុន ?

Please explain your answer. If less than 4 how else can we improve it?

9. តើក្នុងវគ្គបណ្តុះបណ្តាខ្លីនេះផ្នែកណាដែលល្អបំផុត ?

What was the best part of the Training?

10. តើចំណុចមួយណាដែលគួរតែធ្វើអោយប្រសើរជាងមុន ?

What was the one thing that could be improved the most?

11. តើអ្នកគិតថាបន្ទាប់ពីទទួលបានការបណ្តុះបណ្តានេះ សកម្មភាពការងាររបស់អ្នកនឹងប្រសើរជាងមុនទេ ?

Do you think that your performance in your work will improve after this Training?

1. ប្រសើរខ្លាំង (Large extent)
2. ប្រសើរខ្លះៗ (Some extent)
3. មិនមានអ្វីប្រសើរសោះ (Not at all)

12. បើសិនអ្នកគិតថាមិនមានអ្វីប្រសើរសោះ សូមពន្យល់ខាងក្រោម៖

If you answered "not at all", please explain:

13. តើចំនួនប្រធានបទត្រូវបានគ្រប់គ្រាន់ដែរឬទេ ?

Was an appropriate amount of topic covered?

1. ☐ គ្រប់គ្រាន់ (Yes)
2. ☐ មិនគ្រប់គ្រាន់ (NO)

14. សូមវាយតម្លៃពីជំនាញនិងសមត្ថភាពរបស់គ្រូបណ្តុះបណ្តាល (សូមគូសវង្វង់លើលេខខាងក្រោម)

Please rate the Trainers' Skills and Capabilities (Please encircle the number of your answer)

5 - ល្អបំផុត Excellent

4 - ល្អណាស់ Very good

3 - ល្អ Good

2 - ត្រឹមត្រូវ Fair

1 - មានកាពន្លះខាត Poor

ការសាកល្បងវាយតម្លៃ ក្រោយពេលទទួលបានការបណ្តុះបណ្តាលលើ
ការកសាងសមត្ថភាពក្នុងទីលានចែកចាយសំរាម

POST-EVALUATION ASSESSEMENT FOR CAPACITY
BUILDING TRAINING ON MRFS

1. តើការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍សម្រាប់ការងារអ្នកដែរឬទេ ?

Was the overall training Course beneficial to your job?

- a. មាន (Yes) ✓ b. មិនមាន (No)

សូមធ្វើការពន្យល់បកស្រាយ (Please explain)

2. តើអ្នកនឹងពិពណ៌នាការបណ្តុះបណ្តាលវគ្គនេះលើការកសាងសមត្ថភាពក្នុងការបែងចែកសំរាមនេះ
យ៉ាងដូចម្តេច ?

How would you describe this Capacity-Building Training?

- (a) ខ្ញុំទទួលបានចំណេះដឹងជាច្រើនពីការគ្រប់គ្រងសំណល់រឹង និងសំរាមកែច្នៃឡើងវិញ ok.

I learned a lot about solid waste management (SWM) and Recycling

- (b) ខ្ញុំទទួលបានចំណេះដឹងពីរបៀបក្នុងការបែងចែកសំរាម ok.

I learned how to operate and MRF

- (c) ខ្ញុំទទួលបានចំណេះដឹងពីរបៀបក្នុងការគ្រប់គ្រងសំណល់រឹង និងបែងចែកសំរាម ok.

I learned how to manage solid waste and MRF

- (d) ការបណ្តុះបណ្តាលវគ្គនេះមានអត្ថប្រយោជន៍ជាច្រើនសម្រាប់ការងាររបស់ខ្ញុំ ok.

This training is useful for my career

3. តើអ្នកនឹងរៀបរាប់ពីការបណ្តុះបណ្តាលវគ្គនេះយ៉ាងដូចម្តេច (សូមគូសរង្វង់លើចម្លើយខាង
ក្រោម) ?

How would you describe the Training (Please encircle your answer)?

1 – មិនល្អសោះ Terrible

2 – មិនល្អ Bad

3 – មធ្យម Average

4 – ល្អ Good

(5) – ល្អណាស់ Very Good *OK*.

6 – ល្អបំផុត Excellent

4. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរមុនពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much did you know about these subjects before taking the Training?

1 – មិនធ្លាប់ដឹងសោះពីមុខវិជ្ជានេះ (Know nothing about the subjects)

(2) – ដឹងខ្លះពីមុខវិជ្ជានេះ (Know some about these subjects) *OK*.

3 – ធ្លាប់បានដឹងច្រើនពីមុខវិជ្ជានេះ (Know a lot about these subjects)

5. តើអ្នកដឹងអំពីមុខវិជ្ជាទាំងនេះប៉ុន្មានដែរក្រោយពេលទទួលបានការបណ្តុះបណ្តាលវគ្គនេះ?

How much do you know about the subjects after participating in the Training?

1 – ទទួលបានចំនេះដឹងតិចតួច (Learned a little)

(2) – ទទួលបានចំនេះដឹងមួយចំនួន (Learned some) *OK*.

3 – ទទួលបានចំនេះដឹងយ៉ាងច្រើន (Learned a lot)

6. តើអ្នកនឹងប្រើប្រាស់ជំនាញដែលទទួលបានពីវគ្គបណ្តុះបណ្តាលនេះ?

How likely are you to use the skills gained after the Training?

1 – ទំនងជាមិនប្រើប្រាស់ (Not likely)

(2) – ទំនងជាប្រាស់តិច (Less likely) *OK*.

3 – ទំនងជាប្រើប្រាស់បន្តិចបន្តួច (Use a little)

4 – ប្រើប្រាស់ច្រើន (Use a lot)

7. សូមវាយតម្លៃសកម្មភាពដែលបានធ្វើ៖

Please rate the activities conducted

1 – មិនល្អ (poor)

2 – គ្រាន់ប៉ុណ្ណោះ (fair)

3 – ល្អ (good)

(4) – ល្អណាស់ (very good) *OK*.

5 – ល្អបំផុត (excellent)

8. សូមរៀបរាប់ចម្លើយអ្នក។ បើការវាយតម្លៃសកម្មភាពរបស់អ្នកតិចជាង៤ តើអ្វីខ្លះដែលយើងត្រូវធ្វើអោយប្រសើរជាងមុន ?

Please explain your answer. If less than 4 how else can we improve it?

9. តើក្នុងវគ្គបណ្តុះបណ្តាខ្លីនេះផ្នែកណាដែលល្អបំផុត ? ៤
What was the best part of the Training?

10. តើចំណុចមួយណាដែលគួរតែធ្វើអោយប្រសើរជាងមុន ?
What was the one thing that could be improved the most?

11. តើអ្នកគិតថាបន្ទាប់ពីទទួលបានការបណ្តុះបណ្តានេះ សកម្មភាពការងាររបស់អ្នកនឹងប្រសើរជាងមុនទេ ?
Do you think that your performance in your work will improve after this Training?

1. ប្រសើរខ្លាំង (Large extent) *ok*
2. ប្រសើរខ្លះៗ (Some extent)
3. មិនមានអ្វីប្រសើរសោះ (Not at all)

12. បើសិនអ្នកគិតថាមិនមានអ្វីប្រសើរសោះ សូមពន្យល់ខាងក្រោម៖
If you answered "not at all", please explain:

13. តើចំនួនប្រធានបទត្រូវបានគ្រប់គ្រាន់ដែរឬទេ ?

Was an appropriate amount of topic covered?

1. ☐ គ្រប់គ្រាន់ (Yes)
2. ☐ មិនគ្រប់គ្រាន់ (NO)

14. សូមវាយតម្លៃពីជំនាញនិងសមត្ថភាពរបស់គ្រូបណ្តុះបណ្តាល (សូមគូសផ្ទៃដំណើរលេខខាងក្រោម)

Please rate the Trainers' Skills and Capabilities (Please encircle the number of your answer)

5 - ល្អបំផុត Excellent

4 - ល្អណាស់ Very good

3 - ល្អ Good

2 - គ្រាន់បើ Fair

1 - មានភាពខ្វះខាត Poor

APPENDIX 5: TRAINING MATERIALS



GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង
របៀង ខាងត្បូង

GMS: Southern Economic Corridor
Towns Development Project

ទិដ្ឋភាពទូទៅនៃការបណ្តុះបណ្តាល

TRAINING OVERVIEW

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



ទិដ្ឋភាពទូទៅនៃការបណ្តុះបណ្តាល

TRAINING OVERVIEW

ថ្ងៃទី ១

ពេលព្រឹក

ការណែនាំអំពីការគ្រប់គ្រងសំណល់រឹង

- និយមន័យ
- មូលហេតុ និងប្រភព
- ប្រភេទ និងចំណាត់ថ្នាក់
- តើការគ្រប់គ្រងកាកសំណល់រឹងគឺជាអ្វី
- ហេតុផលសម្រាប់ការគ្រប់គ្រងសំណល់រឹងក្រុង
- ទិដ្ឋភាពនៃអភិបាលកិច្ច
- ទិដ្ឋភាពនៃរាងកាយ
- យុទ្ធសាស្ត្រដើម្បីបង្កើនប្រសិទ្ធភាពការប្រមូលនិងដឹកជញ្ជូន ។

Day 1

Morning Session

Introduction to Solid Waste Management

- Definitions
- Causes and Sources
- Types and Classifications
- What is Solid Waste Management
- Reasons for Municipal Solid Waste Management
- Governance Aspect
- Physical Aspect
- Strategies to optimize collection and transport of MSW

ទិដ្ឋភាពទូទៅនៃការបណ្តុះបណ្តាល

ថ្ងៃទី ១

ពេលរសៀល

- សេចក្តីណែនាំអំពីការកែច្នៃឡើងវិញ
- សេចក្តីផ្តើមអំពីទីលានព្យាកសំរាម
- ការពិពណ៌នាអំពីភាពងាយស្រួល (លក្ខណៈទីតាំង)
- ការគ្រប់គ្រងទីតាំង និងគោលនយោបាយ
- ដំណើរការប្រតិបត្តិការ
- ការត្រួតពិនិត្យ ការប្លង់ទម្ងន់ និងការផ្ទុកសំរាម ដែលអាចកែច្នៃឡើងវិញ- ផ្នែកទី ១

TRAINING OVERVIEW

Day 1

Afternoon Session

- Introduction to Recycling
- Introduction to MRFs
- Facility Description (Site Characteristics)
- Facility Management and Policies
- Operation Process
- Inspection, Weighing and Storage of Recyclable Materials - Part 1

ទិដ្ឋភាពទូទៅនៃការបណ្តុះបណ្តាល

ថ្ងៃទី ២

ពេលព្រឹក

- ការត្រួតពិនិត្យ ការប្លង់ទម្ងន់ និងការផ្គុំកសំរាម ដែលអាចកែច្នៃឡើងវិញ - ផ្នែកទី ២
- ការដំណើរការ និងការស្តុកសំរាមញែករួច
- ការបញ្ចេញសំរាមញែករួច
- ការថែទាំ- ផ្នែកទី ១

TRAINING OVERVIEW

Day 2

Morning Session

- Inspection, Weighing and Storage of Recyclable Materials - Part 2
- Processing and Storage of Processed Materials
- Releasing of Recovered Materials
- Maintenance - Part 1

ទិដ្ឋភាពទូទៅនៃការបណ្តុះបណ្តាល

ថ្ងៃទី ២

សម័យប្រជុំពេលវេលា

- ការថែទាំ - ផ្នែកទី ២
- ការតាមដាន និងការធ្វើរបាយការណ៍
- ការគិតគូរអំពីសុខភាព និងសុវត្ថិភាពការងារ
- ការគ្រប់គ្រងបរិស្ថាន
- ការប្រាស្រ័យទាក់ទងជាមួយប្រជាជន និងភ្ញៀវ
- កិច្ចព្រមព្រៀងជួល ការប្រតិបត្តិការនិងការថែទាំ

TRAINING OVERVIEW

Day 2

Afternoon Session

- Maintenance - Part 2
- Monitoring and Reporting
- Occupational Health and Safety Considerations
- Environmental Management
- Resident and Visitor Correspondence
- Lease/Operation and Maintenance Agreement

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុងរបៀង ខាងត្បូង

សេចក្តីផ្តើមចំពោះការគ្រប់គ្រងសំណល់រឹង និងការកែច្នៃ
ទិដ្ឋភាពទូទៅ

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with

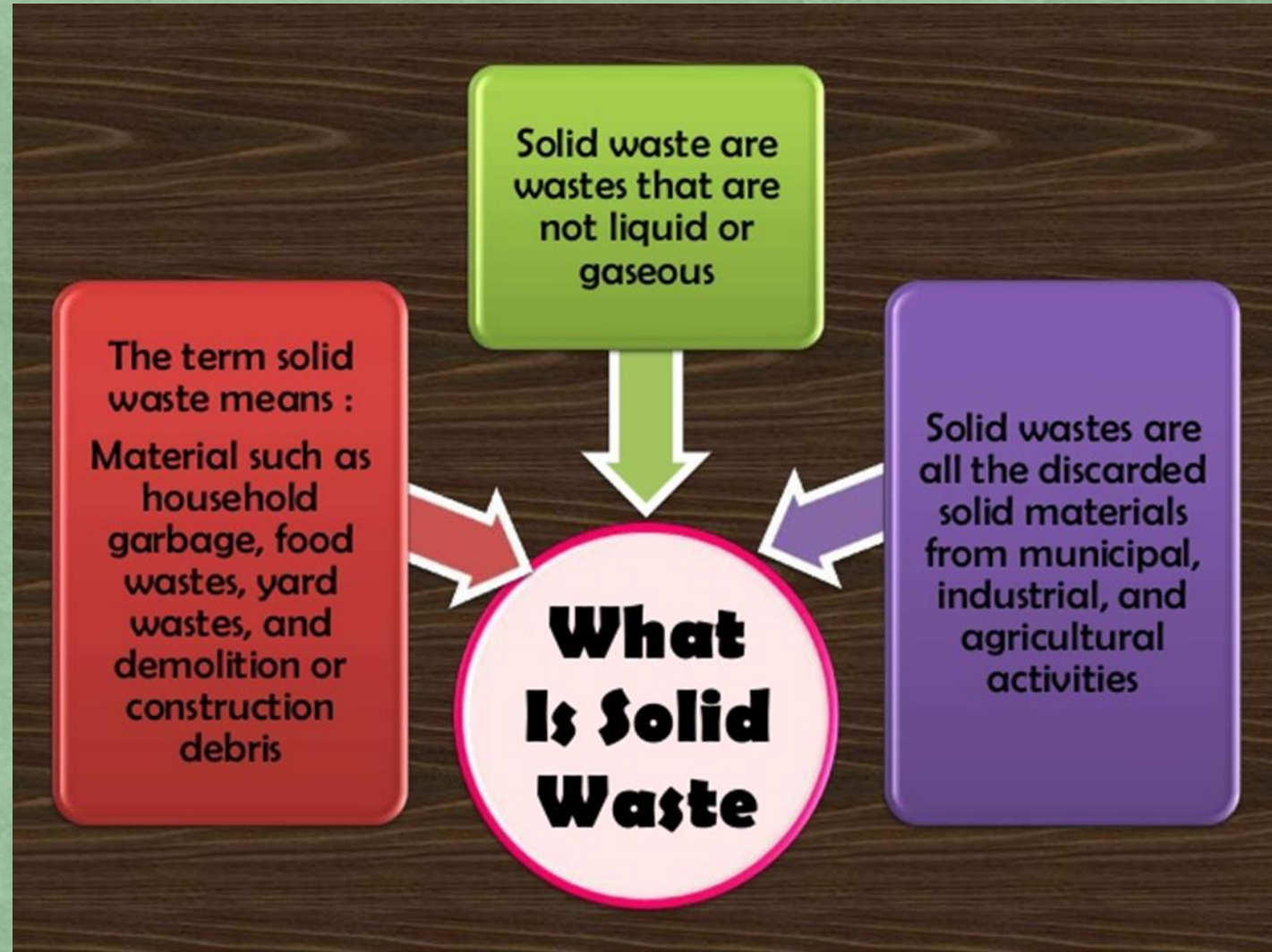


ADB

GMS: Southern Economic Corridor Towns Development Project



និយមន័យសំណល់រឹង



តើសំណល់រឹងជាអ្វី ?

បើ RA 9003 សំណល់រឹងសំដៅលើ៖

- ▶ សំណល់បោះចោលតាមផ្ទះ
- ▶ សំណល់ពាណិជ្ជកម្ម
- ▶ សំណល់មិនគ្រោះថ្នាក់មកពីស្ថាប័ន និងឧស្សាហកម្ម
- ▶ សំណល់ពីការបោសស្អាត
- ▶ សំណល់ពីការសាងសង់
- ▶ សំណល់កសិកម្ម និង
- ▶ សំណល់មិនគ្រោះថ្នាក់/សំណល់មិនពុល



ប្រភពសំណល់រឹង

- ❖ លំនៅដ្ឋាន
- ❖ ពាណិជ្ជកម្ម
- ❖ ស្ថាប័ន
- ❖ សាងសង់ និងការវាយអាគារចាស់ៗ
- ❖ សេវាកម្មក្នុងក្រុង
- ❖ រោងចក្រប្រព្រឹត្តិកម្ម
- ❖ ឧស្សាហកម្ម
- ❖ កសិកម្ម
- ❖ មន្ទីរពេទ្យ/គ្លីនិក (សំណល់ពីការបែងចែកសុខភាព)



មូលហេតុនៃសំណល់រឹង

- ❖ សំណល់ពីសកម្មភាពមនុស្ស (សរីរាង្គ និងអសរីរាង្គ)
- ❖ កំណើនប្រជាជន
- ❖ នគរូបនីយកម្ម
- ❖ ឧស្សាហូបនីយកម្ម (consumerism and promotion of needless consumption)

ប្រភេទសំណល់ Types of Waste

- **សំណល់ងាយបំបែក** គឺជាសំណល់ដែលអាចបំបែកបានក្រោមអំពើបាក់តេរី (មានខ្យល់ និងគ្មានខ្យល់) ឱ្យទៅជាធាតុតូចៗ។ សំណល់សរុបរាងដូច្នេះទៅជាសំណល់ដែលអាចបំបែកបាន។
- **សំណល់ងាយរលួយ** (Putrescible materials) គឺជាសំណល់ទាំងឡាយណាដែលបំបែកលឿនជាពិសេសក្នុងធាតុអាកាសក្តៅ ហើយត្រូវការការថែទាំខ្ពស់ បើមិនអញ្ចេញទេវានិងមានក្លិនស្អុយខ្លាំង។
- **សំណល់មិនរលួយ** (Non-putrescible materials) ជាសំណល់ដែលបំបែកយឺតៗ ផ្លាស្ទិក និងថង់ប៉ូលីតេន (polythene bags) ស្ថិតនៅក្រោមប្រភេទនេះ។
- **សំរាម** (Refuse) គឺជាសំណល់ទាំងអស់រួមទាំងងាយបំបែក និងមិនងាយបំបែកដែលគេបោះចោល ដូចជាសំរាមតាមផ្លូវ សំណល់ពីការដុត សត្វងាប់។ល។ (Salvato, 1992).
- **ទឹកស្អុយពីសំណល់** (Leachate) ជាសារធាតុរាវចេញពីសំណល់នៅពេលវារលួយ។ វាមានផ្ទុកនូវសំណល់ ទឹក និងបាក់តេរី។ នៅទីលាន ទឹកស្អុយនេះបានជ្រាបចូលទៅក្នុងដី នាំឱ្យមានការបំពុលទីលានដី និងក្រោមដី។

ចំណាត់ថ្នាក់សំណល់រឹង

A. សំណល់ដែលអាចធ្វើជីកំប៉ុស្តបាន Compostable wastes
សំណល់ដែលអាចបំប្លែងបាន (សំណល់អាហារ សំណល់សួន
ច្បារ សំណល់សត្វកសិកម្ម)



ចំណាត់ថ្នាក់សំណល់រឹង

B. សំណល់អាចកែច្នៃបាន

សំណល់ទាំងឡាយណាដែលបានពីគំនូរសំរាមដែលអាចបំប្លែងទៅជាផលប្រយោជន៍ ឬបំប្លែងទៅជាផលិតផលថ្មីខុសពីទម្រង់ដើម



ចំណាត់ថ្នាក់សំណល់រឹង

C. សំណល់អត់ប្រយោជន៍ Residual wastes

ជាសំណល់ដែលមិនអាចធ្វើដំកំប៉ុស្ត និងមិនអាចកែច្នៃបាន
(និយាយរួមគឺសំណល់ដែលគ្មានប្រយោជន៍)



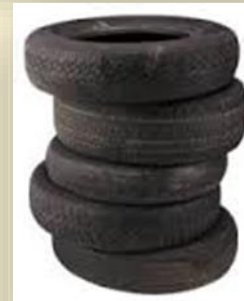
synovapower.com



blog.viridor.co.uk

ចំណាត់ថ្នាក់សំណល់រឹង

D. សំណល់ពិសេស Special Waste សំដៅលើគ្រោះថ្នាក់ចេញពីលំនៅដ្ឋាន



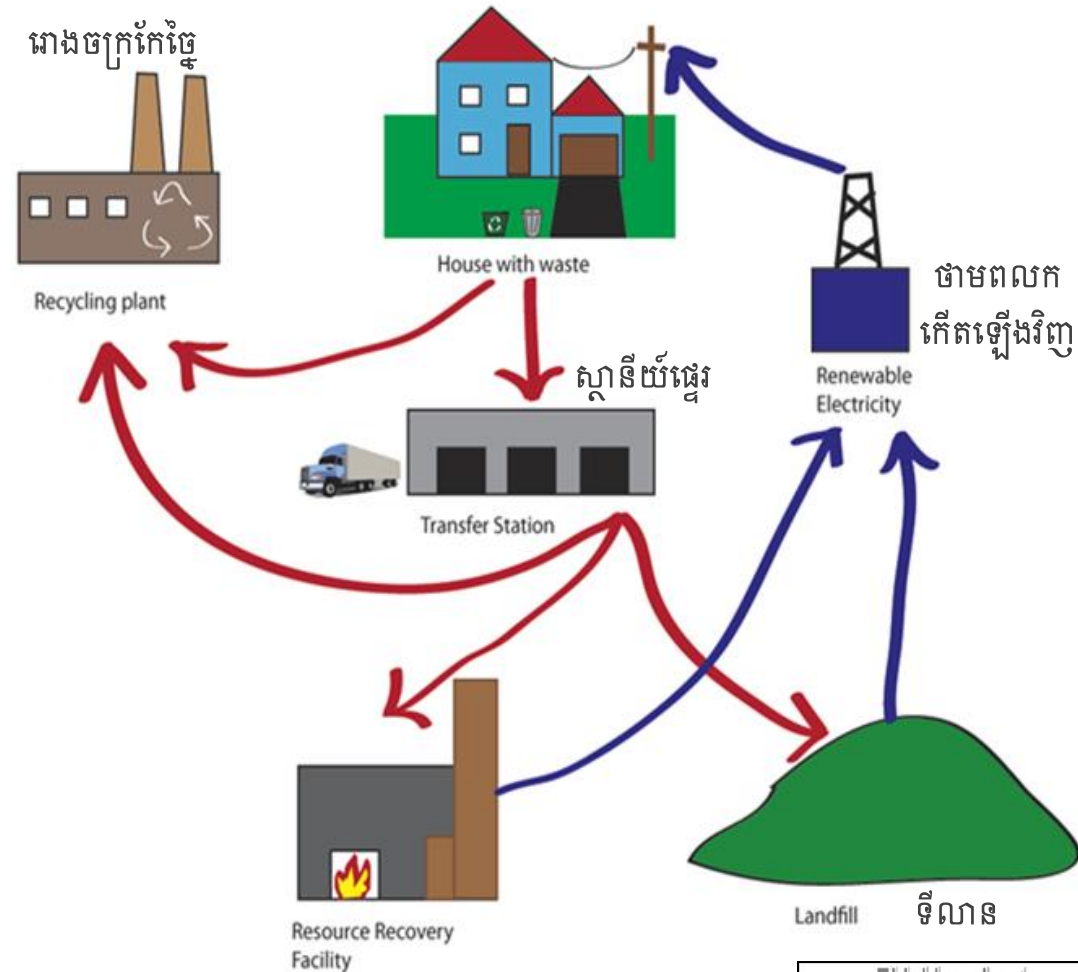
តើអ្វីទៅជាការគ្រប់គ្រងសំណល់រឹង ?

1. សំដៅលើការដោះស្រាយសំណល់រឹងពីប្រភពបញ្ចេញតាមរយៈដំណើរការទាញយកវត្ថុធាតុមុនបោះចោល

It refers to the supervised handling of solid waste material from generation at the source through the recovery processes to disposal. (OECD)

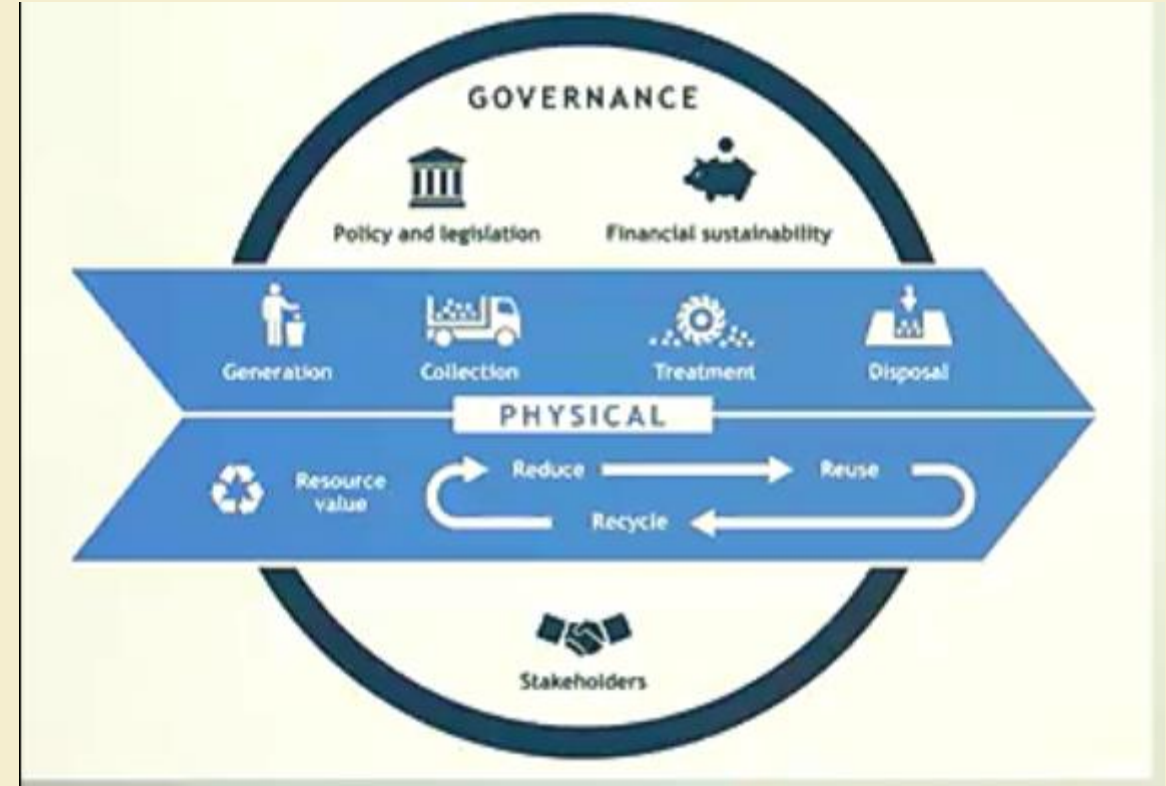
2. គឺជាការត្រួតពិនិត្យជាប្រព័ន្ធនៃការបញ្ចេញ ការរក្សាទុក ការដឹកជញ្ជូន ការញែកនៅនឹងប្រភព ដំណើរការផ្សេងៗ ប្រព្រឹត្តិកម្ម ការទាញយក និងការបោះចោលសំណល់

It is the Systematic control of generation, storage, transport, source separation, processing, treatment, recovery, and disposal of solid waste. (Business dictionary.com)



មូលហេតុសម្រាប់ការគ្រប់គ្រងសំណល់រឹង

- 1) ដើម្បីធ្វើឲ្យគោលនយោបាយនិងវិធានការណ៍/យុទ្ធសាស្ត្រមាន ឥទ្ធិពលសម្រាប់ការពារនិងកាត់បន្ថយកាកសំណល់
- 2) ដើម្បីកំណត់ចំនួនរថយន្ត និងសមត្ថភាពផ្ទុកនៃរថយន្តដឹកនិង/ ឬស្ថានីយធ្វើរ
- 3) វាយតម្លៃលទ្ធភាព និងទំហំនៃជម្រើសប្រព្រឹត្តិកម្ម
- 4) កំណត់នូវឱកាសនៃការកែច្នៃ
- 5) ប៉ាន់ស្មានអាយុកាលនៃទីលាន
- 6) ប៉ាន់ស្មានពីបម្រែបម្រួលនៃការគ្រប់គ្រងសំណល់រឹងចំពោះ ផែនការអនាគត



ផ្នែកសំខាន់ៗនៃការគ្រប់គ្រងសំណល់រឹង

អ្វីដែលត្រូវយល់៖

A. អភិបាលកិច្ច

១. គោលនយោបាយ និងច្បាប់

២. និរន្តរភាពហិរញ្ញវត្ថុ

B. ទិដ្ឋភាពរូប

១. ការបញ្ចេញ

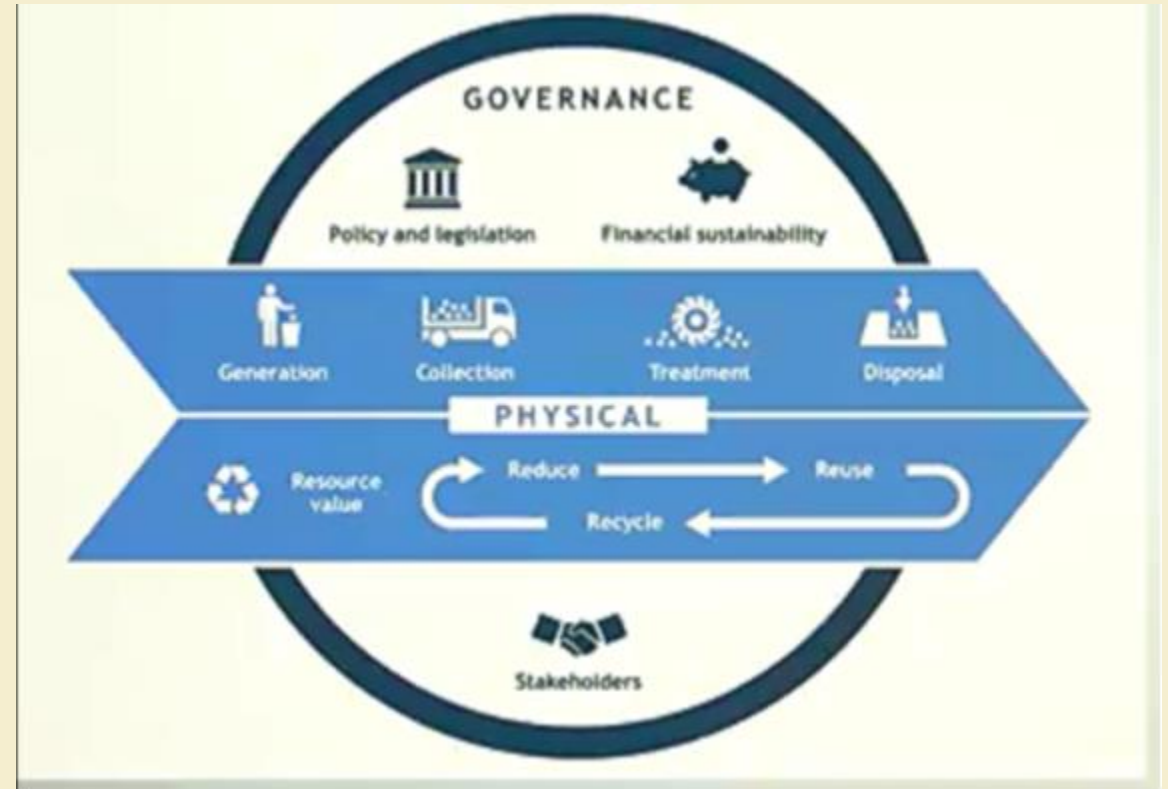
២. ការប្រមូល

៣. ប្រព្រឹត្តិកម្ម

៤. ការបោះចោល

៥. តម្លៃធនធាន (3 R's)

C. អ្នកពាក់ព័ន្ធ



ទិដ្ឋភាពអភិបាលកិច្ចនៃការគ្រប់គ្រងសំណល់រឹង



និរន្តរភាពហិរញ្ញវត្ថុ

ឧបករណ៍សេដ្ឋកិច្ចសម្រាប់ LGUs

១. តម្លៃប្រមូលសំរាម (user fee)

២. ការលក់វត្ថុអាចកែច្នៃបាន

៣. តម្លៃចាក់សំរាម

៤. ការផ្សព្វផ្សាយ និងទោសទាន

➢ អ្វីៗទាំងអស់ត្រូវធ្វើឡើងតាមច្បាប់កំណត់

ទិដ្ឋភាពរូបនៃការគ្រប់គ្រងសំណល់រឹង



១. ការបញ្ចេញសំណល់ Generation
២. ការស្តុកទុក Storage
៣. ការប្រមូល Collection
៤. ការដឹកជញ្ជូន Transport
៥. ការបោះចោល Disposal



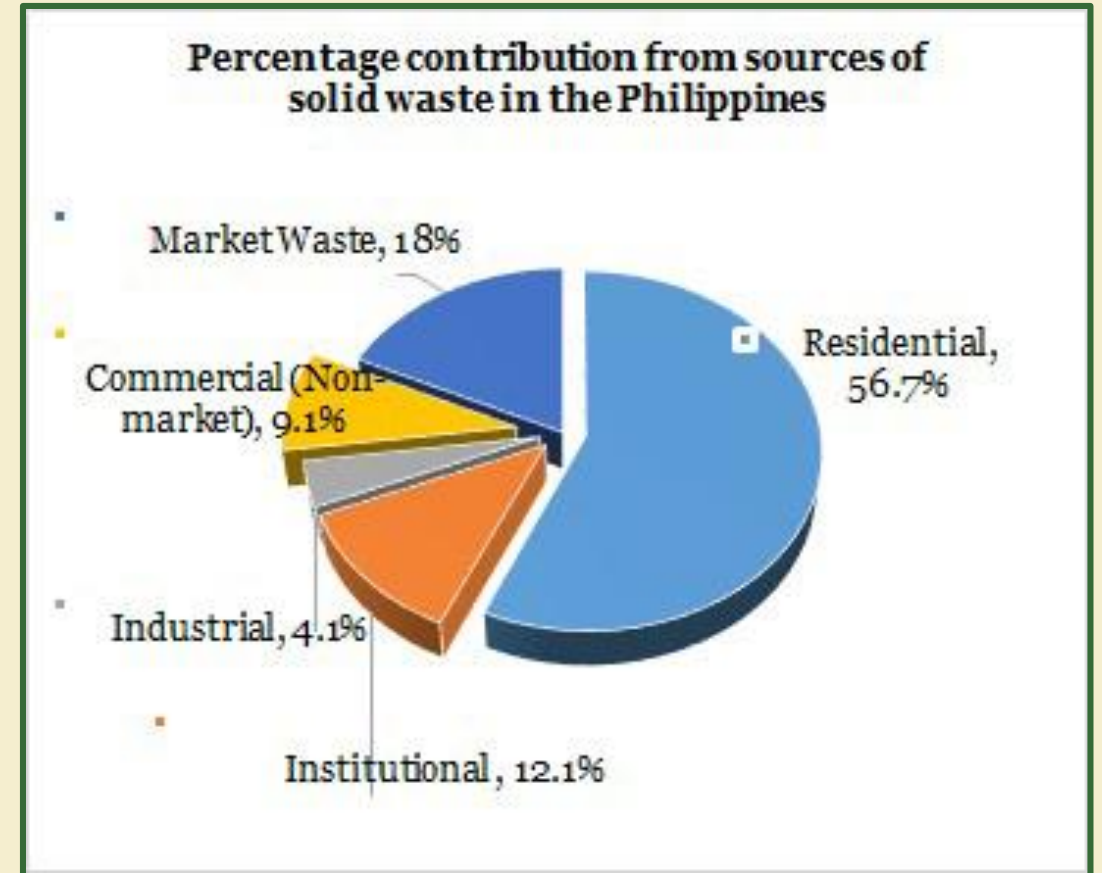
ការបញ្ចេញសំណល់រឹង

១. ការបញ្ចេញ - ជាដំណាក់កាលដែលអ្វីមួយក្លាយជាគ្មានប្រយោជន៍ ឬអស្ថិរភាពម្ល៉េះ មិនសូវហើយបោះវាចោល។

បរិមាណសំណល់ដែលបានបញ្ចេញក្នុងតំបន់មួយអាស្រ័យលើចំនួនប្រជាជន និងអត្រានៃការបញ្ចេញ។

ឧទាហរណ៍ ទីក្រុងមួយដែលមានប្រជាជន ១លានអត់ ហើយអត្រាបញ្ចេញសំណល់ ០.៧គីក្រ/ម៉ែត្រ/ថ្ងៃ នឹងមានបរិមាណសំណល់ ៧០០ម៉ែត្រគីតោន/ថ្ងៃ

បរិមាណសំណល់ប្រចាំថ្ងៃ = $\frac{\text{ចំនួនប្រជាជន} \times \text{អត្រាបញ្ចេញ}}{9000}$



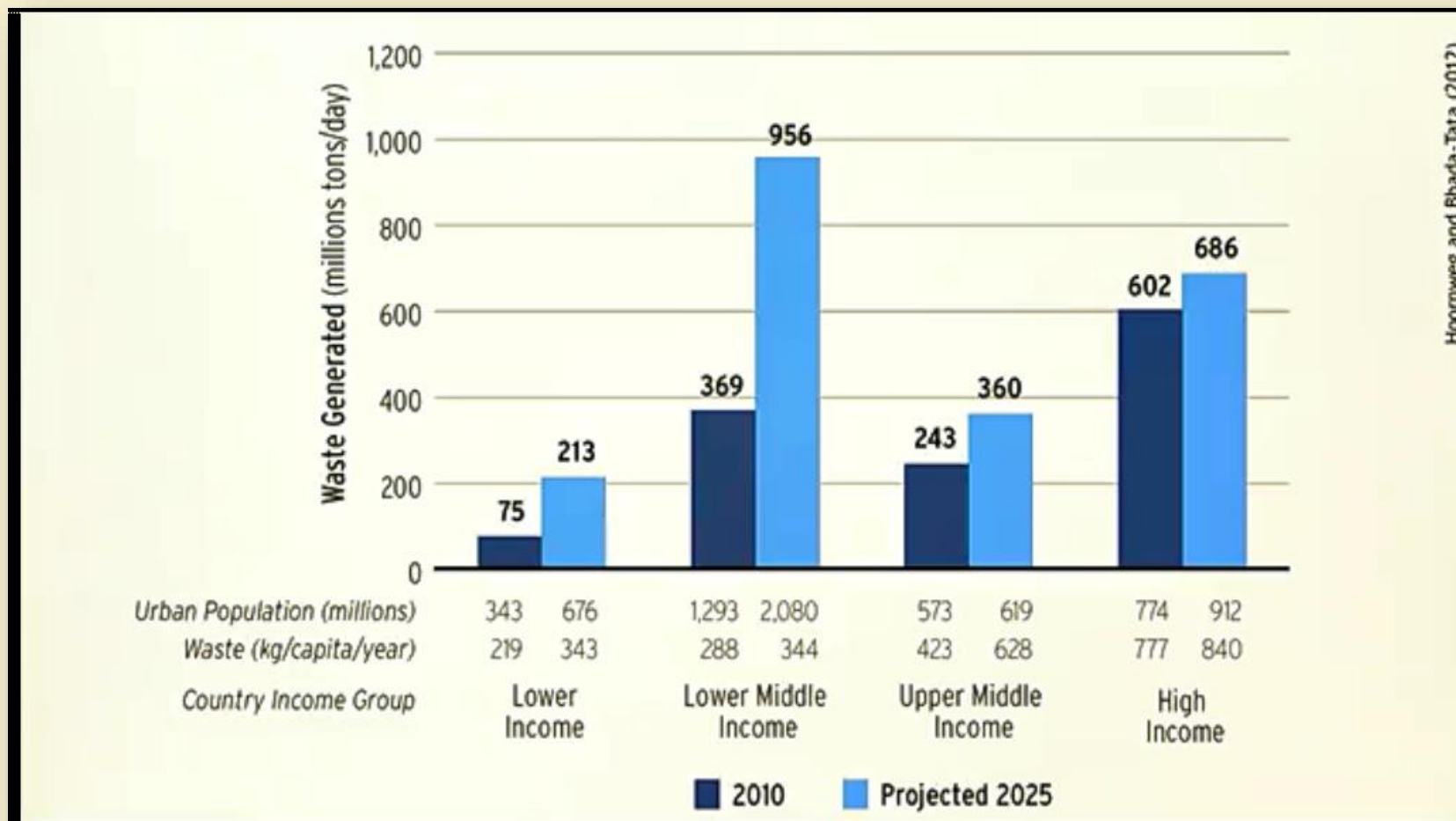
តើអ្វីមានឥទ្ធិពលលើអត្រាបញ្ចេញសំណល់រឹង ?

- របៀបរបបរស់នៅ
- នគរូបនីយកម្ម
- ប្រាក់ចំណូល

- For example, Philippine SW was predicted to increase to 165% from 29,315 tons  77,776 tons per day in 2025
- Due to projected 47.3% hike in urban population

ឧទាហរណ៍នៃការបញ្ចេញសំណល់ពីក្រុមដែលមានប្រាក់ចំណូលខុសគ្នា

ការទស្សនា
សម្រាប់ឆ្នាំ២០២៥
នៃប្រទេសដែល
មានចំណូលទាប
ចំណូលមធ្យម និង
ចំណូលខ្ពស់



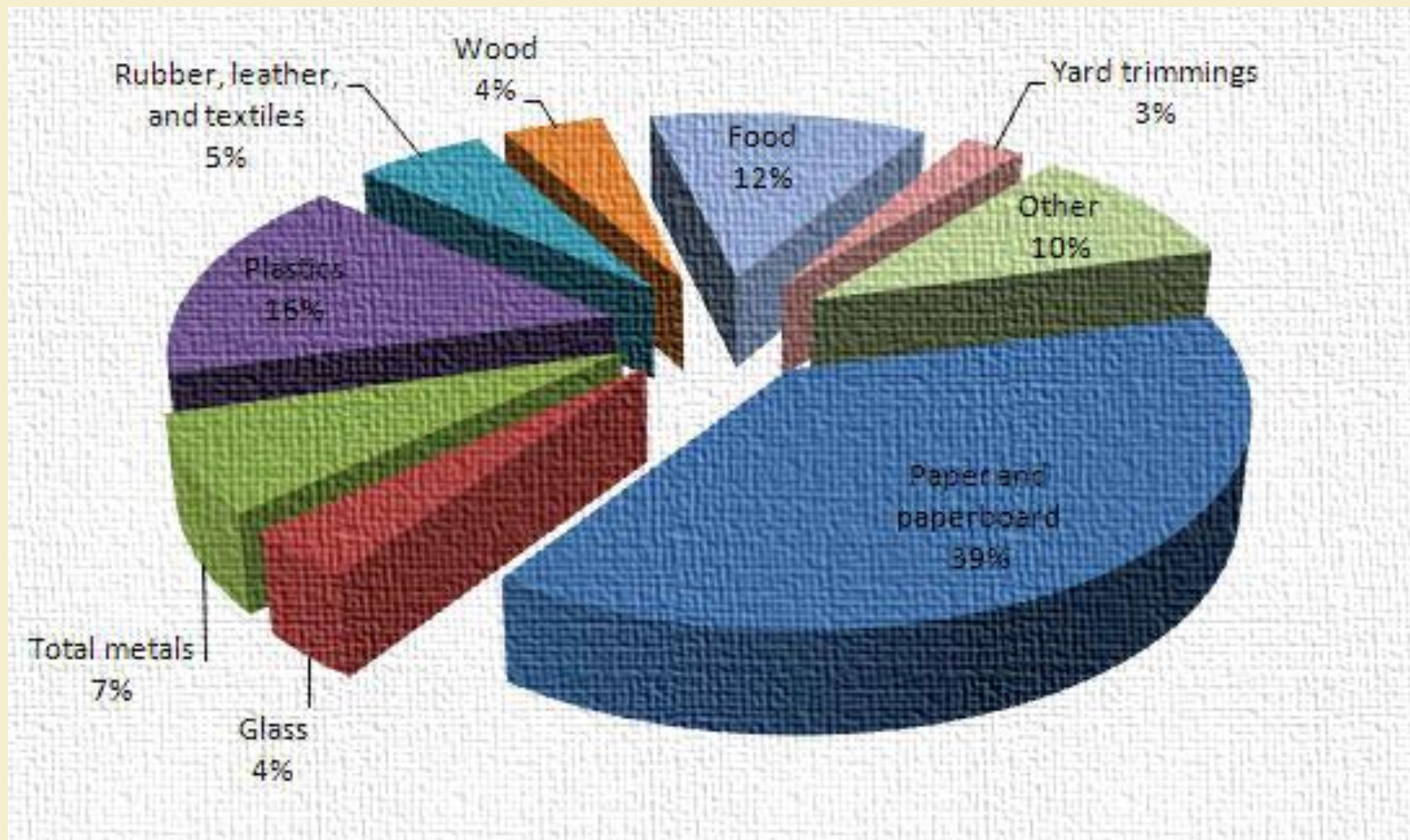
Hoornweg and Bada-Tata 2012

លក្ខណៈសម្បត្តិនៃសំណល់រឹង

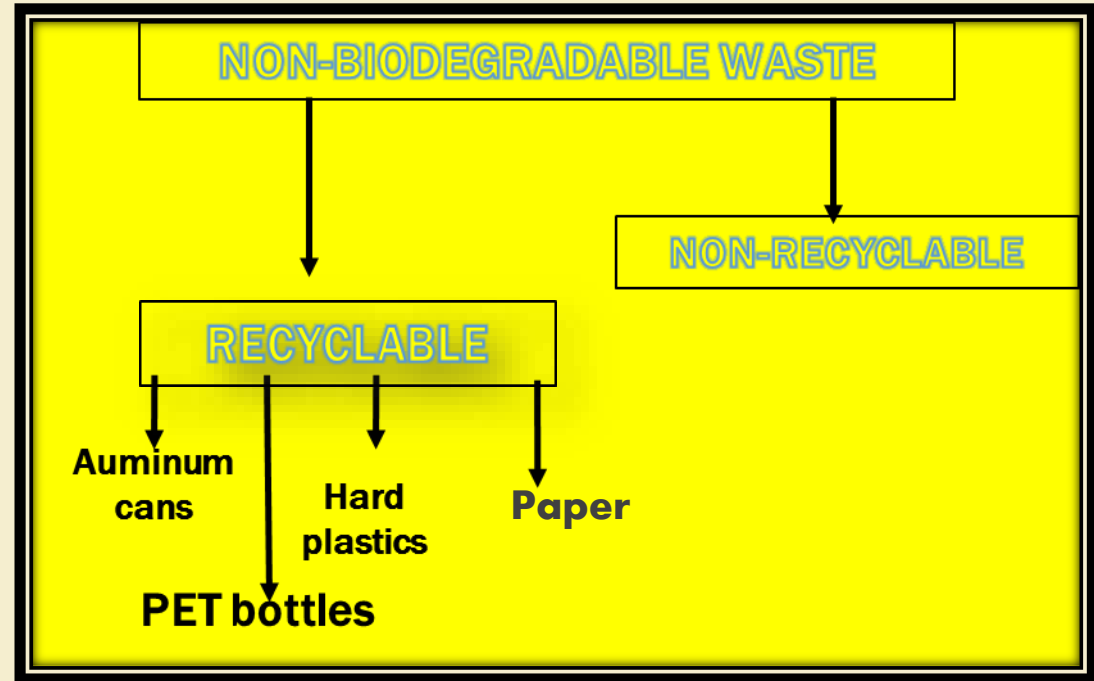
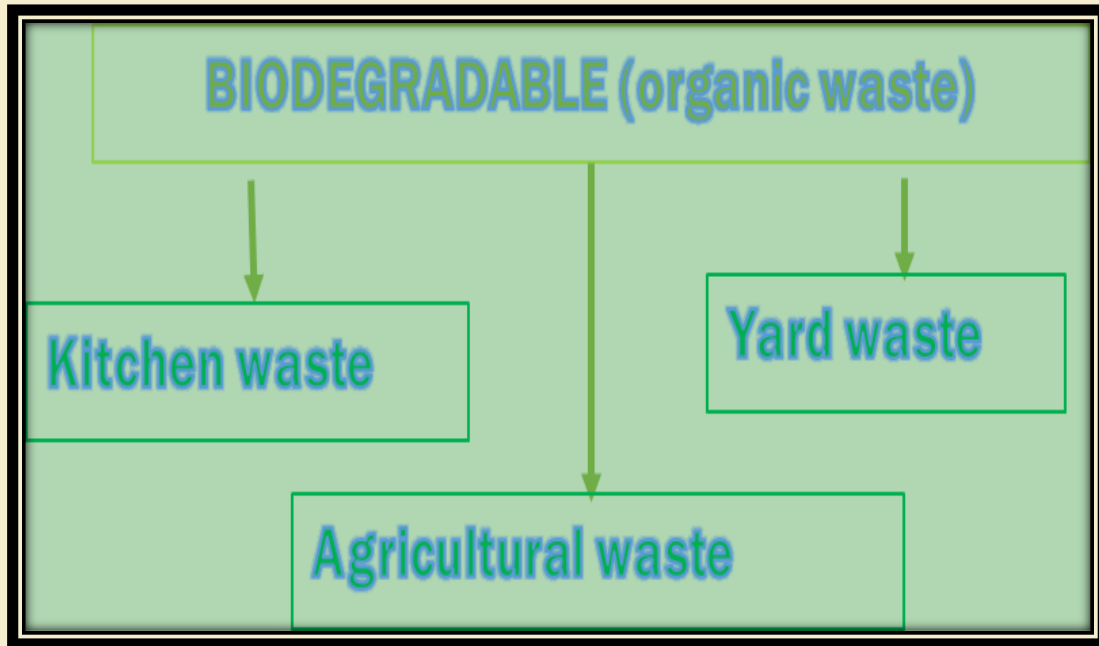
- ១) សមាសភាព
- ២) ជាតិទឹកក្នុងសំណល់
- ៣) ដង់ស៊ីតេ
- ៤) សម្លេងកាល់ឡូរី

តើហេតុអ្វីយើងចង់ដឹងនូវចំណុចទាំងនេះ ?

សមាសភាពសំណល់រឹង



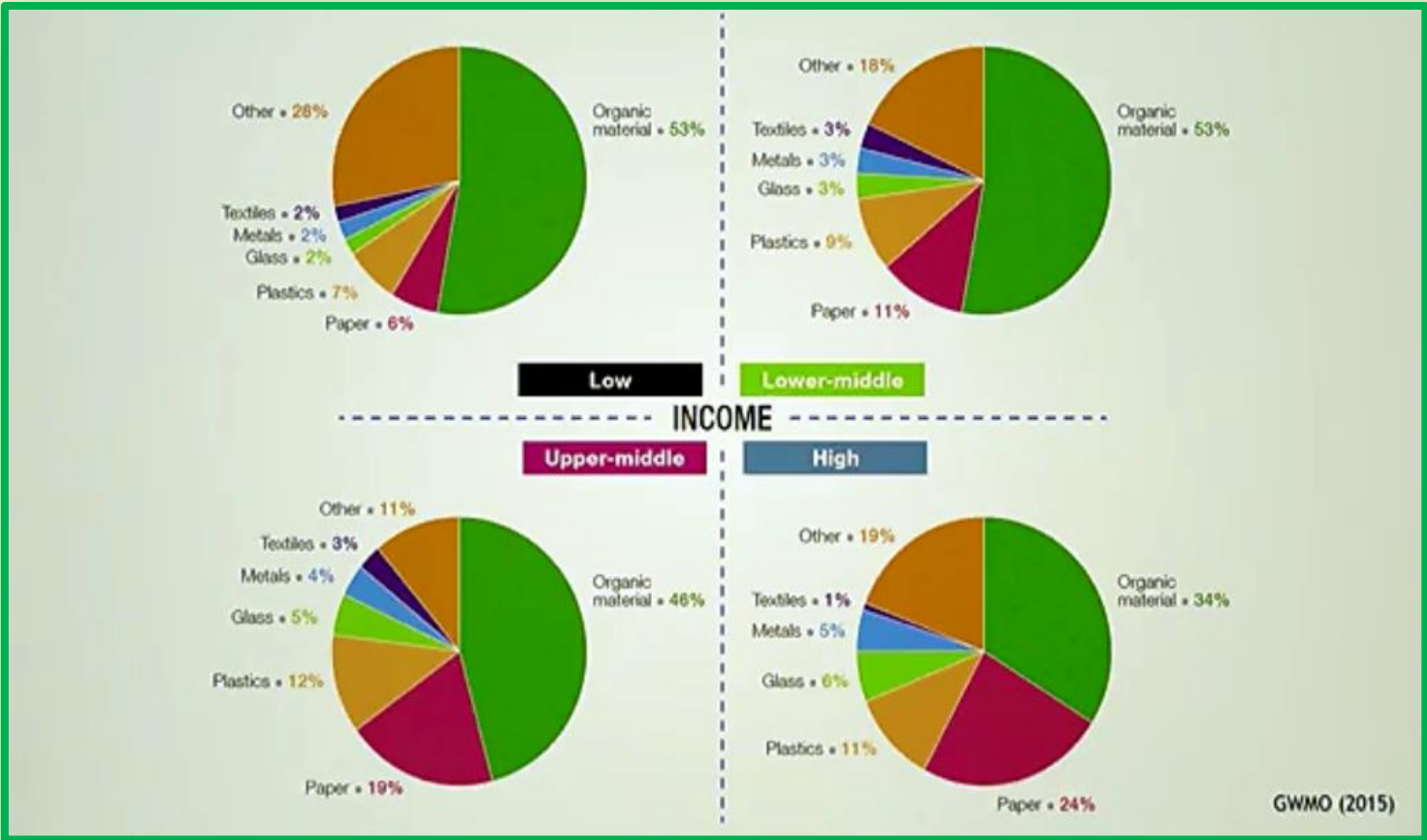
សមាសភាពសំណល់រឹង



ឧទាហណ៍នៃសមាសភាពសំណល់រឹង

នៅក្នុងឧទាហណ៍នេះ៖

- ប្រទេសមានចំណូលទាប មានសំណល់សរុបខ្ពស់ជាងប្រទេសមានចំណូលខ្ពស់
- ផ្ទុយទៅវិញប្រទេសមានចំណូលខ្ពស់មានសំណល់ពីការវេចខ្ចប់ក្រីដាស និងផ្លាស្ទិកខ្ពស់ជាងប្រទេសមានចំណូលទាប
- ត្រូវចងចាំថាសមាសភាពសំណល់រឹងមានភាពខុសគ្នាទៅតាមទីតាំង ឬតំបន់



សមាសភាពសំណល់នៅក្នុងទីក្រុងភ្នំពេញ

Commercial Waste Composition (%)

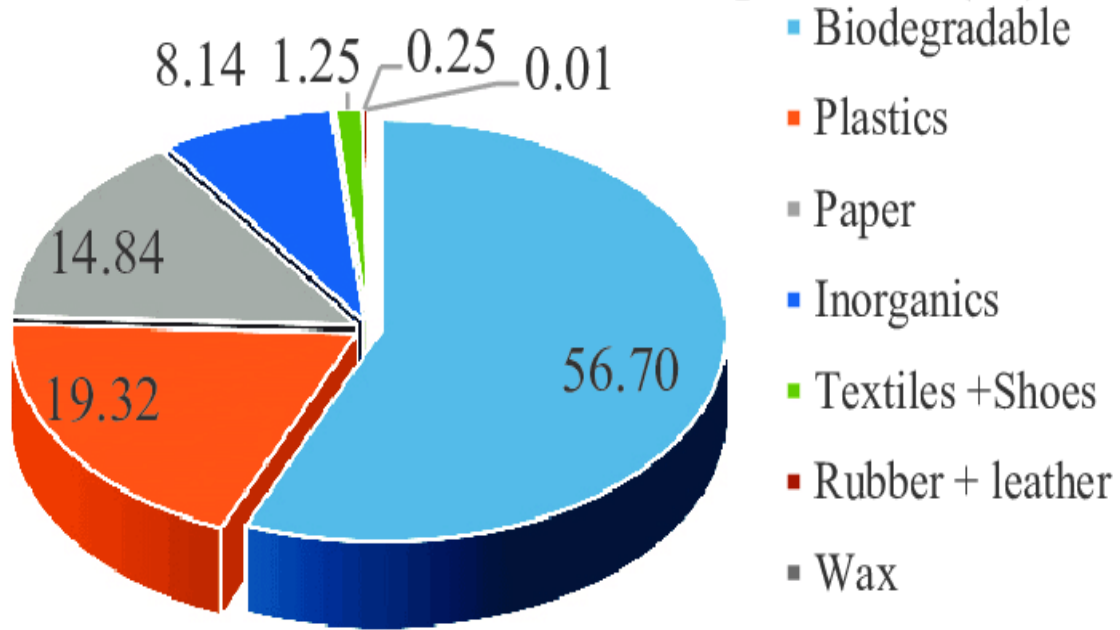
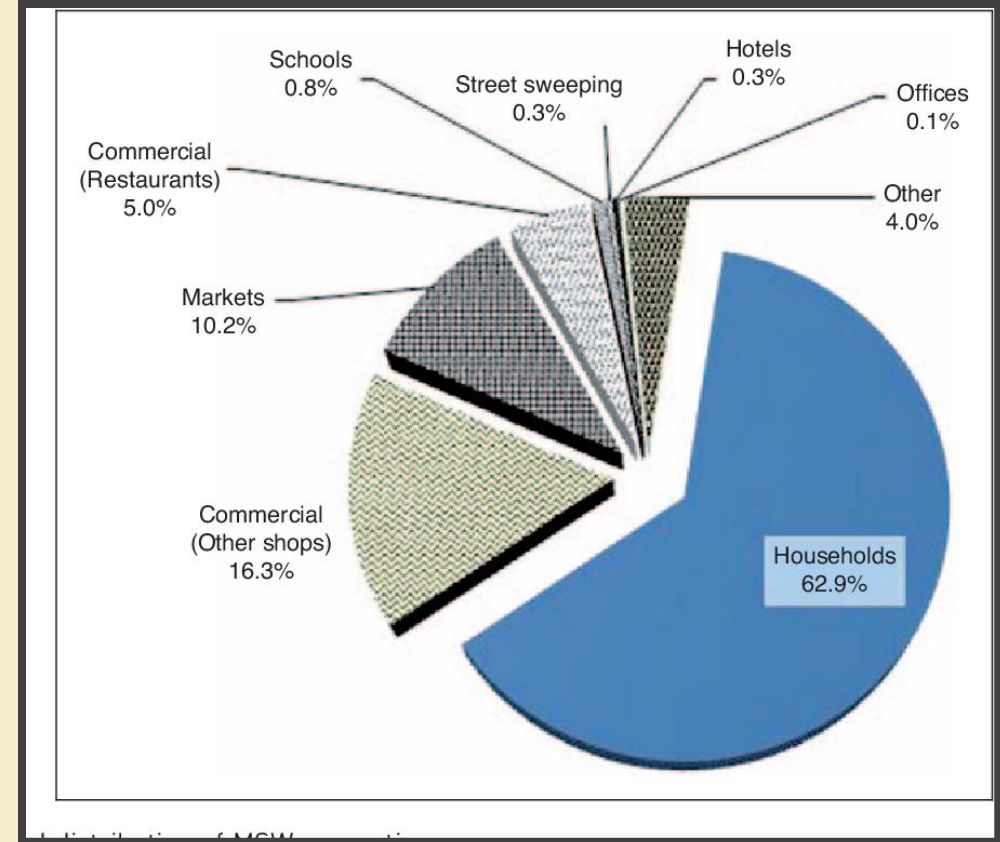


Figure by Yim Mongtoeun in [A Study of Commercial Solid Waste Generation and Composition in Phnom Penh City, CAMBODIA](https://www.researchgate.net/publication/264084303_A_Study_of_Commercial_Solid_Waste_Generation_and_Composition_in_Phnom_Penh_City_CAMBODIA/figures?lo=1), July 2014 (accessed from https://www.researchgate.net/publication/264084303_A_Study_of_Commercial_Solid_Waste_Generation_and_Composition_in_Phnom_Penh_City_CAMBODIA/figures?lo=1, January 13, 2020).



Source: Municipal solid waste management in Phnom Penh, capital city of Cambodia by [Bunrith Seng](https://www.semanticscholar.org/paper/Municipal-solid-waste-management-in-Phnom-Penh%2C-of-Seng-Kaneko/c165aac1f9b2f5344362f243cabca5e64d795fef), et al. 2011. accessed from <https://www.semanticscholar.org/paper/Municipal-solid-waste-management-in-Phnom-Penh%2C-of-Seng-Kaneko/c165aac1f9b2f5344362f243cabca5e64d795fef> on January 13, 2020.

សំនួរ

១. ហេតុអ្វីវាមានសារៈសំខាន់ដើម្បីដឹងពីសមាសភាពសំណល់
រឹងនៃទីក្រុំ/ក្រុងមួយ ?

លក្ខណៈផ្សេងៗទៀតនៃសំណល់

Properties	Low Income Country	Middle Income Country	High Income Country
Moisture content %	40-80	40-60	20-30
Density in Truck (kg/m ³)	250-500	170-330	100-170
Lower Calorific Value (kcal/kg)	800-1000	1000-1300	1500-2700



បរិមាណទឹកក្នុងសំរាម

បរិមាណទឹកក្នុងសំរាម គឺជាលក្ខណៈរូបនៃសំណល់បញ្ជាក់ពីបរិមាណទឹកក្នុងសំណល់

វាជាចំនួនសំខាន់នៅពេលគេនិយាយពីការបំបែកសំណល់ទៅជាថាមពលជាពិសេស
ការផលិតឧស្ម័នមេតានពីព្រោះបរិមាណទឹកនេះប៉ះពាល់ដល់ការបំបែកធាតុដោយបាក់
តេរីជាពិសេសសំណល់សរីរាង្គ។

លទ្ធផលនៃការវិភាគបរិមាណទឹកក្នុងសំណល់គេអាចប្រើដើម្បីវាយតម្លៃភាពសមស្រប
នៃការធ្វើដំកំប៉ុស្តរួត ការបំបែកដោយគ្មានខ្យល់ ការកែច្នៃ និងការទាញយកថាមពល។

សូមចំណាំថាសំណល់សើមនឹងត្រូវការបាក់តេរីច្រើនជាងសំណល់ស្ងួត។

ដង់ស៊ីតេសំណល់

ដង់ស៊ីតេ គឺជាលក្ខណៈរូបនៃសំណល់បញ្ជាក់ពីទំងន់គិតជាមាឌ (គ.ក្រ/ម^៣) (kg/m³).

ប៉ារ៉ាម៉ែត្រនេះត្រូវការដើម្បីរៀបចំកម្មវិធីគ្រប់គ្រងសំណល់រឹង។ ការកាត់បន្ថយមាឌទទួលបាន៧៥%តាមរយៈឧបករណ៍បង្គាប់ធម្មតា។

ដង់ស៊ីតេមានសារៈសំខាន់ក្នុងការរៀបចំទីលានព្រមទាំងការស្កេន ការប្រមូល និងដឹកជញ្ជូន។ កម្រិតបង្កើនទីលានឱ្យមានប្រសិទ្ធភាពត្រូវការការបង្កាប់សមស្រប។

តម្លៃកាល់ឡូរី ឬតម្លៃកំដៅ

- វាអាស្រ័យលើសមាសភាពសំណល់
- ចំនុចនេះសំខាន់នៅពេលគិតគូរពីការដុត ឬការទាញយកចំណូល (RDF) ឬអ្វីៗដែលបំប្លែងទៅជាថាមពលដទៃទៀត។
- ការវាយតម្លៃពីសក្តានុពលនៃសំណល់សម្រាប់ការប្រើជាឥន្ធនៈនៅក្នុងឡដុតត្រូវការកំណត់តម្លៃកំដៅរបស់វា ដែលគិតជា kilo joules/kilo grams (kj/kg) .
- តម្លៃកំដៅត្រូវបានកំណត់តាមរយៈការពិសោធន៍ដោយប្រើប្រាស់ម៉ាស៊ីន bomb calorimeter ដែលក្នុងនោះកំដៅត្រូវបានបង្កើតឡើងនៅសីតុណ្ហភាព 25°C ពីចំហេះនៃសំណល់ស្ងួត។ តម្លៃកំដៅមានសារៈសំខាន់ក្នុងការវាយតម្លៃនៃដំណើរការចំហេះដែលជាមធ្យោបាយនៃការទាញយកថាមពលឬមិនយក។

ការស្តុកទុក

២. ការស្តុកទុក – ជាប្រព័ន្ធនៃសកម្មភាពរក្សាទុកសំណល់ក្រោយពីបោះចោលមុនគេប្រមូល និងបោះចោលទីលាន។



ការប្រមូល

៣. ការប្រមូល - សំដៅលើថា គឺសំណល់ត្រូវបានប្រមូលដោយ របៀបណាមុនពេលយកទៅចាក់ចោល



ការដឹកជញ្ជូន

៤. ការដឹកជញ្ជូន – ជាដំណាក់កាលដែលសំណល់ត្រូវបានដឹកយកទៅទីលានចាក់.



ការបោះចោល

៥. ការបោះចោល – ជាដំណាក់កាលចុងក្រោយនៅពេលដែលគេយកទៅបោះចោលចុងក្រោយ (ទីលាន) ដែលហានិភ័យត្រូវបានកាត់បន្ថយ។



លក្ខណៈទូទៅសម្រាប់ការជ្រើសរើសទីតាំងទីលាន

- កំរិតទឹកក្រោមដី
- ផ្ទៃដីធំ
- មិននៅឆ្ងាយពេកពីប្រភពបញ្ចេញ
- នៅឆ្ងាយពីទន្លេ
- នៅឆ្ងាយពីផ្ទះប្រជាជន
- ឆ្ងាយពីព្រលានយន្តហោះ

- នៅជិតផ្លូវ
- នៅឆ្ងាយពីតំបន់ archaeological, religious or cultural sites of importance
- នៅឆ្ងាយពីតំបន់មានប្រភេទផ្សេងៗដែលងាយរងគ្រោះ និងបង្កើតកូន
- ងាយតភ្ជាប់បណ្តាញទឹក ភ្លើង
- មិនមានគ្រោះធម្មជាតិ



ការធ្វើឱ្យប្រសើរឡើងនៃការប្រមូល និងដឹកជញ្ជូន

មានគោលបំណងធំៗ២៖

១. កែលម្អសេវាកម្ម

២. កាត់បន្ថយតម្លៃ

ការធ្វើឱ្យប្រសើរឡើងនៃការប្រមូល និងដឹកជញ្ជូន

ហេតុអ្វីចាំបាច់ធ្វើឱ្យប្រសើរឡើងនៃការប្រមូល និងដឹកជញ្ជូន ?

១. ដើម្បីកាត់បន្ថយចំងាយរថយន្តដឹកសំណល
២. ដំណោះស្រាយផ្លូវប្រមូលដើម្បីរថយន្តដឹកបានពេញ១០០%នៅចុងផ្លូវ និងកាត់បន្ថយពេលវេលានិងចំងាយ (kilometers)
៣. ដើម្បីកំរិតការប្រមូលនៅតាមផ្លូវធំៗ
៤. ដើម្បីកាត់បន្ថយចំនួននៃចំនុចប្រមូល និងជៀសវាងប្រព័ន្ធការប្រមូលពីផ្ទះមួយទៅផ្ទះមួយ
៥. ដើម្បីកំណត់ចំងាត់អតិបរមាសម្រាប់ប្រជាជនពីធុងសំរាម ១០០ម ឬ២០០ម។



យុទ្ធសាស្ត្រក្នុងការធ្វើឱ្យប្រសើរនូវការប្រមូល និងដឹកជញ្ជូន សណាលរង

១. រៀបចំការថែទាំរថយន្តដឹក និងធុងដើម្បីកាត់បន្ថយការខូចញឹកញាប់
២. ប្រតិបត្តិការ២ ឬ៣វេនក្នុងមួយថ្ងៃ – ជាការសម្រេចចិត្តមួយ – ឬ៦ ឬ៧ថ្ងៃក្នុងមួយសប្តាហ៍
៣. បើកដំណើរការនៅក្រៅក្រុងនៅម៉ោងមហាឹក ឬបង្កើតសានីយ៍ផ្ទេរសម្រាប់ការដឹកជញ្ជូនផ្លូវឆ្ងាយ និងរៀបចំការដឹកជញ្ជូនជាមួយរថយន្តធំ និងតម្លៃថោក (ឡាន៤០តោន) ។
៤. កែលម្អនូវការគ្រប់គ្រងសេវាកម្ម

តើយើងធ្វើយ៉ាងម៉េចដើម្បីស្របតាមយុទ្ធសាស្ត្រទាំងនេះ ?

១. ធ្វើការសិក្សាផង និងអនុវត្តផង Conduct a TIME AND MOTION STUDY

២. ធ្វើការវិភាគ និងសិក្សាពីលក្ខណៈសំណល់ (WACS)

៣. សិក្សា និងវិភាគប្រព័ន្ធគ្រប់គ្រងសំណល់នៅក្នុងតំបន់របស់ខ្លួន

សូមចំណាំថាការសិក្សាទាំងនេះត្រូវការលុយដូច្នេះត្រូវតែត្រៀមលុយសម្រាប់ធ្វើវា

តើធ្វើដូចម្តេចដើម្បីកែលម្អការគ្រប់គ្រង និងសេវាកម្ម ប្រមូលសំណល់រឹង ?

ក្រោយការសិក្សា (ស្ទាយមុន) បានធ្វើ និងការវិភាគបានបញ្ចប់ យើងត្រូវ៖

១. ត្រូវកំណត់ប្រព័ន្ធច្បាប់ថ្មី
២. កំណត់ពីកត្តាធាតុរូបសម្បជាន
៣. កំណត់កាតព្វកិច្ចអ្នកជំនួញ
៤. កំណត់កាតព្វកិច្ចក្រុមហ៊ុនសំណង់ដែលបញ្ចេញសំណល់
៥. កំណត់កាតព្វកិច្ចនៃក្រុមប្រមូល

តើធ្វើដូចម្តេចដើម្បីកែលម្អការគ្រប់គ្រង និងសេវាកម្ម ប្រមូលសំណលរង ?

១. រៀបចំការគ្រប់គ្រងឱ្យបានល្អទាំងរំពេច និងយប់ ដោយមានការរាយការណ៍ពីទិន្នន័យចាស់ ហើយប្រើទិន្នន័យនេះដើម្បីកែលម្អសេវាកម្ម
២. រៀបចំការបណ្តុះបណ្តាលបុគ្គលិក៖ អ្នកបើកបរ កម្មករ និងអ្នកគ្រប់គ្រង
៣. រៀបចំយុទ្ធនាការទំនាក់ទំនងដើម្បីជូនដំណឹងដល់ប្រជាជនពីសេវាកម្មថ្មី ពីតារាងសេវាកម្មថ្មី ច្បាប់ថ្មី កាតព្វកិច្ចពួកគាត់ និងការបង់ថ្លៃសេវាកម្ម។ល។

បទបង្ហាញបន្ទាប់
ការកែច្នៃសម្រាម

UP NEXT
RECYCLING





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង របៀង ខាងត្បូង

GMS: Southern Economic Corridor Towns Development Project

សេចក្តីណែនាំអំពីទីតាំងទីលានព្រែកសម្រាម៖ ទិដ្ឋភាពទូទៅ

INTRODUCTION TO MATERIAL RECOVER FACILITY: AN OVERVIEW

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



និយមន័យនៃទីលានវិញ្ញាបកសំរាម

ទីលានជាកន្លែងប្រមូលកាកសំណល់ បន្ទាប់មកវិញ្ញាបក ដំណើរការ និងរក្សាទុកជាបណ្តោះអាសន្ន តាមវិធីដោយប្រើដៃ និង / ឬមេកានិច ហើយត្រូវបានលក់ទៅឱ្យក្រុមហ៊ុនកែច្នៃ។ កាកសំណល់ដែលប្រមូលបានគឺជាវត្ថុធាតុដើមដែលអាចកែច្នៃឡើងវិញបានដូចជា ក្រដាស កែវ ប្លាស្ទិក និងលោហធាតុ។

DEFINITION OF MATERIAL RECOVERY FACILITY

A facility where refuse solid materials are gathered then separated, process and stored temporarily in manual and/or mechanical method and later sold to recycling or manufacturing companies. Waste gathered are recyclable materials such as paper, glass, plastics and metals.



ប្រភពនៃកាកសំណល់

Sources of Solid Waste



និយមន័យនៃពាក្យគន្លឹះ

- a. ការបំបែកជីវឧស្ម័ន - កាកសំណល់សរីរាង្គរួមមានកាកសំណល់អាហារ និងក្រដាសដែលអាចបំបែកដោយមីក្រូសរីរាង្គ ងាយចូលទៅក្នុងសមាសធាតុ ដូចជាកាបូនឌីអុកស៊ីត និងទឹក។ ទីតាំងនេះជួយសម្រួលឱ្យសំរាមកែច្នៃមួយចំនួនទៅជាដីកំប៉ុស។
- b. លក្ខណៈនៃលំហូរសម្រាមចុងក្រោយ - ដំណើរការនៃការកំណត់កាកសំណល់នៅចុងក្រោយនៃការប្រមូលសំរាម ដែលជាទូទៅត្រូវបានធ្វើឡើងនៅទីលានចាក់សំរាមអនាម័យ។ ជាលទ្ធផលផ្តល់នូវទិន្នន័យស្តីពីបរិមាណ និងគុណភាពនៃសំរាមកែច្នៃ ដែលអាចកែច្នៃនិងរកឃើញនៅទីលានព្រែកសំរាម (MRFs) ។
- c. ការព្រែកដោយដៃ - ការព្រែកវត្ថុធាតុដែលអាចកែច្នៃឡើងវិញបានឬការព្រែកកាកសំណល់ជីវឧស្ម័នដោយដៃ។

Definition of key terms

- a. **Biodegradables** – organic materials which include food wastes and paper that can be broken down by microorganisms into simpler, more stable compounds such as carbon dioxide and water. This property allows these materials to be transformed into compost.
- b. **End-of-pipe waste characterization** – process of determining waste composition at the end of waste collection, which is usually conducted at dumpsites or sanitary landfills. The results provide data on the amount and quality of recyclables that can be processed and recovered at materials recovery facilities (MRFs).
- c. **Manual separation** – separation of recyclable or biodegradable components of waste by hand sorting.

និយមន័យនៃពាក្យគន្លឹះ

- d. ការបំបែកសំណល់មេកានិច - ការបំបែកសំណល់ដែលអាចកែច្នៃឡើងវិញបាន ឬការបំបែកសំណល់ជីវឧស្ម័ន ឆ្លងការប្រើប្រាស់ឧបករណ៍មេកានិច ដូចជា trommels, screens និងឧបករណ៍បំបែក។
- e. ទីលានបំបែកសំណល់ - ជាកន្លែងទទួលសំណល់រឹងក្រុងដែលអាចកែច្នៃ ត្រូវបានយកមកកែច្នៃនិងបំបែកដោយដៃនិង / រឺមេកានិច។ សំណល់កែច្នៃមានដូចជាក្រដាស កែវ ប្លាស្ទិក និងលោហធាតុ ដែលសង្កត់រួចត្រូវរក្សាទុកកន្លែងស្តុកបណ្តោះអាសន្ន ទុកសម្រាប់លក់ទៅឱ្យក្រុមហ៊ុនកែច្នៃ ឬផលិត។ កាកសំណល់ដែលនៅសល់ត្រូវបានគេបោះចោលទៅក្នុងកន្លែងចាក់សំណល់អនាម័យ។ ទីលានបំបែកសំណល់ អាចដំណើរការបំបែកសំណល់ ឬកាកសំណល់ចម្រុះដែលក្នុងករណីនេះសំណល់អាចកែច្នៃបាន អាចត្រូវបានកែច្នៃទៅជាដីកំប៉ុសនៅក្នុងរោងចក្រមួយផ្សេងទៀត។

Definition of key terms

- d. **Mechanical separation** – separation of recyclable or biodegradable components of waste through the use of mechanical equipment such as trommels, screens, and separators.
- e. **Materials Recovery Facility** – a facility where recyclable municipal solid waste is processed and separated using manual and/or mechanical methods. The recovered materials may include paper, glass, plastics, and metals, which are baled, temporarily stored, and eventually sold to recycling or manufacturing firms. The remaining residual wastes are then disposed of into a sanitary landfill. MRFs can process either source-separated recyclables or mixed wastes, in which case the biodegradable components can be processed into compost in another facility.

និយមន័យនៃពាក្យគន្លឹះ

- f. តុល្យភាពទម្ងន់ - ការអនុវត្តនៃការតាមដានចំនួន ក្នុងការគ្រប់គ្រងកាកសំណល់រឹង ដែលបរិមាណ សំរាមចូលនិងចេញពីទីលាន ដើម្បីប៉ាន់ប្រមាណ ក្នុងការធ្វើផែនការ និងប្រតិបត្តិការ។
- g. កាកសំណល់រឹងទីក្រុង - កាកសំណល់ដែលចេញពី លំនៅដ្ឋាន ស្ថាប័ន និងគ្រឹះស្ថានពាណិជ្ជកម្មនិង អាជីវកម្មឯកជន។ ទាំងនេះរួមបញ្ចូលទាំង ក្រដាស ប្រភេទចំណីអាហារ សំរាមក្នុងទីវាលកំប៉ុង សំណប៉ាហាំង ដប ប្លាស្ទិក ប៉ូន្តែមិនមែនជាកាក សំណល់ឧស្សាហកម្ម និងសំណល់គ្រោះថ្នាក់។

Definition of key terms

- f. **Mass balance** – an application of the conservation of mass in solid waste management, where the quantity of inputs and outputs of an MRF are estimated to guide planning and operation.
- g. **Municipal solid waste** – waste generated by residences, institutions, and commercial and business establishments. This includes paper, food items, yard waste, tin cans, bottles, plastics but not industrial and hazardous waste.

និយមន័យនៃពាក្យគន្លឹះ

- h. **Polyethylene terephthalate (PET)** - ជាវត្ថុធាតុច្បាស្ទិកដែលប្រើជាទូទៅដើម្បីធ្វើដប/ប្រអប់ សម្រាប់អាហារ ភេសជ្ជៈ ឱសថ និងផលិតផលរាវផ្សេងទៀត។ លេខកូដច្បាស្ទិកស្តង់ដារសម្រាប់ PET គឺលេខ ១៖
- i. **Polypropylene** - វត្ថុធាតុច្បាស្ទិកដែលត្រូវបានប្រើសម្រាប់ធ្វើកៅអី ប្រអប់ទឹកដោះគោ កាបូប កម្រាលព្រំនិងកន្ទួល។ លេខកូដច្បាស្ទិកស្តង់ដារសម្រាប់ប៉ូលីប្រូភីលីន (Polypropylene) គឺលេខ ៥ ។
- j. **ការកែច្នៃឡើងវិញ** - វត្ថុធាតុដែលបម្រើគោលបំណង ប៉ុន្តែនៅតែមានលក្ខណៈរូបវន្ត ឬគីមី ដែលអាចយកមកប្រើឡើងវិញ ឬកែច្នៃឡើងវិញ ជាវត្ថុធាតុដើមសម្រាប់ផលិតផលថ្មី។ ឧទាហរណ៍ រួមមាន ក្រដាស កែវ លោហធាតុ ក្រដាសកាតុងនិងធុងច្បាស្ទិក។

Definition of key terms

- h. **Polyethylene terephthalate (PET)** – a plastic material commonly used to make bottles for food, beverages, pharmaceutical, and other liquid products. The standard plastic code for PET is #1.
- i. **Polypropylene** – a plastic material that is used to manufacture chairs, dairy tubs, bags, ropes, carpets, and mats. The standard plastic code for polypropylene is #5.
- j. **Recyclables** – materials that have served their original purpose but still have useful physical or chemical properties that can be reused or reprocessed as materials for new products. Typical examples include paper, glass, metals, cardboard, and plastic containers.

Source: ADB. 2013. MATERIALS RECOVERY FACILITY TOOL KIT

និយមន័យនៃពាក្យគន្លឹះ

- k. **សំណល់** - កាកសំណល់រឹងដែលមិនមានតម្លៃដែលត្រូវទុកចោល បន្ទាប់ពីដំណើរការបំបែកនៅក្នុងទីលាន ។ ទាំងនោះរួមមាន កញ្ចក់ខូចៗ វាយនភ័ណ្ឌ កៅស៊ូ សេរ៉ាមិចផ្លាស្ទិច បំណែកបេតុង និងដី និងរបស់ផ្សេងទៀត។
- l. **ការបែងចែកប្រភព** - ការបែងចែកដីឧស្ម័ន និងសំណល់អាចកែច្នៃឡើងវិញបាន ពីកាកសំណល់ទូទៅ មុនពេលពួកគេត្រូវបានប្រមូលទៅទីលានដើម្បីជួយសម្រួលដល់ការកែច្នៃ និងដឹកប៉ុស។

Definition of key terms

- k. **Residuals** – waste materials with no commercial value that are left out after the segregation process in an MRF. These include broken glass, textile, rubber, ceramics, worn-out plastics, concrete fragments, and soil, among others.
- l. **Source separation** – the segregation of biodegradable and recyclable materials from the waste stream at the point of generation before they are collected to facilitate reuse, recycling, and composting.

និយមន័យនៃពាក្យគន្លឹះ

- m. ការសិក្សាអំពីប្រភេទកាកសំណល់ (WACS) - ដំណើរការ ដែលសមាសភាពដោយទំងន់នៃសំណល់រាវក្រុង ត្រូវបានកំណត់ទាក់ទងនឹងវត្ថុធាតុដូចខាងក្រោម៖ ប្លាស្ទិក ក្រដាស កែវ ដែក លោហៈ វាយនភ័ណ្ឌ សំណល់អាហារ បោះចោលតាមស្ពានច្បារ និងសំណល់ ផ្សេងៗទៀត។ វាក៏បង្កើតអត្រានៃកាកសំណល់ក្នុង សហគមន៍ តំបន់ទីក្រុង ទាក់ទងនឹងចំនួន គឺឡូក្រាមក្នុងមួយថ្ងៃ សម្រាប់មនុស្សម្នាក់។
- n. ការបញ្ចេញកាកសំណល់ - ដំណើរការនៃការបញ្ចេញកាកសំណល់ចេញពីទីលានចាក់សំរាមអនាម័យ ឬទីលានចោលសំរាម តាមរយៈការបែងចែក និងការកែច្នៃឡើងវិញនូវវត្ថុធាតុដែលអាចកែច្នៃឡើងវិញ ការធ្វើដីកំប៉ុសនិងការ។ បរិមាណបង្វែរត្រូវបានវាស់ដោយទម្ងន់ជាធម្មតាគិតជាតោនឬគីឡូក្រាម។

Definition of key terms

- m. **Waste characterization study (WACS)** – a process whereby the composition by weight of municipal solid waste is determined in terms of the following components: plastic, paper, glass, metal, textile, discarded food materials, garden trimmings, and other materials. It also establishes the rate of waste generation of a particular community, town, or city in terms of kilograms per day per person.
- n. **Waste diversion** – process of diverting waste from a sanitary landfill or disposal site through segregation and recovery of recyclable materials, composting, and treatment. The diverted amount is measured by weight, usually in tons or kilograms.

សមាសធាតុនៃប្រព័ន្ធគ្រប់គ្រងកាកសំណល់រឹង

Components of a solid waste management system

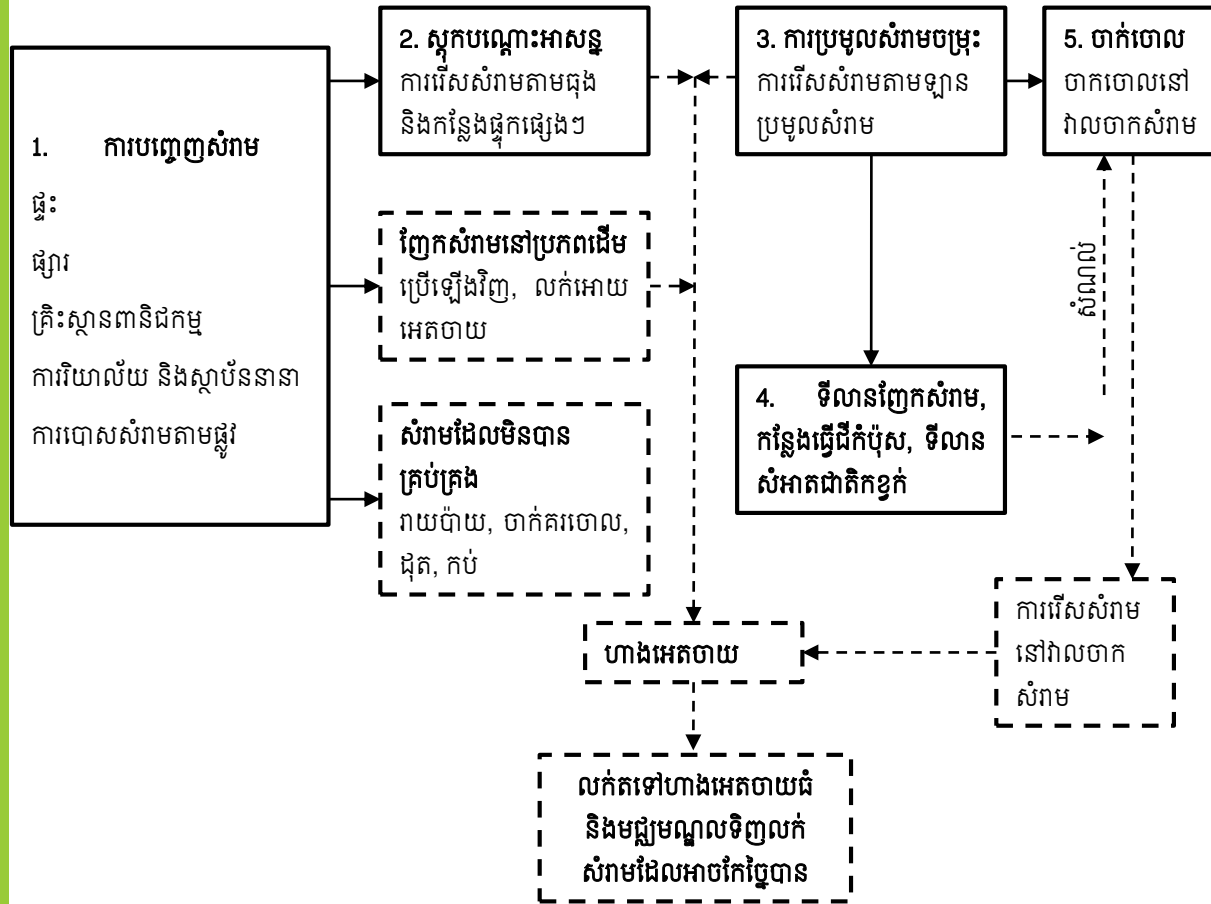
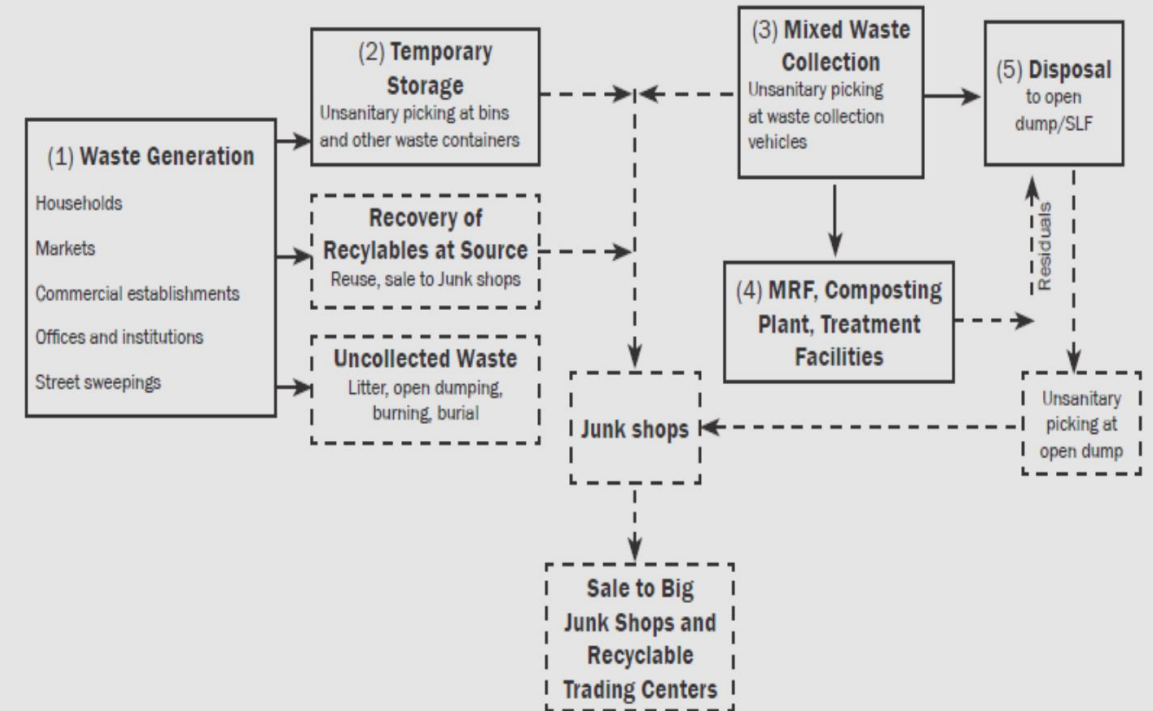


Figure 1 Components of a Solid Waste Management System



MRF = materials recovery facility, SLF = sanitary landfill.

Source: ADB. 2010. Technical Assistance for the Greater Mekong Subregion: Preparing the Corridor Towns Development Project. Manila. (TA 7644-REG) MRF Subprojects.

ប្រភេទនៃការស្តារវត្ថុធាតុដើម គ្រឿងបរិក្ខារ

ស្អាតឬប្រភពដាច់ដោយឡែក

Clean or source separated



Types of Materials Recovery Facilities

កខ្វក់ឬមិនប្រភពត្រូវបានបំបែកចេញពីគ្នា

dirty or non-source separated



អាជីវកម្មនៃការកែច្នៃសំរាម

អាជីវកម្មនៃការកែច្នៃសំរាមពាក់ព័ន្ធនឹងសកម្មភាពសំខាន់ៗគឺ ការទិញនិងលក់។ វាពាក់ព័ន្ធនឹងការកំណត់: ប្រភេទនៃសំរាមដែលអាចកែច្នៃបាន ដែលអាចរកបានយ៉ាងងាយស្រួលនូវ បរិមាណនិងប្រាក់ចំណេញ ដំណើរការនៃការប្រមូល និង "អ្នកទិញ" ដែលនឹងផ្តល់ឱ្យអ្នកនូវតម្លៃដ៏ល្អបំផុត គ្រោងការណ៍ដឹកជញ្ជូន និងលក្ខខណ្ឌទូទាត់ប្រាក់។ ចំពោះសកម្មភាពទាំងនេះ ទីលានញែកសំរាម គឺចាំបាច់ដើម្បីផ្ទុកនូវសំរាមដែលអាចកែច្នៃបាន។

The BUSINESS OF RECYCLING

The business of recycling involves two main activities: buying and selling. It involves determining: the types of recyclables which are easily available in volume and profitable; the process of collecting them; and the "buyers" who will give you the best price, hauling scheme, and payment terms. For these activities, an MRF is necessary to contain the recyclables.

អាជីវកម្មនៃការកែច្នៃសំរាម

ភាពជាដៃគូជាមួយអ្នករើសសំរាមក្រៅផ្លូវការ

ដោយមើលឃើញថាសំរាមជាធនធានមួយ ដែលអាចត្រូវគ្រប់គ្រងបាន ជាជាងទុកជាបញ្ហា អ្នករើសសំរាមអាចចូលរួមយ៉ាងមានប្រសិទ្ធភាពនៅក្នុងកម្មវិធីផ្លូវការនៃការគ្រប់គ្រងសំណល់រឹង ដោយចាត់ទុកពួកគាត់ជាដៃគូរបស់យើងក្នុងការប្រមូល និងកែច្នៃកាកសំណល់រឹង។

នៅក្នុងដំណើរការនេះ ការស្តារឡើងវិញនូវសំណល់ដែលអាចកែច្នៃបានដោយអ្នករើសសំរាម បានក្លាយជាផលប្រយោជន៍ផ្នែកសេដ្ឋកិច្ច មិនត្រឹមតែចំពោះពួកគេ និងបរិស្ថានប៉ុណ្ណោះទេ ប៉ុន្តែថែមទាំងដល់រដ្ឋាភិបាលថ្នាក់តំបន់ ដែលអាចសន្សំសំចៃលើថ្លៃដឹកជញ្ជូន និងថ្លៃចាក់ចោល។

The BUSINESS OF RECYCLING

INFORMAL WASTEPICKERS AS PARTNERS

By looking at waste as a resource to be managed rather than a problem, the waste pickers can be effectively integrated into the formal SWM program by looking at them as our partners in collecting and recycling solid wastes.

In the process, the recovery of recyclables by the waste pickers becomes economically beneficial not only to them and the environment, but also to the local governments, who would save on hauling and disposal costs.

អាជីវកម្មនៃការកែច្នៃសំរាម

ការប្រើប្រាស់សក្តានុពលភាពជាដៃគូរដ្ឋ-ឯកជន (PPP), ភាពជាដៃគូជាមួយ LGU គួរតែត្រូវបានរកឃើញនៅក្នុងការអនុវត្តនៃកម្មវិធីគ្រប់គ្រងសំណល់រឹងថ្នាក់តំបន់។ ការរៀបចំអាចត្រូវបានធ្វើឡើង ដើម្បីឱ្យសហគ្រាសអាចទទួលបានធនធាននៃទីភ្នាក់ងារសាធារណៈ ដូចជាការផ្តល់ដីជាដើម / ក្នុងករណីនេះការផ្តល់នូវ ទីលានបោះសំរាម ដែលបានត្រៀមរួចជាស្រេច និងជំនួយលើតម្រូវការនៃការអនុញ្ញាតក្នុងការងារនានា បានផ្តល់តបមកវិញនូវកម្លាំងពលកម្ម និងជំនាញ ក្នុងការអនុវត្តគំនិតផ្តួចផ្តើមការកែច្នៃនិងការស្តារឡើងវិញរបស់រដ្ឋាភិបាលក្នុងតំបន់។

The BUSINESS OF RECYCLING

Using the **public-private-partnership (PPP)** dynamics, a partnership with the LGU should be explored in the implementation of its local SWM program. Arrangements can be made so the enterprise can access the resources of a public agency, i.e. provision of land/in this case, provision of a ready-made MRF, and assistance on permitting requirements, while it, in turn, provides the manpower and expertise in handling the local government's recycling and recovery initiatives.

អាជីវកម្មនៃការកែច្នៃសំរាម

លក្ខណៈនៃលំហូរកាកសំណល់

មានសំរាមជាច្រើនប្រភេទ ដែលអាចចាប់យកបាននៅក្នុងសហគ្រាសកែច្នៃរបស់អ្នក។ ជាទូទៅកាកសំណល់អាចត្រូវបានកំណត់ដោយយោងទៅលើ៖

លំនៅដ្ឋាន កាសែត ក្រដាសចម្រុះ សម្លៀកបំពាក់ កញ្ចប់អាហារ កំប៉ុងនិងដប ដបដីរ ផ្លាស្ទិច សំណល់អាហារ

ពាណិជ្ជកម្ម/ស្ថាប័ន ក្រដាសកាតុងធ្វើកេស សំណល់អាហារ ក្រដាសការិយាល័យ ក្រដាសលាយ កាសែត ដបដីរ ផ្លាស្ទិច។

ឧស្សាហកម្ម ក្រដាសកាតុង ហ្វឺលឆ្នាស្ទិច ឈើ កេស ក្រដាស ការិយាល័យនិងចម្រុះ សំណល់ចំណីអាហារ, សំបកកង់ ចាស់, លោហធាតុ

The BUSINESS OF RECYCLING

Characterizing the waste stream

There are several types of wastes which can be captured in your recycling enterprise. Generally, wastes may be characterized according to:

Residential	Newspapers, mixed paper, clothing, food packaging, cans and bottles, PET bottles, plastics, food scraps,
Commercial/Institutional	Corrugated cardboard, food wastes, office paper, mixed paper, newspaper, PET bottles, plastics,
Industrial	Corrugated cardboard, plastic film, wood, pallets, office and mixed paper, food wastes, old tires, metals

តម្រូវការទីផ្សារ

វត្ថុធាតុដែលអាចកែច្នៃបាន ដែលត្រូវបែកចែកតាមរយៈទីលានញែកសំរាម ត្រូវតែបំពេញតាមលក្ខណៈទីផ្សារជាមូលដ្ឋាន ដើម្បីជួយសម្រួលដល់ការលក់ក្នុងតម្លៃសាកសមបំផុត។ តារាងខាងក្រោមបង្ហាញពីតម្រូវការ និងគូសបញ្ជាក់ពីគុណសម្បត្តិនៃដំណើរការបែងចែកសំរាមពីប្រភពដើម ជាជាងការយកសំណល់ចម្រុះចូល និងតម្រូវការក្នុងការផ្គត់ផ្គង់ជាមូលដ្ឋាន (ទឹក ថាមពល) និងឧបករណ៍ដូចជាម៉ាស៊ីនសង្កត់ដើម្បីសម្រេចការងារនេះ។ សំរាមកែច្នៃឡើងវិញ ដែលមិនបំពេញតាមតម្រូវការទាំងនេះ នឹងត្រូវគេឱ្យតម្លៃទាប។

តម្រូវការទីផ្សារមូលដ្ឋានសំរាប់វត្ថុធាតុដែលអាចកែច្នៃបាន

កំប៉ុងសំណប៉ាហាំង	សំប៉ែត សង្កត់ ស្អាត ស្អាត
លោហធាតុ	សំប៉ែតស្លាកដកចេញ ស្អាត
ប្លាស្ទិច	សង្កត់ បែងចែកដោយពណ៌ឬប្រភេទ ដោយមានឬគ្មានគម្រប
ក្រដាស	បែងចែកដោយថ្នាក់ឬប្រភេទ ស្អាត សង្កត់ ស្អាត
កែវ	បែងចែកដោយពណ៌ ស្អាត

Market requirements

Recyclable materials recovered through an MRF must satisfy basic market specifications to facilitate sale at optimum prices. The table below shows the requirements and highlights the advantages of processing source-separated recyclables over mixed waste and the need to provide basic utilities (water, power) and equipment such as balers to help attain them. Recyclables that do not meet these requirements command lower prices

BASIC MARKET REQUIREMENTS FOR RECYCLABLES

Tin can	Flattened, baled, dry., clean
Metal	Flattened, label removed, clean
Plastic	Baled, separated by color or type, with or without caps
Paper	Separated by grade or type, dry, baled, clean
Glass	Separated by color, dry

ប្រតិបត្តិការ និងថែទាំ

**ប្រតិបត្តិការ និងថែទាំ នៃទីលានព្រែក
សំរាម ត្រូវបានសរសេរនៅក្នុងសៀវភៅ
ណែនាំ ដែលនឹងត្រូវបង្ហាញជូនលោក
អ្នកនៅពេលក្រោយ។**

OPERATIONS AND MAINTENANCE

**Operations and maintenance of
Materials Recovery Facility are
written in the Manual, which
shall be presented to you later.**

ដំណើរការពាក់ព័ន្ធនឹង ទីលានព្យាកសំរាម

បច្ចេកទេស

វិធីសាស្ត្រដោយមនុស្ស



វិធីសាស្ត្រមេកានិច

- ការព្យាកដោយប្រើដៃកឆក់
- ដោយទឹក
- ដោយខ្យល់
- ផ្សេងៗ



ដំណើរការ

- កាត់បន្ថយទំហំ
- កំរិតខ្យល់
- ការបែងចែកគ្រួសៗ

Process involved in MRF

Techniques

Manual methods



Mechanical methods

- *Electromagnetic separation*
- *Fluid dynamics*
- *Pneumatics*
- *Others*

Processes:

- *Size reduction*
- *Air classification*
- *Screening*



ដំណើរការដោយមនុស្ស

- ការសែត (700 ទៅ 4500គីឡូក្រាម/ម៉ោង/នាក់)
- ញែកវត្ថុធាតុប្រភេទខុសគ្នាដែលស្ថិតជាប់គ្នា (700 ទៅ 4500 គីឡូក្រាម/ម៉ោង/នាក់)
- សំភារៈផ្ទុកធ្វើពីកែវ (ចំរុះពណ៌) (400 ទៅ 800គីឡូក្រាម/ម៉ោង/នាក់)
- សំភារៈផ្ទុកធ្វើពីកែវ (តាមពណ៌) (200 ទៅ 400គីឡូក្រាម/ម៉ោង/នាក់)
- សំភារៈផ្ទុកធ្វើពីប្លាស្ទិច (PET,HDPE) (140 ទៅ 280 គីឡូក្រាម/ម៉ោង/នាក់)
- កំប៉ុងអាលុយមីញ៉ូម

Manual Processing

- Newspaper (700 to 4,500kg/hr/person)
- Corrugated (700 to 4,500kg/hr/person)
- Glass containers (mixed colour) (400 to 800kg/hr/person)
- Glass containers (by colour) (200 to 400 kg/hr/person)
- Plastic containers (PET, HDPE) (140 to 280 kg/hr/person)
- Aluminum cans



ដំណើរការដោយមេកានិក

- កាត់បន្ថយទំហំ
- បែងចែកកែវ
- កំរិតខ្យល់
- បែងចែកវត្ថុធាតុអលោហៈ
- ការបែងចែកត្រួសៗ
- បែងចែកតាមម៉ាសមាឌ
- បែងចែកដោយដែកឆក់
- ជញ្ជូន

Mechanical Separation

- *Size reduction*
- *Glass separation*
- *Air classification*
- *Non-ferrous separation*
- *Screening*
- *Densification*
- *Magnetic separation*
- *Conveyors*



ការបែងចែកតាមកម្រិតខ្យល់

- ការបែងចែកតាមកម្រិតខ្យល់គឺជាដំណើរការនៃការបែងចែកប្រភេទនៃវត្ថុធាតុយោងតាមភាពខុសគ្នានៃលក្ខណៈអេរ៉ូឌីណាមិករៀងៗខ្លួន។
- លក្ខណៈអេរ៉ូឌីណាមិកនៃវត្ថុធាតុមួយគឺជាអនុគមន៍រវាងទំហំ រាង សណ្ឋាន និងម៉ាស់មាឌនៃរបស់ណាមួយ។
- Suspended fraction សំដៅលើ “air-classified light fraction” និង Settled fraction សំដៅលើ “air-classified heavy fraction”
- Air-classifier គឺជាមាឌមួយដែលការបែងចែកបានកំណត់។

AIR classification

- Air classification is a process of separating categories of materials by way of differences in their respective aerodynamic characteristics.
- The aerodynamic characteristic of a particular material is primarily a function of the size, geometry, and density of the particles.
- The suspended fraction conventionally is referred to as the “*air classified light fraction*” and the settled fraction is termed “*air-classified heavy fraction*”.
- The confined volume in which the separation takes place is called an “*air classifier*”.

ការបែងចែកត្រួសៗ

- ការបែងចែកត្រួសៗ ត្រូវបានប្រើប្រាស់ដើម្បីសំរេចបាននូវការញែកដ៏មានប្រសិទ្ធភាពតាមភាពដោយឡែករវាងរបស់ដែលមានទំហំខុសគ្នា
- ជំនើរការបែងចែកត្រួសៗមានដូចជា៖ ញែករបស់ដែលធំ ជ្រុលចេញ រឺរបស់ដែលតូចជ្រុលចេញ

Screening

- Screens are used for achieving efficient separation of particles through dependence on differences between particle sizes with respect to any two dimensions.
- Screening process: Oversized feedstock, Undersized feedstock



សេចក្តីសន្និដ្ឋាន

- មានទីលានចម្រុះសំរាមគឺមានប្រព័ន្ធគ្រប់គ្រងសំណល់រឹងដ៏មានប្រសិទ្ធភាព
- ទីលានចម្រុះសំរាមផ្តល់នូវការកែច្នៃនៃវត្ថុធាតុដើមសម្រាប់បម្រើបម្រាស់ក្នុងវិស័យឧស្សាហកម្ម។

Conclusion

- By Material recovery facility the Waste management system functions efficiently.
- MRF methods provides recycling of raw materials for Industrial uses.

រូបថតរបស់ទីលានផ្ទុកបច្ចេកទេស

PHOTOS OF MECHANICAL MRFS



រូបថតរបស់ទីលានផ្នែកបច្ចេកទេស



PHOTOS OF MECHANICAL MRFS



Source: <https://www.greenwaste.com/sites/default/files/og-RY-web.jpg>

Source: <https://www.logisticsmiddleeast.com/supply-chain/33890-saudi-arabia-invests-recycling-for-construction-supply-chain>

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង របៀង ខាងត្បូង

GMS: Southern Economic Corridor Towns Development Project

ទីលានវិក្កកសំរាមក្រុងបាត់ដំបង ប៉ោយប៉ែត និងបាវិត

**BATTAMBANG, POIPET, BAVET
MATERIALS RECOVERY FACILITY**

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



ការពិពណ៌នាអំពីទីលាន

ទីតាំងគម្រោង

ទីលានវិលាសសំរាប់ក្រុងបាត់ដំបង ប៉ោយប៉ែត និងបារិត ត្រូវបានរៀបចំឡើងក្រោមការណែនាំរបស់រាជរដ្ឋាភិបាលកម្ពុជា ដោយ “អនុក្រឹត្យលេខ ៣៦ អនក្រ នៃព្រះរាជាណាចក្រកម្ពុជា ស្តីពីការគ្រប់គ្រងសំរាមរឹង (១៩៩៩)” ដែលត្រូវបានអនុម័ត ដើម្បីគ្រប់គ្រង ការគ្រប់គ្រងសំណល់រឹង ជាមួយនឹងបទដ្ឋាន បច្ចេកទេសត្រឹមត្រូវ និងសុវត្ថិភាព ដើម្បីធានាបាននូវការ ការពារសុខភាពមនុស្ស និងការអភិរក្សជីវចម្រុះ។ អនុក្រឹត្យនេះ អនុវត្តចំពោះរាល់សកម្មភាពពាក់ព័ន្ធនឹងការចោល ការស្តុកទុក ការប្រមូល ការដឹកជញ្ជូន ការកែច្នៃ ការចាក់ចោលសំរាមទូទៅ និងសំណល់គ្រោះថ្នាក់។

Facility Description

Project Location

The Battambang, Poipet, Bavet MRF (herein after referred to as the Facility) was designed as guided by the “Royal Government of Cambodia Sub-decree No. 36 on Solid Waste Management (1999)” which was enacted to regulate solid waste management with proper technical manners and in safe ways in order to ensure the protection of human health and the conservation of biodiversity. The sub-decree applies to all activities related to disposal, storage, collection, transport, recycling, dumping of garbage and hazardous waste.

ការពិពណ៌នាអំពីទីលាន

ទីតាំងគម្រោង

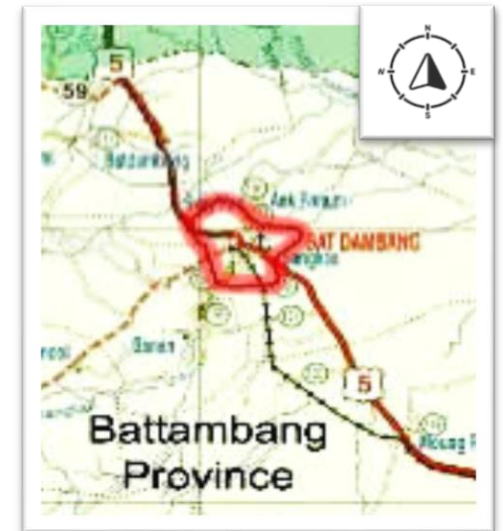
ក្រុងបាត់ដំបងស្ថិតនៅក្នុងខេត្តបាត់ដំបង ភាគ
ពាយព្យនៃប្រទេសកម្ពុជា មានចម្ងាយប្រមាណ
៣០០ គីឡូម៉ែត្រតាមផ្លូវជាតិលេខ៥ ពីទីក្រុងភ្នំពេញ។
ទីផ្សារប្រជុំជននេះ គឺជាមជ្ឈមណ្ឌលពាណិជ្ជកម្ម
កសិកម្មបែបបុរាណមួយ ដែលស្ថិតនៅចំកណ្តាលនៃ
SEC ដែលមានសក្តានុពលខ្ពស់ក្នុងការប្រែក្លាយទៅ
ជាមជ្ឈមណ្ឌលកសិឧស្សាហកម្ម។

Facility Description

Project Location

Battambang, which is situated in Battambang Province in the northwestern part of Cambodia, is about 300 kilometers via National Road 5 from the capital city of Phnom Penh.

This market town is a traditional agricultural trading center through the center of the SEC, which has high potential to be transformed into an agro-industrial hub, given its strategic location.



ការពិពណ៌នាអំពីទីលាន

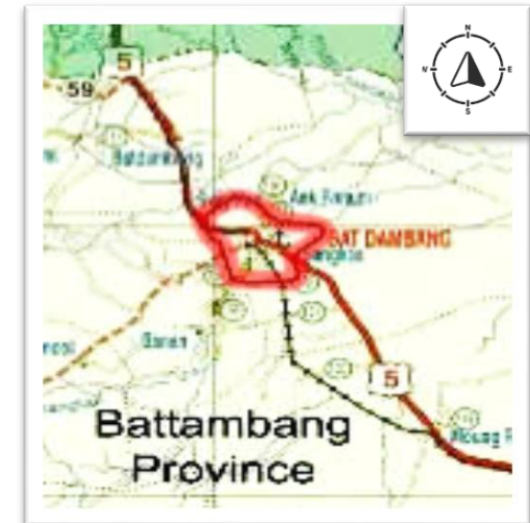
ទីតាំងគម្រោង

ទីលានព្រែកសំរាមក្រុងបាត់ដំបងមានទីតាំងស្ថិតនៅក្នុងដីទំហំ ៦ហិកតា ដែលទទួលបានដោយរដ្ឋបាលក្រុងដែលមានគោលបំណងដើម្បីអភិវឌ្ឍទៅជាកន្លែងចាក់សំរាមដែលមានអនាម័យ។ ដីនេះស្ថិតនៅជាប់នឹងកន្លែងចាក់សំរាមដែលមានស្រាប់ ដែលដំណើរការដោយក្រុមហ៊ុនស៊ីនឡី (ខេមបូឌា) និងទីលានធ្វើដីកំប៉ុស ឈ្មោះ **COMPED**។ ទីលានព្រែកសំរាមដែលមានស្រាប់ និងអ្វីៗដែលបានស្នើសុំមានចម្ងាយប្រហែលប្រាំ (៥) គីឡូម៉ែត្រ ភាគពាយព្យពីទីប្រជុំជនក្រុង។

Facility Description

Project Location

Battambang MRF is located within a flat 6-hectare property acquired by the municipal government intended to be developed into a sanitary landfill. The property is adjacent the existing dumpsite operated by CINTRI (Cambodia) Ltd. and the COMPED composting facility. The cluster of these existing and proposed solid waste facilities is about five (5) kilometers north-west from the town center.



ការពិពណ៌នាអំពីទីលាន

ទីតាំងគម្រោង

ប៉ោយប៉ែតជាទីក្រុងនៅក្នុងខេត្តបន្ទាយមានជ័យនៅខាងលិចនៃប្រទេសកម្ពុជា ជាប់ព្រំដែនជាមួយប្រទេសថៃ។ វាជាមជ្ឈមណ្ឌលដឹកជញ្ជូនតាមផ្លូវគោក និងដឹកជញ្ជូនដ៏សំខាន់សម្រាប់ការធ្វើដំណើររវាងខេត្តសៀមរាប និងក្រុងបាងកក។ ទីក្រុងនេះមានកាស៊ីណូជាច្រើន ដែលមានទីតាំងនៅតាមបណ្តោយផ្លូវធំ និងតំបន់ជុំវិញព្រំដែន។ នៅខាងកើតស៊ីសុផុនគឺមានប្រាសាទបន្ទាយឆ្មារ ដែលមានតាំងពីសម័យអង្គរ។

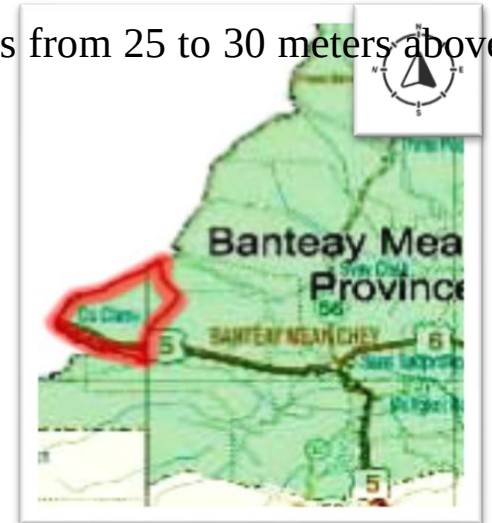
ក្រុងប៉ោយប៉ែត រួមទាំងទីតាំងរបស់ទីលាននៅក្នុងនោះ គឺស្ថិតនៅលើសណ្ឋានដីរាបស្មើ។ រយៈកម្ពស់ប្រែប្រួលពី ២៥ ទៅ ៣០ ម៉ែត្រធៀបនឹងនីវ៉ូទឹកសមុទ្រ។

Facility Description

Project Location

Poipet is a city in Banteay MeanChey Province in Western Cambodia, bordering with Thailand. It is the main land crossing and transport hub for travel between Siem Reap and Bangkok. This city is known for its many casinos, which line the main street and the area around the border. To the East, Sisophon is a base for exploring the Banteay Chhmar Temple complex, which dates from the Angkor period.

The municipality of Poipet, including the site of the Facility, is essentially flat. The site elevation varies from 25 to 30 meters above sea level.



ការពិពណ៌នាអំពីទីលាន

ទីតាំងគម្រោង

ទីលានបំបែកសំណល់ក្នុងប៉ោយប៉ែត ស្ថិតនៅផ្នែកខាងក្រៅ ជាប់នឹងច្រក ចូលដីឡូត៍ទំហំ១០ហិចតា ដែល ផ្តល់ដោយរដ្ឋបាលស្រុកប៉ោយប៉ែត សំរាប់ធ្វើជាវាលចាក់សំណល់ ដែល មានអនាម័យ។ វាមានចម្ងាយ១៧ គីឡូម៉ែត្រភាគឦសានពីទីរួមក្រុង។



Facility Description

Project Location

Poipet MRF is located just outside, adjacent the entrance of the 10-hectare lot allocated by the Poipet District Government for its sanitary landfill. It is about 17 road kilometers northeast from the town center

ការពិពណ៌នាអំពីទីលាន

ទីតាំងគម្រោង

ក្រុងបាវិតមានទីតាំងស្ថិតនៅក្នុងខេត្តស្វាយរៀង នៅភាគពាយព្យនៃប្រទេសកម្ពុជា គឺជាទីក្រុងធំជាងគេ នៅក្នុងខេត្តស្វាយរៀង និងជាច្រកព្រំដែនអន្តរជាតិរវាង ប្រទេសកម្ពុជានិងប្រទេសវៀតណាម ដែលមានចម្ងាយ ប្រហែល ១៦៥ គីឡូម៉ែត្រតាមផ្លូវជាតិលេខ ១ ពីរាជធានីភ្នំពេញ។

ក្រុងបាវិតគឺជាតំបន់សេដ្ឋកិច្ចពិសេសមួយរបស់ ប្រទេសកម្ពុជាដែលមានរោងចក្រវាយនភ័ណ្ឌនិងកង់។ ប៉ុន្តែសកម្មភាពសេដ្ឋកិច្ចជាក់ស្តែងបំផុតនៅបាវិត គឺការស៊ី ល្អា ដែលភាគច្រើនជាជនជាតិវៀតណាម។

Facility Description

Project Location

Bavet, which is situated in Svay Rieng Province in the northwestern part of Cambodia, is the largest city in Svay Rieng Province and is an international border gate between Cambodia and Vietnam about 165 kilometers via National Road 1 from the capital city of Phnom Penh.

Bavet is one of the special economic zones of Cambodia where there are established textiles and bicycle factories. But the most evident economic activity in Bavet are the casinos, mostly attended by Vietnamese.



ការពិពណ៌នាអំពីទីលាន

ទីតាំងគម្រោង

ទីលានប្រែកម្លាំងសំរាប់ក្រុងបាវិត ស្ថិតនៅក្នុងដីសាធារណៈ ២០ ហិកតា ដែលគ្រប់គ្រងដោយក្រសួងកសិកម្មរុក្ខាប្រមាញ់និងនេសាទ ចម្ងាយប្រហែល ១.២០ គីឡូម៉ែត្រ ខាងត្បូងផ្លូវជាតិលេខ ១ ក្នុងក្រុងបាវិត ខេត្តស្វាយរៀង។ វា នៅតំបន់រាបស្មើរយៈកម្ពស់ប្រហែល ៤-៦ ម៉ែត្រ លើនីវ៉ូ ទឹកសមុទ្រ។ ទីលានប្រែកម្លាំងសំរាប់ត្រូវបានព័ទ្ធជុំវិញ ដោយប្រឡាយធារាសាស្ត្រ ៣០០ ម៉ែត្រនៅខាងជើង និង ជាប់ខាងកើតនៃព្រំដី។ នៅខាងត្បូងគឺជាប្រឡាយបង្ហូរទឹក ធម្មជាតិ ដែលលាតសន្ធឹងដល់ព្រំដែនប្រទេសវៀតណាម។

Facility Description

Project Location

Bavet MRF is located in a 20-hectare public land owned by the Ministry of Agriculture, Forestry and Fishery, about 1.20 kms south of National Road No.1 in Bavet, Svay Rieng Province. It is essentially in a flat area with an elevation of about 4-6 masl. The MRF is bounded by irrigation channels, 300 meters to the north and just east of the property. To the south is a natural drainage channel, which extends all the way to Vietnam border.



ការពិពណ៌នាអំពីទីលាន

មុខងារសំខាន់ៗរបស់ទីលាន នឹងមានដូចខាងក្រោម៖

1. តាមទីតាំងនៅក្នុងប្រព័ន្ធគ្រប់គ្រងសំណល់រឹង និងលើកកម្ពស់ការយល់ដឹងរបស់ប្រជាជន ទាក់ទងនឹងការកែច្នៃឡើងវិញនៃសំណល់ដែល អាចកែច្នៃបាន។
2. កាត់បន្ថយកាកសំណល់រឹងនៅក្នុងកន្លែងចោល សំរាម និងសំរាមកែច្នៃដែលអាច យកមកកែច្នៃ ឡើងវិញបាន។
3. ដើម្បីបង្កើនបរិមាណនៃការកែច្នៃឡើងវិញ ដែល អាចផលិតបាននូវវត្ថុធាតុដើម ដែលនឹងបង្កើត ប្រាក់ចំណូលខ្ពស់បំផុតនៅលើទីផ្សារ។

Facility Description

The main functions of the Facility will be the following:

- 1.To address the gap in the solid waste management system and raise the awareness of people regarding recovery of recyclable materials;
- 2.To reduce the solid waste in the disposal facility and to recover materials that are recyclable;
3. To maximize the quantity of recyclables processed thereby producing materials that will generate the highest possible revenues in the market.

ឈ្មោះកន្លែង	ទីលានវិញ្ញាបនបត្រសំរាប់ក្រុងបាត់ដំបង
ទីតាំង	ស្ថិតនៅលើដីរបស់ស្ថាប័ន ៦ហិកតា ដែលទទួលបានដោយរដ្ឋបាលក្រុងមានចម្ងាយ៥គីឡូម៉ែត្រ ភាគពាយព្យពីទីប្រជុំជនក្រុងបាត់ដំបងខេត្តបាត់ដំបង
ទំហំទីលាន	ប្រមាណ 1,625 m ²
ឧបករណ៍សំខាន់ៗ	ម៉ាស៊ីនសង្កត់ (Hydraulic Baler)
	ម៉ាស៊ីនបំបែក (Crusher Machine)
	ត្រាក់ទ័រចូក (Front-end Pay loader)
	ម៉ាស៊ីនភ្លើង (Stand-by Generator Set)
	ផ្តល់ដោយប្រតិបត្តិករអាជីវកម្មឯកជន៖ - ក្តារកម្រាល និងកៅអីតុល (Floor and Bench/Table Scale) - ធុងសំរាម HDPE Bins - ម៉ាស៊ីនបូមទឹក Submersible Pump - ឧបករណ៍លាង Pressure Washers - បំពង់ពន្លត់អគ្គិភ័យ
កន្លែងសំខាន់ៗ	ចំណតរថយន្តភ្ញៀវ(285 m ²), ឃ្លាំងស្តុក(113m ²), ខ្លោងទ្វារ (W=៨.៤ ម៉ែត្រ), របង (H=២.៥ ម៉ែត្រ)

Name of the facility	Battambang Materials Recovery Facility
Location of the facility	Situated within a flat 6-hectare property acquired by the municipal government, 5 kilometers north-west from the center of the municipality of Battambang, Battambang Province .
Site area	Approximately 1,625 m ²
Major Equipment	Hydraulic Baler
	Crusher Machine
	Front-end Pay loader
	Stand-by Generator Set
	To be provided by the private business operator: • Floor and Bench/Table Scales • HDPE Bins • Submersible Pump • Pressure Washers • Fire Extinguishers
Major auxiliary facility	Visitors Parking Lot (285 m ²),Stockyard (113 m ²), Gate (W=8.4 m), Net Fence (H=2.5 m)

ឈ្មោះកន្លែង	ទីលានព្រែកសំរាមក្រុងប៉ោយប៉ែត
ទីតាំង	ស្ថិតនៅផ្នែកខាងក្រៅ ជាប់នឹងច្រកចូលដីឡូត៍ទំហំ១០ហិចតា ដែលផ្តល់ដោយរដ្ឋបាលស្រុកប៉ោយប៉ែតសំរាប់ទីលានចាក់សំរាមរបស់ដែលមានអនាម័យ។ វាមានចម្ងាយ១៧គីឡូម៉ែត្រភាគឦសាននៃទីរួមក្រុង។
ទំហំទីលាន	ប្រមាណ 1,800 m ²
ឧបករណ៍សំខាន់ៗ	ម៉ាស៊ីនសង្កត់ (Hydraulic Baler)
	ម៉ាស៊ីនបំបែក (Crusher Machine)
	ត្រាក់ទ័រចូក (Front-end Pay loader)
	ម៉ាស៊ីនភ្លើង (Stand-by Generator Set)
	ផ្តល់ដោយប្រតិបត្តិករអាជីវកម្មឯកជន៖ - ក្តារកម្រាល និងកៅអីវែង (Floor and Bench/Table Scale) - ធុងសំរាម HDPE Bins - ម៉ាស៊ីនបូមទឹក Submersible Pump - ឧបករណ៍លាង Pressure Washers - បំពង់ពន្លត់អគ្គីភ័យ
កន្លែងសំខាន់ៗ	ចំណតរថយន្តភ្ញៀវ(366 m ²), ឃ្លាំងស្តុក(113m ²), ខ្លោងទ្វារ (W=៨.៤ ម៉ែត្រ), របង (H=២.៥ ម៉ែត្រ)

Name of the facility	Poipet Materials Recovery Facility
Location of the facility	Situated just outside, adjacent the entrance of the 10-hectare lot allocated by the Poipet District Government for its sanitary landfill. It is about 17 road kilometers northeast from the town center.
Site area	Approximately 1,800 m ²
Major Equipment	Hydraulic Baler
	Crusher Machine
	Front-end Pay loader
	Stand-by Generator Set
	To be provided by the private business operator: - Floor and Bench/Table Scales - HDPE Bins - Submersible Pump - Pressure Washers - Fire Extinguishers
Major auxiliary facility	Visitors Parking Lot (366 m ²),Stockyard (113 m ²), Gate (W=8.4 m), Net Fence (H=2.5 m)

ឈ្មោះកន្លែង	ទីលានប្រកួតប្រជែង
ទីតាំង	ស្ថិតនៅលើដីសាធារណៈដែលជាកម្មសិទ្ធិរបស់ក្រសួងកសិកម្ម រុក្ខាប្រមាញ់និងនេសាទ ដែលមានចម្ងាយ ១.២០ គីឡូម៉ែត្រ ខាងត្បូងផ្លូវជាតិលេខ ១ ក្នុងក្រុងបាវិត ខេត្តស្វាយរៀង។ ប្រហែល ៥០០ ម៉ែត្រ ជិតតំបន់សេដ្ឋកិច្ចពិសេស មេនហាតធើន(Manhattan Special Economic Zone)
ទំហំទីលាន	ប្រមាណ 2,082 m ²
ឧបករណ៍សំខាន់ៗ	ម៉ាស៊ីនសង្កត់ (Hydraulic Baler)
	ម៉ាស៊ីនបំបែក (Crusher Machine)
	ត្រាក់ទ័រទូក (Front-end Pay loader)
	ម៉ាស៊ីនភ្លើង (Stand-by Generator Set)
	ផ្តល់ដោយប្រតិបត្តិការអាជីវកម្មឯកជន៖ - ក្តារកម្រាល និងកៅអីរឹង (Floor and Bench/Table Scale) - ធុងសំរាម HDPE Bins - ម៉ាស៊ីនបូមទឹក Submersible Pump - ឧបករណ៍លាង Pressure Washers - បំពង់ពន្លត់អគ្គីភ័យ
កន្លែងសំខាន់ៗ	ចំណតរថយន្តភ្ញៀវ(278m ²), ឃ្លាំងស្តុក(113m ²), ខ្លោងទ្វារ (W=៨.៤ ម៉ែត្រ), របង (H=២.៥ ម៉ែត្រ)

Name of the facility	Bavet Materials Recovery Facility
Location of the facility	Situated on public land owned by the Ministry of Agriculture, Forestry and Fishery, 1.20 km south of National Road No.1 in the town of Bavet, Svay Rieng Province. Within 500 m proximity to the Cambodia Manhattan Special Economic Zone
Site area	Approximately 2,082 m ²
Major Equipment	Hydraulic Baler
	Crusher Machine
	Front-end Payloader
	Stand-by Generator Set
	To be provided by the private business operator: • Floor and Bench/Table Scales • HDPE Bins • Submersible Pump • Pressure Washers • Fire Extinguishers
Major auxiliary facility	Visitors Parking Lot (278 m ²),Stockyard (113 m ²), Gate (W=8.4 m), Net Fence (H=2.5 m)

ឧបករណ៍ធ្ងន់ធ្ងរ

Heavy Equipments



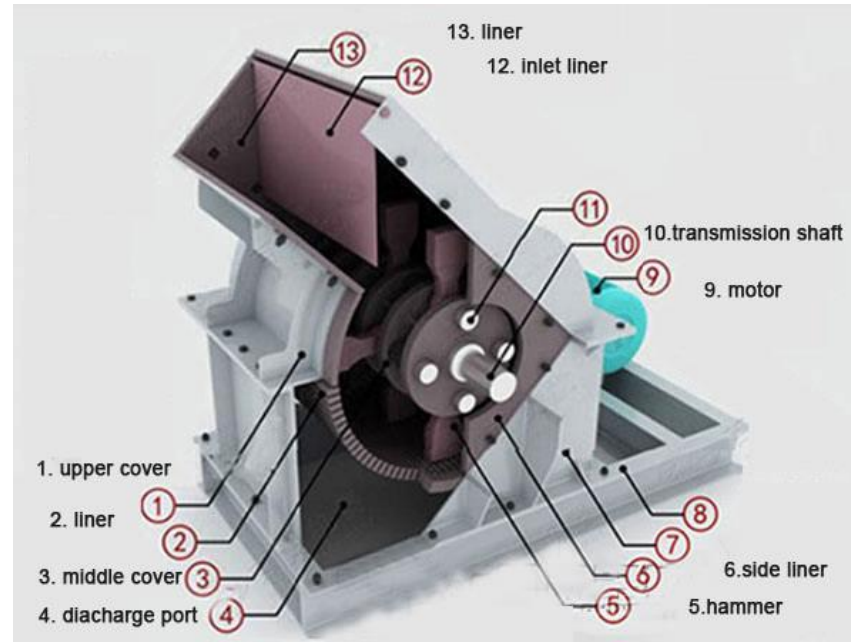
ឧបករណ៍ធ្ងន់ធ្ងរ

Heavy Equipment



ម៉ាស៊ីនសង្កត់

hydraulic baler



ម៉ាស៊ីនកម្ទេច (ប្រភេទព្យញ្ជ័រ)

Crusher Machine (hammer type)



ត្រាក់ទ័រចូរ

Front-end Payloader

ឧបករណ៍ធ្ងន់ធ្ងរ

Heavy Equipment



ម៉ាស៊ីនភ្លើង

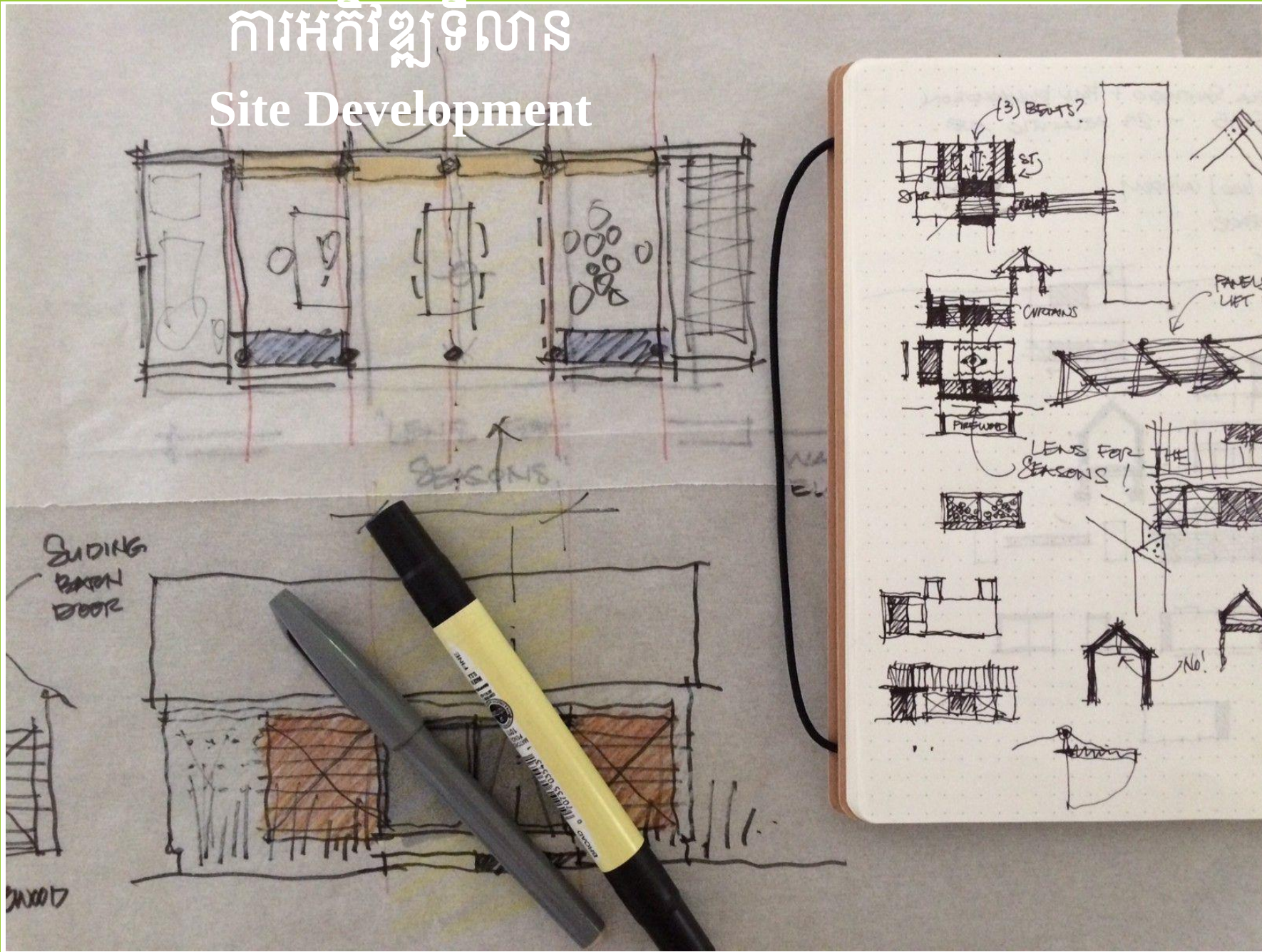
Stand-by Generator



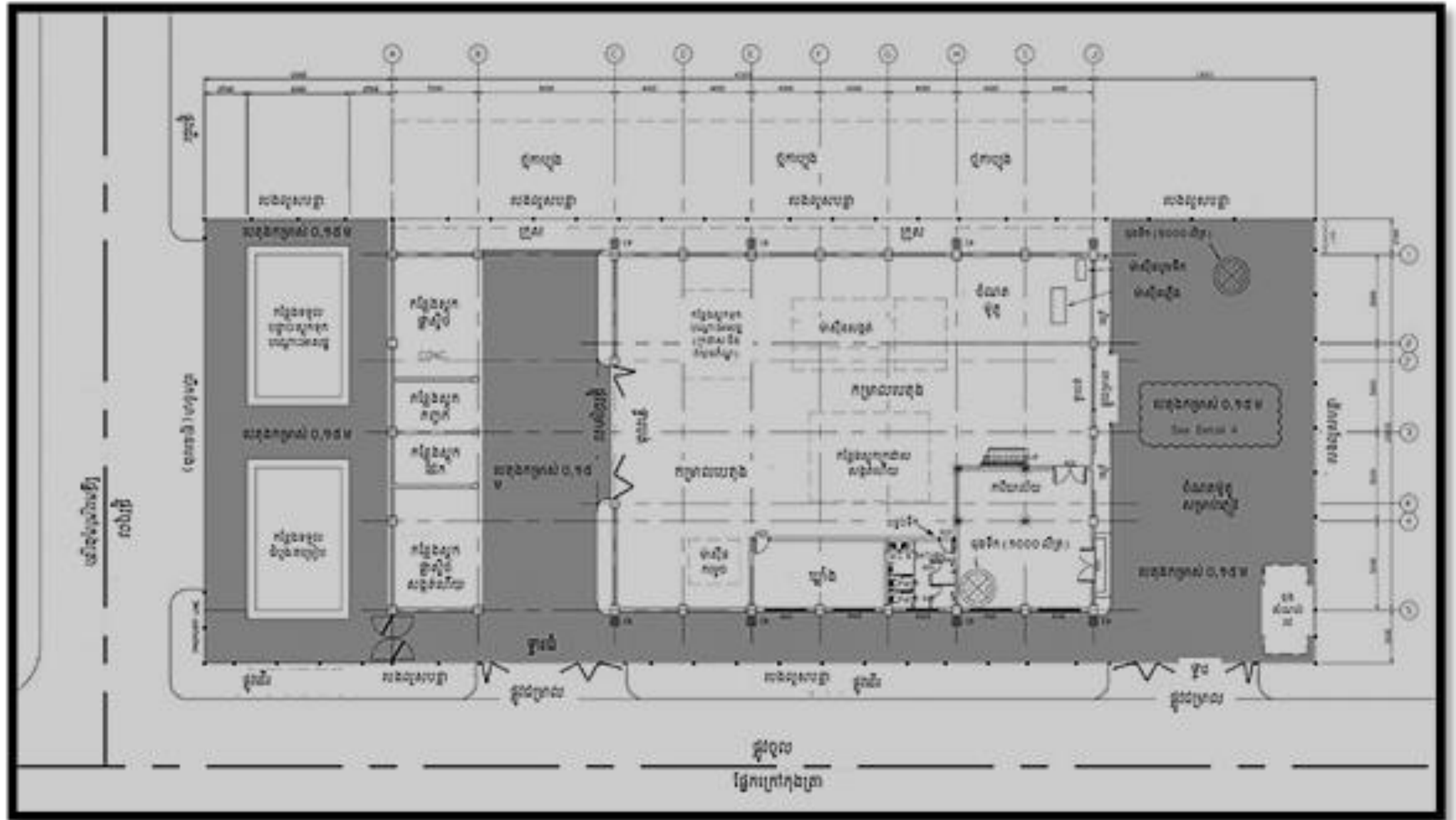
ម៉ាស៊ីនបូមទឹក

Submersible Pump

ការអភិវឌ្ឍទីលាន Site Development

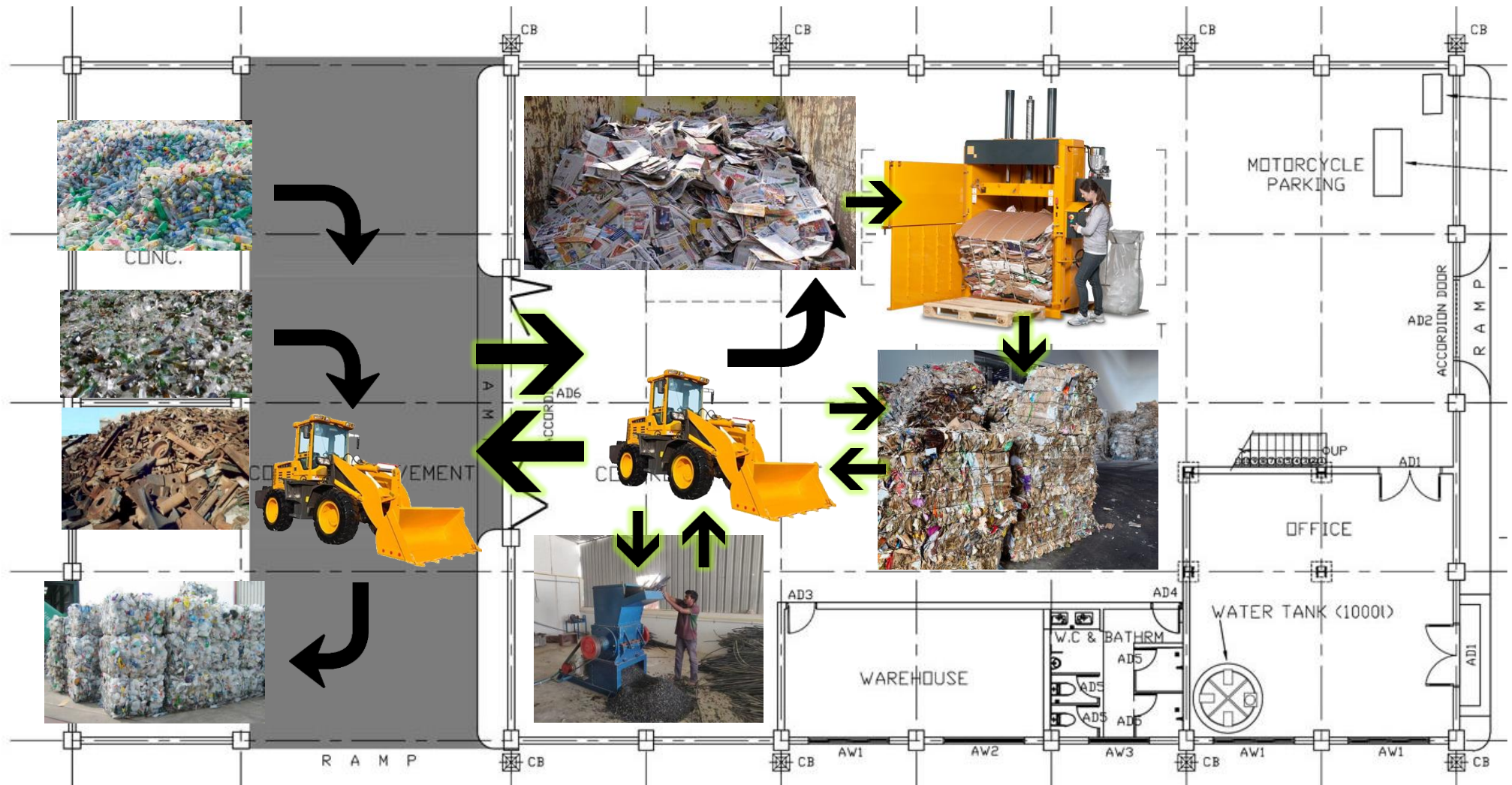


ប្លង់ទីលាន The Facility Layout Plan



ផែនការទីលានព្យែកសំរាម

MRF Floor Plan



ការពិពណ៌នាអំពីទីលាន

ទីលាននេះត្រូវបានសាងសង់ឡើងជាមួយនឹងសមត្ថភាពដំណើរការ រហូតដល់ ៦០m³ ឬ ៨តោន នៃសំរាមស្ងួតដែលអាចកែច្នៃឡើងវិញបាន ដូចជា ក្រដាស ប្លាស្ទិក (គ្រប់ប្រភេទ) កំប៉ុងសំណ លោហៈ កញ្ចក់កែវ និងវត្ថុដែលអាចកែច្នៃឡើងវិញដែលមាន ទីផ្សារតែប៉ុណ្ណោះ។

Facility Description

The Facility was constructed with a processing capacity of a maximum of 60 m³, or 8 tons, of dry recyclable waste components, such as paper, plastics (all types), tin cans, metals, glass, and other marketable recyclable materials only.



ការពិពណ៌នាអំពីទីលាន

ទីលាននេះនឹងបម្រើការ ជាកន្លែងផ្តល់ និងអភិវឌ្ឍប្រព័ន្ធ បែងចែកសំណល់អាចកែច្នៃបានសម្រាប់ក្រុង។ សកម្មភាព នៅក្នុងបរិវេណទីលាននេះរួមមាន ការញែកដោយមនុស្ស និងការញែកសំរាមអាចកែច្នៃបាន ទៅតាមប្រភេទនីមួយៗ ដូចជាក្រដាស ប្លាស្ទិក លោហធាតុ និងកញ្ចក់ជាដើម។ ប្រសិនបើសំរាមមានការការបែងចែកតិចតួចពេក សំរាម ទាំងនោះត្រូវដាក់បញ្ចូលក្នុងទីលានតែម្តង។ សំរាមដែល អាចកែច្នៃ ទាំងនេះនឹងត្រូវ ចងបង្រួម សង្កត់ និងបំបែក អាស្រ័យលើប្រភេទនៃសំរាមអាចកែច្នៃបាន ដែលត្រូវបានដ កចូលដោយយានយន្តប្រមូលសំរាម និង/ឬអ្នករើសសំរាម ពីវាលចាក់សំរាម។

Facility Description

The Facility shall serve as a venue for providing and developing a solid waste recycling system for the Municipality. The activities within the Facility shall include manual sorting and separation of recyclables into their respective components such as paper, plastic, metals, and glass, among others. Very minimal sorting, if any, is expected once the materials are unloaded into the Facility. These recyclables will be bound/compressed, baled, and crushed depending on the type of recyclables, which have been brought in by collection vehicles and/or waste pickers from the disposal site.



មុខងារសំខាន់ៗរបស់ទីលាន

1. ដើម្បីកាត់បន្ថយកាកសំណល់រឹងនៅទីលាន
ចាក់សំរាម និងទាញយកសំរាមដែលអាចកែច្នៃ
ឡើងវិញបាន។
2. ដើម្បីបង្កើនបរិមាណនូវសំរាមអាចកែច្នៃបាន
ដែលត្រូវដំណើរការ ដោយផលិតបានជាវត្ថុ
ធាតុដើម ដែលអាចទទួលបានប្រាក់ចំណូល
ខ្ពស់បំផុតនៅលើទីផ្សារ។

Main functions of the Facility

1. To reduce the solid waste in the disposal facility and to recover materials that are recyclable;
2. To maximize the quantity of recyclables processed thereby producing materials that will generate the highest possible revenues in the market.

មុខងារសំខាន់ៗរបស់ទីលាន

ទីលាននេះ អាចដើរតួជាកន្លែងដើម្បីអភិវឌ្ឍប្រព័ន្ធទាញយកសំរាមក្រុង ដើម្បីជំរុញដល់ការបែងចែក និងការកែច្នៃសំរាមឡើងវិញ។

ទីលាននេះមិនត្រូវបានរចនាឡើងដើម្បីទទួលយកកាកសំណល់ចម្រុះនិងសំណល់គ្រោះថ្នាក់ទេ។ ដូច្នេះវាជាការចាំបាច់ដែលថាបុគ្គលិកដែលបានចាត់តាំង ត្រូវពិនិត្យឱ្យបានហ្មត់ចត់នូវសំរាមចូល ដែលនឹងត្រូវដំណើរការ និងរក្សាទុកនៅក្នុងទីលាន។

ទីលាននេះមិនត្រូវប្រើសម្រាប់គោលបំណងក្រៅពីអ្វីដែលបានចែងនៅទីនេះទេ។

Main functions of the Facility

The Facility can serve as a venue to develop a municipal waste recovery system to encourage waste segregation and recycling.

The Facility was not designed to accept mixed and hazardous wastes. It is imperative therefore that designated personnel thoroughly inspect incoming materials that will be processed/stored in the facility.

The Facility shall not be used for purposes other than stated herein.

ផ្នែកទី ៣៖ គោលបំណងនៃសៀវភៅណែនាំ

សៀវភៅណែនាំស្តីពីការប្រតិបត្តិការនិងការថែទាំនេះ ត្រូវបានរៀបចំឡើងសម្រាប់រដ្ឋបាលក្រុងគឺ៖

- a. ដើម្បីប្រើប្រាស់ជាឯកសាររដ្ឋបាលនៃទីលានព្យាកសម្រាប់អាជ្ញាធរពាក់ព័ន្ធនានា។
- b. វាពិពណ៌នាអំពីគោលការណ៍ណែនាំជាមូលដ្ឋានស្តីពីការគ្រប់គ្រង ប្រតិបត្តិការ និងការថែរក្សាទីលានឱ្យបានសមស្រប។

វាក៏ត្រូវបានពិនិត្យ និងកែសម្រួលឡើងវិញដោយមន្ត្រីពាក់ព័ន្ធដោយផ្អែកលើតម្រូវការនៃប្រតិបត្តិការ។

លក្ខណៈបច្ចេកទេស និងព័ត៌មានផ្សេងៗនៅក្នុងសៀវភៅណែនាំនេះផ្អែកលើរបាយការណ៍រចនាវិស្វកម្មលម្អិត សម្រាប់អនុគម្រោងទីលានព្យាកសម្រាប់ក្រុង។

Section 3. Purpose of the Manual

The Operations and Maintenance Manual has been prepared for the municipal administration to:

- a. To serve as a framework for the administration of the MRF by the relevant authorities.
- b. It describes the basic guidelines on the appropriate administration, operations and maintenance of the Facility.

It shall be revised by the relevant authorities from time to time, depending on the requirements of the operations.

Specifications in the Manual are based on information from the Detailed Engineering Design Report (DEDR) for the Materials Recovery Facility Subproject.

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង
របៀង ខាងត្បូង

GMS: Southern Economic Corridor
Towns Development Project

ការគ្រប់គ្រងទីតាំង និងគោលនយោបាយ

FACILITY MANAGEMENT AND POLICIES

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



អាជ្ញាធរមានសមត្ថកិច្ច

DESIGNATED AUTHORITIES

ទីលាននេះនឹងត្រូវគ្រប់គ្រងដោយរដ្ឋបាលក្រុងគោលដៅ ដែលជារដ្ឋបាលទទួលបន្ទុកទីលាន។

The Facility will be managed by the municipal administration as the administration in charge of the Facility.

ប្រតិបត្តិការនៃទីលាននឹងត្រូវប្រគល់ជូនផ្នែកអាជីវកម្មឯកជន ដែលនឹងឈ្នះក្នុងដំណើរការដេញថ្លៃ។ ដូច្នេះប្រតិបត្តិការត្រូវមានទំនួលខុសត្រូវពេញលេញចំពោះប្រតិបត្តិការ និងការថែទាំទីលាន ក្រោមការណែនាំរបស់អ្នកគ្រប់គ្រង។

Operations of the Facility shall be awarded to the business entity who will win the bidding process. The Operator has full responsibility for the operations and maintenance of the Facility under the guidance of the Administrator.



ម៉ោងប្រតិបត្តិការ

RECOMMENDED OPERATIONAL HOURS

កំណត់ពេលវេលាធ្វើការ ៨ ម៉ោងក្នុងមួយថ្ងៃ

៦ថ្ងៃក្នុងមួយសប្តាហ៍៖

៨:០០ ព្រឹក - ម៉ោងចូល, ការរៀបចំ

៩:០០ ព្រឹក - ចាប់ផ្តើមទទួលយកសំណល់កែច្នៃ

១០:០០ ព្រឹក ដល់ ៣:០០ រសៀល - ដំណើរការម៉ាស៊ីន

១២:០០ ថ្ងៃត្រង់ - សំរាកអាហារថ្ងៃត្រង់ (ប្រតិបត្តិការ អាច
បញ្ឈប់ឬដំណើរការម៉ាស៊ីនបាននៅម៉ោងនេះ)

៣:០០ រសៀល - បញ្ឈប់ការទទួលយកសំណល់កែច្នៃ

៣:០០ ដល់ ៥:០០ រសៀល - សារពើភ័ណ្ឌ សម្អាត និងរៀបចំ
ដើម្បីបិទសម្រាប់មួយថ្ងៃនេះ។

Daily 8-hours operating schedule,

6 days in a week

8:00 AM – Opening time, preparation

9:00 AM – Start accepting recyclables

10:00 AM to 3:00 PM – Machine operations

12:00 Noon – Lunchtime break (Operator may or may
not accept recyclables at this time)

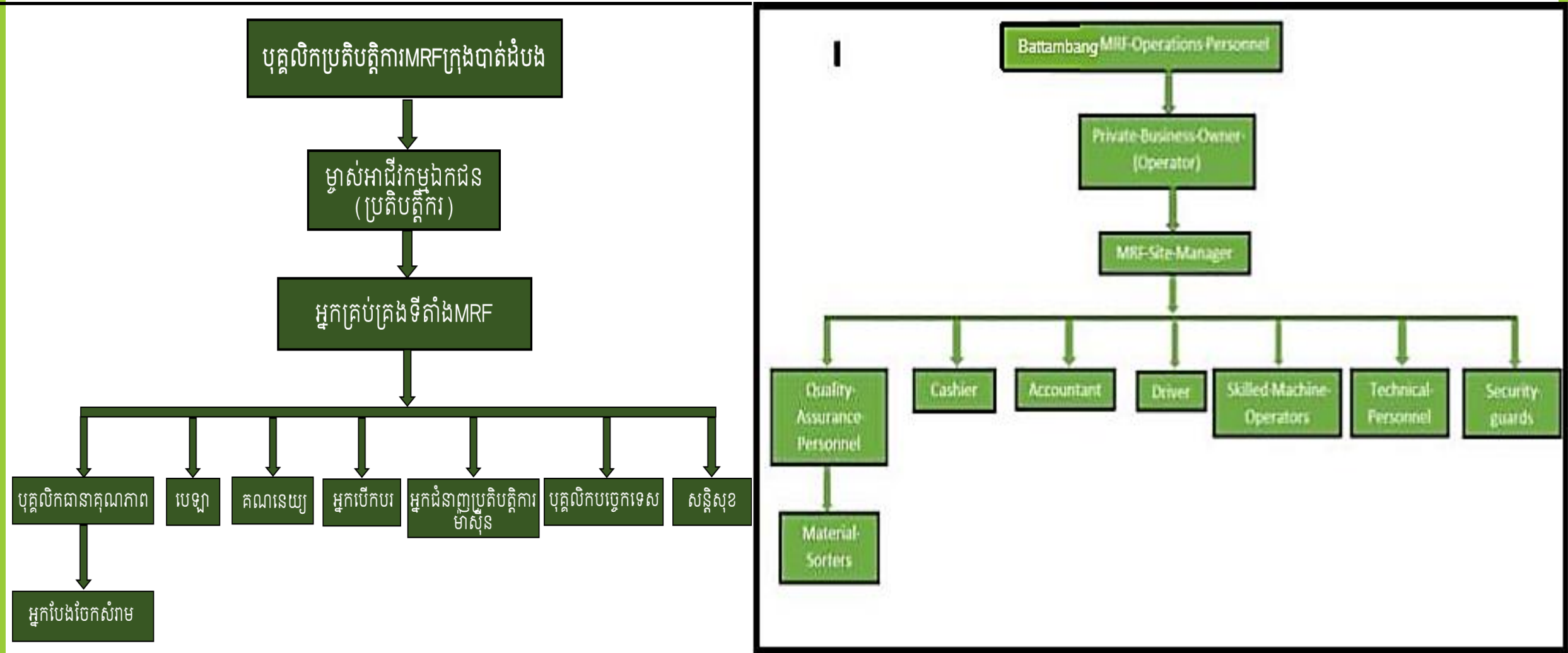
3:00 PM – Closed for acceptance of recyclables

3:00 PM to 5:00 PM – Inventory, clean-up, prepare to
close for the day.



រចនាសម្ព័ន្ធអង្គភាព

ORGANIZATIONAL CHART



តួនាទី និងការទទួលខុសត្រូវ

ROLES AND RESPONSIBILITIES

១. បុគ្គលិកប្រតិបត្តិការ ទីលានព្រែកសំរាម
(អ្នកគ្រប់គ្រងមកពីរដ្ឋបាលក្រុង)
២. ម្ចាស់អាជីវកម្មឯកជន (ប្រតិបត្តិករ)
៣. អ្នកគ្រប់គ្រងទីតាំង
៤. បុគ្គលិកធានាគុណភាព
៥. បេឡាករ
៦. គណនេយ្យករ
៧. អ្នកបែងចែកសំរាម
៨. អ្នកជំនាញប្រតិបត្តិការម៉ាស៊ីន
៩. បុគ្គលិកបច្ចេកទេស
១០. អ្នកបើកបរ
១១. សន្តិសុខ

1. MRF Operations Personnel
(Administrator from the municipal administration)
2. Private Business Owner
(Operator)
3. Site Manager
4. Quality Assurance Personnel
5. Cashier
6. Accountant
7. Material Sorters
8. Skilled Machine Operators
9. Technical Personnel
10. Driver
11. Security Guards



តួនាទីនិងការទទួលខុសត្រូវ

ROLES AND RESPONSIBILITIES

១. បុគ្គលិកប្រតិបត្តិការ ទីលានញែកសំរាម (អ្នកគ្រប់គ្រងមកពីរដ្ឋបាលក្រុង)
 - ត្រួតពិនិត្យប្រតិបត្តិការរបស់ទីលាន
 - ធ្វើអធិការកិច្ចលើទីលានរៀងរាល់ត្រីមាស នៃការគ្រប់គ្រងទូទៅ និងប្រតិបត្តិការនៃទីលាន និងឧបករណ៍នានា
 - យល់ព្រម ឬបដិសេធ ការសំរេចចិត្តរបស់ប្រតិបត្តិការចំពោះការផ្លាស់ប្តូរណាមួយនៅក្នុងប្រតិបត្តិការទូទៅ។

1. MRF Operations Personnel (Administrator from the municipal administration)

- Oversees the management of the Facility
- Conducts quarterly on-site inspections of general management and operation of the Facility and its equipment
- Approves or rejects Operator's decision to any changes in overall operation



តួនាទី និងការទទួលខុសត្រូវ

ROLES AND RESPONSIBILITIES

២. ម្ចាស់អាជីវកម្មឯកជន (ប្រតិបត្តិករ)

- ទទួលខុសត្រូវទាំងស្រុងចំពោះប្រតិបត្តិការនិងថែទាំទីលាន
- អនុលោមតាមលក្ខខណ្ឌជាមូលដ្ឋានរបស់រដ្ឋបាលទាក់ទងនឹង (នីតិវិធីគ្រប់គ្រង ការប្រតិបត្តិនិងការថែទាំត្រឹមត្រូវ សុខភាពនិងសុវត្ថិភាពការងារ ការការពារបរិស្ថាន ការអនុលោមតាមច្បាប់រដ្ឋ ជាពិសេសច្បាប់ការងារ)
- ផ្តល់ការណែនាំសមស្របដល់បុគ្គលិកទាក់ទងនឹងសកម្មភាពទាំងអស់នៅក្នុងទីលាន។

2. Private Business Owner (Operator)

- Takes full responsibility for the operations and maintenance of the Facility
- Conforms to the Administrator's basic conditions regarding compliance (proper management, operations and maintenance procedures, occupational health and safety, environmental protection, compliance to state laws especially to the labor law)
- Provides appropriate guidance and instructions to their staff regarding all activities within the Facility



តួនាទី និងការទទួលខុសត្រូវ

២. ម្ចាស់អាជីវកម្មឯកជន (ប្រតិបត្តិករ)

- បង្កើតលក្ខណៈវិនិច្ឆ័យនៃការទទួលយកកាកសំណល់សម្រាប់ឆ្នាំនីមួយៗ
- អនុវត្តការត្រួតពិនិត្យដោយខ្លួនឯងលើសកម្មភាពនានានៅក្នុងទីលាន
- ធ្វើការត្រួតពិនិត្យ / អធិការកិច្ចជាបន្ទាន់ក្នុងករណីមានភាពមិនប្រក្រតី / គ្រោះថ្នាក់ក្នុងកំឡុងពេលប្រតិបត្តិការ
- ផ្តល់ជូនទឹកនៃសម្រាប់ភ្ញៀវឱ្យបានគ្រប់គ្រាន់
- ជួល / បញ្ឈប់បុគ្គលិក

ROLES AND RESPONSIBILITIES

2. Private Business Owner (Operator) (continued)

- Establishes waste acceptance criteria for each year
- Carries out self-monitoring of the activities within the Facility
- Conducts immediate check/inspection in case of irregularities/accidents during operation
- Provides for adequate resident and visitor correspondence
- Hires/fires personnel.



តួនាទី និងការទទួលខុសត្រូវ

ផែនការ និងប្រព័ន្ធដែលប្រតិបត្តិករត្រូវតែរៀបចំ៖

1. កាលវិភាគប្រតិបត្តិការចុងក្រោយ
2. ផែនការប្រតិបត្តិការប្រចាំឆ្នាំ
3. ផែនការចរាចរណ៍លម្អិត (ស្ថានភាពធម្មតា និងមានអាសន្ន)
4. នីតិវិធីគណនេយ្យស្តង់ដារ
5. កាលវិភាគថែទាំទៀងទាត់
6. ផែនការត្រួតពិនិត្យ / អធិការកិច្ចទៀងទាត់

ROLES AND RESPONSIBILITIES

Plans and Systems that the Operator must prepare:

1. Final operational time schedule
2. Annual Operation Plan
3. Detailed Vehicular Traffic Plan (regular and emergency situations)
4. Standard accounting procedures
5. Regular maintenance interval schedule
6. Regular Check/Inspection Plan



តួនាទី និងការទទួលខុសត្រូវ

ផែនការនិងប្រព័ន្ធដែលប្រតិបត្តិករត្រូវរៀបចំ (ត) ៖

7. ផែនការជួសជុល / ថែទាំ
8. ផែនការជំនួស
9. ផែនការលទ្ធកម្ម
10. ផែនការថែទាំទីតាំង
11. ផែនការគ្រប់គ្រងទេសភាព
12. ផែនការថែទាំកែលម្អ (នៅពេលចាំបាច់)

ROLES AND RESPONSIBILITIES

Plans and Systems that the Operator must prepare:
(continued)

7. Repair/Maintenance Plan
8. Replacement Plan
9. Procurement Plan
10. Facility Maintenance Plan
11. Landscaping Management Plan
12. Plan for improvement maintenance (once necessary)



តួនាទី និងការទទួលខុសត្រូវ

ផែនការនិងប្រព័ន្ធដែលប្រតិបត្តិករត្រូវរៀបចំ៖ (ត)

13. របាយការណ៍គ្រប់គ្រងប្រតិបត្តិការ (ក្នុងអំឡុងពេលត្រួតពិនិត្យ)
14. កម្មវិធីសុខភាព និងសុវត្ថិភាពការងារ
15. សៀវភៅណែនាំពីសុវត្ថិភាព និងការឆ្លើយតប
16. សៀវភៅណែនាំពីការឆ្លើយតបនឹងគ្រោះអាសន្ន
17. ប្រព័ន្ធការពារអគ្គិភ័យ
18. ប្រព័ន្ធការពារសន្តិសុខ / ឧក្រិដ្ឋកម្ម



ROLES AND RESPONSIBILITIES

Plans and Systems that the Operator must prepare: (continued)

- 13.Operation Management Report
(during inspections)
- 14.Occupational Health and Safety Program
- 15.Safety and Response Manual
- 16.Emergency Response Manual
- 17.Fire Prevention System
- 18.Security/Crime Prevention System

តួនាទី និងការទទួលខុសត្រូវ

ROLES AND RESPONSIBILITIES

៣. អ្នកគ្រប់គ្រងទីតាំង

- ត្រួតពិនិត្យដំណើរការប្រតិបត្តិការប្រចាំថ្ងៃរបស់ទីលាន (រួមទាំងការគ្រប់គ្រងសំរាមដែលអាចកែច្នៃ ដើម្បីយកចូលក្នុងទីលាន និងការបញ្ចេញសំរាមប្លាស្ទិក)
- រៀបចំកាលវិភាគ និងការងារសម្រាប់ប្រធានផ្នែក និងត្រួតពិនិត្យពួកគេ
- ផ្តល់ការណែនាំ និងធ្វើការបង្ហាញដល់បុគ្គលិកទាំងអស់ទាក់ទងនឹងសកម្មភាពនៅក្នុងទីលាន។

3. Site Manager

- Oversees daily operation of the Facility (including management of the recyclable materials brought into the Facility and releasing of recovered materials).
- Prepares the schedule and assignments for key personnel and supervises them.
- Provides appropriate guidance and instructions to their staff regarding all activities within the Facility.



តួនាទី និងការទទួលខុសត្រូវ

ROLES AND RESPONSIBILITIES

៣. អ្នកគ្រប់គ្រងទីតាំង (ត)៖

- រៀបចំទម្រង់ផ្លូវការផ្ទាល់ខ្លួន សម្រាប់ការទទួលយកសំរាម និងការបញ្ចេញសំរាមចេញពីក្រុម
- សម្របសម្រួលជាមួយអ្នកផ្គត់ផ្គង់ និងអ្នកដឹកជញ្ជូន ដើម្បីទទួលបានព័ត៌មានបច្ចុប្បន្នភាពអំពីតម្លៃ នៃសំណល់កែច្នៃ និងកាលវិភាគ នៃការប្រមូល
- បង្កើតទំនាក់ទំនងជាមួយអាជ្ញាធរមូលដ្ឋាន សម្រាប់ការណែនាំ និងការបង្ហាញផ្សេងៗ ទៀត។ សម្របសម្រួលជាមួយគ្រឹះស្ថានពាណិជ្ជកម្មផ្សេងៗ ដើម្បី ទាញយកនូវសំណល់ដែលអាចកែច្នៃបាន

3. Site Manager (continued)

- Prepares official individual forms for accepting waste and releasing of recovered materials
- Coordinates with suppliers and haulers to get regular updates on price of recyclables and schedules of pick-up
- Establishes relations with the local government for guidelines and other instructions; coordinates with commercial establishments for recovery of recyclable materials.



តួនាទី និងការទទួលខុសត្រូវ

៣. អ្នកគ្រប់គ្រងទីតាំង (ត)៖

- ផ្តល់ការធ្វើបច្ចុប្បន្នភាពជាប្រចាំ ដល់អាជ្ញាធរក្នុងតំបន់ ជាពិសេសការផ្តល់របាយការណ៍ជញ្ជូនសំណល់ និងរាយការណ៍អំពីដំណើរការរបស់ទីលាន ក៏ដូចជាស្ថានភាពបរិស្ថាននៅក្នុងទីលាន។
- រៀបចំកិច្ចប្រជុំប្រចាំខែអំពីការគ្រប់គ្រង និងបុគ្គលិក ដើម្បីពិភាក្សាអំពីបញ្ហា និងកង្វល់នានាទាក់ទងនឹងប្រតិបត្តិការរបស់ទីលាន និងរៀបចំការបណ្តុះបណ្តាលបុគ្គលិកទាក់ទងនឹងការប្រតិបត្តិ, ការថែទាំ, OHS, និង ការរៀបចំនិងការគ្រប់គ្រងគ្រោះមហន្តរាយ។

ROLES AND RESPONSIBILITIES

3. Site Manager (continued)

- Provides regular update to local government unit especially in submitting the waste diversion report and in reporting on the progress of the Facility as well as on environmental situation.
- Organizes monthly meeting for management and personnel to discuss issues and concerns relative to the operation of the Facility and to organize trainings of personnel regarding operations, maintenance, OHS and disaster preparation and management.



តួនាទី និងការទទួលខុសត្រូវ

ROLES AND RESPONSIBILITIES

៤. បុគ្គលិកធានាគុណភាព

- ត្រួតពិនិត្យ និងទទួលសំរាមដែលបានបែងចែករួច ពីអតិថិជននៅទីលាន ;
- ប្តឹងសំរាមកែច្នៃទាំងនោះ ទៅតាមប្រភេទ និងកត់ត្រាទុក ;
- កំណត់តម្លៃសំរាមកែច្នៃទាំងនោះ ទៅតាមតម្លៃទិញបច្ចុប្បន្ន និងគណនាការលក់សម្រាប់អតិថិជននៅលើវិក្កយបត្រទិញ ;
- រៀបចំច្បាប់ចម្លងវិក្កយបត្រទិញ ;
- ធ្វើបច្ចុប្បន្នភាពដល់អតិថិជនអំពីការផ្លាស់ប្តូរតម្លៃ របស់វត្ថុធាតុតាមប្រភេទ ; និង
- រក្សាកំណត់ត្រាប្រចាំថ្ងៃ នៃវត្ថុធាតុដែលបានប្តឹងរួច។

4. Quality Assurance Personnel

- Inspects and receives sorted recyclable materials from customers at the Facility
- Weighs the recyclables according to their classification and record these accordingly;
- Values the recyclables according to the current buying price and computes the total sale of the customer on a purchase invoice;
- Prepares a duplicate copy of the purchase invoice;
- Updates the customers of changes in prices and in classification of recyclables; and
- Maintains daily record of recyclables weighed.

តួនាទី និងការទទួលខុសត្រូវ

៥. បេឡាករ

- ពិនិត្យឡើងវិញនូវការកំណត់តម្លៃ និងការគណនារបស់បុគ្គលិកធានាគុណភាព
- រៀបចំ និងទូទាត់ប្រាក់ជូនអតិថិជន
- កត់ត្រាការលក់ និងថតចម្លងវិក្កយបត្រទុក
- ទទួលប្រាក់ពីអ្នកដឹកជញ្ជូន សម្រាប់ការទិញសំរាមញែករួចពីទីលាន
- រៀបចំរបាយការណ៍លក់ និងតារាងតុល្យការ នៅថ្ងៃចុងក្រោយ នៃថ្ងៃធ្វើការ (EOB) ដើម្បីបង្ហាញលំហូរសាច់ប្រាក់
- ប្រគល់របាយការណ៍លក់ តារាងតុល្យការ និងសាច់ប្រាក់នៅសល់ជូនម្ចាស់អាជីវកម្ម។

ROLES AND RESPONSIBILITIES

5. Cashier

- Re-checks the pricing and computation of the Quality Assurance Personnel
- Prepares and hands-out the payment to the customers;
- Records the sale and file the duplicate copy of the purchase invoice;
- Receives payment from the hauler for purchase of recyclables from the Facility;
- Prepares the sales report and balance sheet at the end of the business (EOB) day to show cash flow; and
- Turnover to the Business Owner the sales report, balance sheet, and remaining cash.



តួនាទី និងការទទួលខុសត្រូវ

៦. គណនេយ្យករ

- បញ្ចេញសាច់ប្រាក់ទៅបេឡាករ នៅថ្ងៃដំបូង នៃថ្ងៃធ្វើការ ;
- ទទួលសាច់ប្រាក់ពីបេឡាករ នៅថ្ងៃចុងក្រោយ នៃថ្ងៃធ្វើការ ;
- ត្រួតពិនិត្យរបាយការណ៍លក់ និងតារាងតុល្យការដែលដាក់ដោយបេឡាករ ;
- ពិនិត្យមើលការកំណត់តម្លៃ និងការគណនា **QAP** ;
- ត្រួតពិនិត្យវិក្កយបត្រ ក៏ដូចជាការនាំចូល និងនាំចេញនៃសំរាមអាចកែច្នៃបាន នៅក្នុងទីលាន និងរាយការណ៍អំពីលទ្ធផលនៃការត្រួតពិនិត្យនោះ។

ROLES AND RESPONSIBILITIES

6. Accountant

- Releases the cash to the cashier at the start of business day
- Receives the remittances from the cashier at end of business day;
- Checks the sales report and balance sheet submitted by the cashier;
- Checks the pricing and computation of the QAP;
- Audit receipts as well as inflow and outflow of recyclables in the Facility and report on the audit findings



តួនាទី និងការទទួលខុសត្រូវ

៦. គណនេយ្យករ (ត)៖

- ពិនិត្យមើលវិក្កយបត្រជាមួយអ្នកដឹកជញ្ជូន ប្រៀបធៀបទៅនឹងការកត់ត្រានៃសំរាមកែច្នៃ ដែលទទួលបាននៅក្នុងទីលាន
- កត់ត្រាការលក់ និងរៀបចំរបាយការណ៍ប្រាក់ចំណូលប្រចាំខែ
- រៀបចំសាច់ប្រាក់ ដើម្បីចំណាយសម្រាប់ប្រតិបត្តិការនៅថ្ងៃបន្ទាប់ និង
- រក្សារបាយការណ៍ និងសៀវភៅធនាគារឱ្យមានសុវត្ថិភាព

ROLES AND RESPONSIBILITIES

6. Accountant (continued)

- Check hauler's invoice against the record of recyclables received in the Facility;
- Records sales and prepares monthly income statement;
- Prepares the cash for disbursement for the next day's operation; and
- Safekeeps bank statements and passbooks.



តួនាទី និងការទទួលខុសត្រូវ

ROLES AND RESPONSIBILITIES

៧. អ្នកបែងចែកសំរាម

- ទទួលយកសំរាមដែលអាចកែច្នៃឡើងវិញ មកពីសំរាមដែលបានចាក់
- បែងចែកសំរាមទៅតាមប្រភេទ
- យកសំរាមកែច្នៃទៅកន្លែងស្តុកទុក/កន្លែងទទួល
- រៀបចំ សំរាមដែលអាចកែច្នៃបាន តាមលក្ខណៈទីផ្សារ
- សម្អាតកន្លែងបែងចែកសំរាមនៅ ថ្ងៃចុងក្រោយ នៃថ្ងៃធ្វើការ និង
- សម្អាតទីលានទាំងមូលនៅថ្ងៃចុងក្រោយ នៃថ្ងៃធ្វើការ

7. Material Sorters

- Receives the recyclable wastes from the unloaded materials;
- Sorts the wastes according to types
- Transfers recyclable wastes to the appropriate receiving areas/storage areas
- Prepares recyclable materials according to market specifications;
- Cleans the sorting area at the end of business day; and
- Cleans the entire Facility at the end of business day.



តួនាទី និងការទទួលខុសត្រូវ

៨. អ្នកជំនាញប្រតិបត្តិការម៉ាស៊ីន

- ទទួលខុសត្រូវចំពោះការថែទាំ និងការប្រតិបត្តិ នៃ ម៉ាស៊ីនសង្កត់ និងម៉ាស៊ីនកម្ទេច
- ធ្វើការសង្កត់វត្ថុធាតុ (ក្រដាស និងប្លាស្ទិក)
- ធ្វើឱ្យប្រាកដពីសុវត្ថិភាព ក្នុងប្រតិបត្តិការរបស់ម៉ាស៊ីន
- ទទួលខុសត្រូវចំពោះការបំបែកសំណល់កញ្ចក់។

៩. បុគ្គលិកបច្ចេកទេស

- ទទួលខុសត្រូវ ចំពោះការថែទាំឧបករណ៍អគ្គិសនីទាំងអស់ ដើម្បីធានាថាប្រតិបត្តិការយ៉ាងរលូននៃទីលាន។

ROLES AND RESPONSIBILITIES

8. Skilled Machine Operators

- Responsible for the maintenance and operation of baling and crushing machines
- Conducts the baling of materials (paper and plastics)
- Make sure of safety in the operations of the machineries.
- Responsible for the crushing of glass materials.

9. Technical Personnel

- Responsible for the maintenance of all electrical appliances to ensure the smooth operations of the Facility.

តួនាទី និងការទទួលខុសត្រូវ

១០. អ្នកបើកបរ

- ទទួលខុសត្រូវចំពោះប្រតិបត្តិការ និងរក្សាមិនឱ្យខូចខាតនូវអ្វីៗដែលនៅមុខក្រោយរបស់ ត្រាក់ទ័រចូក
- អាចត្រូវបានទទួលការបណ្តុះបណ្តាល ឱ្យចេះដំណើរការឧបករណ៍សំខាន់ៗផ្សេងទៀត ដូចជាម៉ាស៊ីនសង្កត់ និងម៉ាស៊ីនបំបែកកញ្ចក់ ដើម្បីអាចជំនួសនៅក្នុងអំឡុងពេលអវត្តមានរបស់អ្នកជំនាញប្រតិបត្តិការម៉ាស៊ីន។

១១. សន្តិសុខ

- ទទួលខុសត្រូវចំពោះសន្តិសុខ ក្នុងបរិវេណរបស់ទីលាន
- ធ្វើការត្រួតពិនិត្យបឋមចំពោះយានយន្ត និងផ្តល់ប័ណ្ណជូនដល់យានយន្តចូល។
- កំណត់ការចេញចូល រាល់ការចេញចូលនៃយានយន្តទាំងអស់។



ROLES AND RESPONSIBILITIES

10. Driver

- Responsible for operations and up-keep of the in-house facility front-end payload.
- May also be trained to operate other major equipment such as baler and glass crusher to act as alternate during absence of the machine operators.

11. Security Guards

- Responsible for the security of the Facility premises.
Conducts preliminary ocular inspection of the vehicles and provide reception slip to incoming vehicles
Logs entry and exit of all incoming and outgoing vehicles.

ការអនុលោម នៃកិច្ចព្រមព្រៀង

ប្រតិបត្តិករគួរតែអនុលោមតាមលក្ខខណ្ឌមូលដ្ឋាន ដែលបាន
ពិពណ៌នាដូចខាងក្រោម៖

1. ធ្វើឱ្យមានឡើងនូវ សកម្មភាពជាមូលដ្ឋានគ្រឹះរបស់ទីលាន ដើម្បី
ដំណើរការកិច្ចការងារលើសំរាមដែលអាចកែច្នៃបានទាំងនោះ ឱ្យ
បានត្រឹមត្រូវ
2. អនុវត្តគ្រប់ដំណាក់កាលទាំងអស់ នូវការថែទាំ និងការគ្រប់គ្រង
ដើម្បីថែរក្សាឱ្យបាន នូវសកម្មភាពជាមូលដ្ឋានគ្រឹះរបស់ទីលាន
3. ប្រតិបត្តិការទីលានប្រកបដោយស្ថេរភាព និងយ៉ាងខ្ជាប់ខ្ជួន ដើម្បី
ឱ្យដំណើរការបានយ៉ាងរលូន
4. ប្រកាន់ខ្ជាប់ នូវស្តង់ដារសុខភាព និងសុវត្ថិភាពការងារ (OHS)
ដើម្បីចៀសវាងគ្រោះថ្នាក់នានា សម្រាប់ការគ្រប់គ្រងសុវត្ថិភាព
និងការប្រតិបត្តិការរបស់ទីលាន។

COMPLIANCE AGREEMENT

The Operator should conform to the basic conditions described below:

1. Enable the basic performance of the Facility to process the recyclable wastes properly
2. Implement all the necessary maintenance and management procedures to maintain the basic performance of the Facility
3. Operate the Facility in a stable and consistent manner to make it run smoothly
4. Adhere to standards of Occupational Health and Safety (OHS) to prevent accidents for safe management and operations of the Facility



Photo source: <https://www.waste360.com/haulers/republic-unveils-its-latest-sustainability-report>

ការអនុលោម នៃកិច្ចព្រមព្រៀង

5. កាត់បន្ថយបរិមាណសំណល់រឹង ដែលនឹងត្រូវចាក់ចោល ទៅក្នុងទីលាន
6. អនុលោមតាមការណែនាំ ការណែនាំទាំងឡាយដែលផ្តល់ដោយអាជ្ញាធរពាក់ព័ន្ធ
7. អនុលោមតាមវិធានការសម្រាប់ការពារបរិស្ថាន ដែលបានពិពណ៌នានៅក្នុងផែនការគ្រប់គ្រង បរិស្ថាន (**EMP**) ដែលភ្ជាប់ជាមួយនៅក្នុង ឧបសម្ព័ន្ធទី៣ ក៏ដូចជាវិធានការកាត់បន្ថយដែលត្រូវការសម្រាប់ផលប៉ះពាល់នីមួយៗ
- ក្នុងករណី មានការរកឃើញថា ប្រតិបត្តិការនោះ បានធ្វើឱ្យមានផលប៉ះពាល់ ដល់បរិស្ថាន នោះត្រូវធ្វើការបន្ទុះបន្ថយផលប៉ះពាល់ជាបន្ទាន់ ដោយយោងតាមការណែនាំរបស់អាជ្ញាធរក្រុងឱ្យបាន ត្រឹមត្រូវ។

COMPLIANCE AGREEMENT

5. Reduce the amount of solid waste being dumped into the Facility
6. Conform to any guidelines, guidance and instructions that will be provided by relevant authorities
7. Conform to the measures for environmental protection described in the Environmental Management Plan (EMP) as well as the mitigation measures required for each impact.

In case there are findings that operations have impacted on the environment, it should be immediately mitigated in accordance with the instructions from the municipality's proper authorities.



ការអនុលោម នៃកិច្ចព្រមព្រៀង

8. អនុលោមតាមផែនការគ្រប់គ្រងសំណល់រឹង ដែលសាលាក្រុងបានកំណត់សម្រាប់ឆ្នាំនីមួយៗ (ប្រសិនបើមាន)
 - ក្នុងករណីដែលមិនមាន នោះនឹងត្រូវអនុវត្តតាម អនុក្រឹត្យស្តីពីការគ្រប់គ្រងសំណល់រឹង។
9. អនុលោមតាមច្បាប់ពាក់ព័ន្ធដទៃៗទៀត ក្នុងដំណើរការទីលាន ដូចដែលបានដាក់ឱ្យអនុវត្តជាទូទៅ នៅក្នុងព្រះរាជាណាចក្រកម្ពុជា
 - នៅពេលដែលច្បាប់ និងបទប្បញ្ញត្តិត្រូវបានផ្លាស់ប្តូរឧទាហរណ៍ដូចជាមានវិសោធនកម្មច្បាប់ជាដើម ប្រតិបត្តិករត្រូវពិគ្រោះយោបល់ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។

COMPLIANCE AGREEMENT

8. Conform to the Solid Waste Management Plan that the Municipality stipulates for each fiscal year (if available)
 - In cases where it is not available, the Sub-decree on Solid Waste Management shall be referred to.
9. Comply with other relevant laws in operating the Facility, as enforced in the Kingdom of Cambodia
 - When laws and regulations are changed by, e.g., law revision, the Operator shall consult with the relevant authorities.

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង
របៀង ខាងត្បូង

GMS: Southern Economic Corridor
Towns Development Project

ដំណើរការប្រតិបត្តិការ

OPERATION PROCESS

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



ដំណើរការប្រតិបត្តិការ

ទិដ្ឋភាពទូទៅនៃដំណើរការ

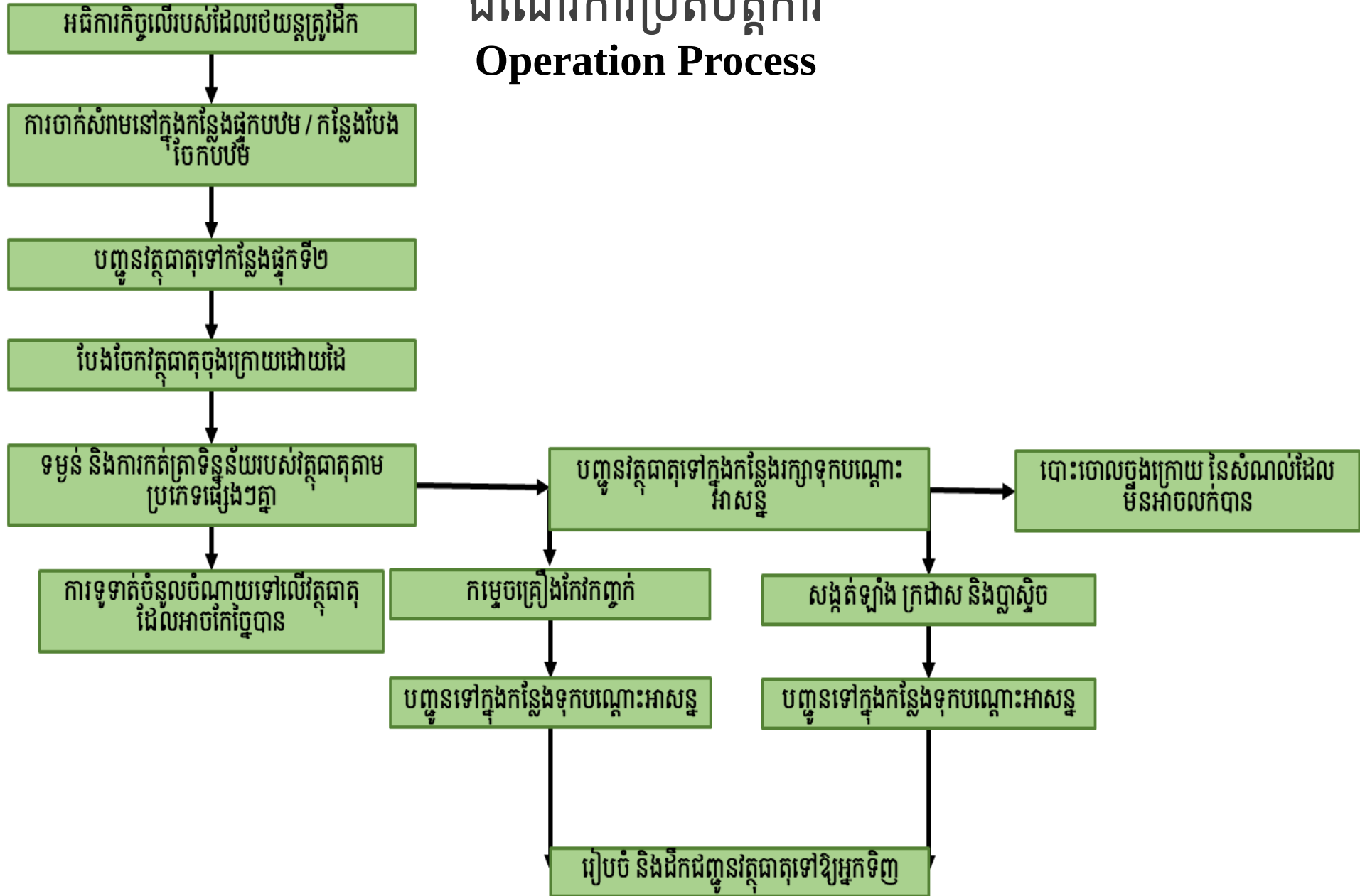
លំដាប់លំដោយដំណើរការនៃការបែងចែក
សំរាមកែច្នៃបាន នៅក្នុងទីលាន គឺត្រូវបាន
បង្ហាញ និងពន្យល់នៅក្នុងតារាងខាង
ក្រោម៖

Operation Process

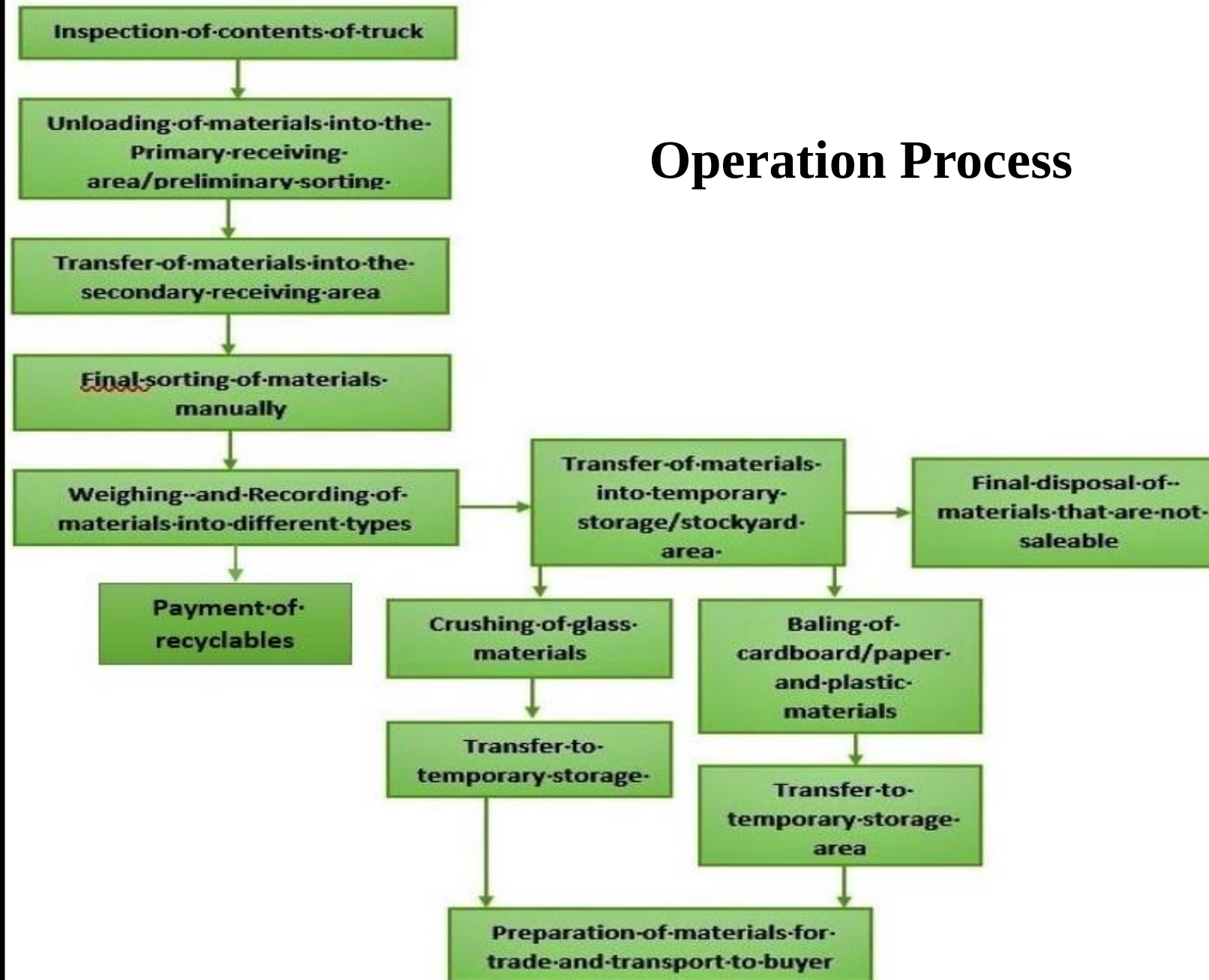
Process Overview :

The process sequence of the
recyclables within the Facility is as
shown as a chart in the figure below
and further explained in the
information following the chart:

ដំណើរការប្រតិបត្តិការ Operation Process



Operation Process



ដំណើរការប្រតិបត្តិការ

ការព្យាករណ៍

ទីលាននេះត្រូវបានរចនាឡើង ដើម្បីដោះស្រាយទៅនឹងបរិមាណសំរាម កែច្នៃបាន ដែលបានព្យាករណ៍ ចំនួន ៨ (តោនក្នុងមួយថ្ងៃ) នៅឆ្នាំ ២០៣០។ ចំនួនប្រជាជន និងកាកសំណល់ដែលបានព្យាករណ៍លម្អិត ដូចខាងក្រោម៖

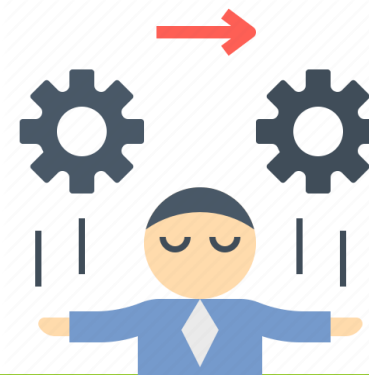
- ចំនួនប្រជាជន ដែលបានព្យាករណ៍៖ ១៨២៤២០ នាក់
- សំរាមដែលបញ្ចេញក្នុងម្នាក់៖ ០.៧ គីឡូក្រាមក្នុង១ថ្ងៃ
- បរិមាណសំរាមបញ្ចេញសរុប ១២៧.៦៩ (តោនក្នុងមួយថ្ងៃ)
- អត្រានៃការប្រមូល៖ ៧០ភាគរយ
- បរិមាណសំរាមប្រមូលបាន៖ ៨៩.៣៨ (តោនក្នុងមួយថ្ងៃ)

Operation Process

Projection

The Facility was designed to handle a projected recyclable materials amount capacity of 8 TPD by the year 2030. The detailed projected population and waste amount are as follows:

- Projected population: 182,420 capita
- Per capita waste generation: 0.7 kg/day
- Total generated waste amount: 127.69 TPD
Collection Ratio: 70%
- Collected waste amount: 89.38 TPD



ដំណើរការប្រតិបត្តិការ

ការបង្កើតផែនការប្រតិបត្តិការ

ប្រតិបត្តិករត្រូវរៀបចំផែនការប្រតិបត្តិការប្រចាំឆ្នាំរបស់ខ្លួន ដែលបង្ហាញពីដំណើរការនៃការប្រព្រឹត្តទៅតាមគម្រោង។ ប្រតិបត្តិករក៏ត្រូវធ្វើប្រតិបត្តិការរបស់ទីលាន ដោយផ្អែកលើផែនការប្រតិបត្តិការប្រចាំឆ្នាំផងដែរ។

ប្រសិនបើមានការផ្លាស់ប្តូរណាមួយក្នុងការអនុវត្តនូវផែនការប្រតិបត្តិការប្រចាំឆ្នាំ ប្រតិបត្តិករត្រូវផ្លាស់ប្តូរផែនការដោយពិគ្រោះយោបល់ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។



Operation Process

Formulation of Operation Plan

The Operator shall prepare their own annual operation plan showing the processing of their planned throughput. The Operator shall also carry out operation of the Facility based on their annual operation plan.

If there is a change in the implementation of the annual operation plan, the Operator shall change plan in consultation with the relevant authorities.



យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង របៀង ខាងត្បូង

GMS: Southern Economic Corridor Towns Development Project

ជំពូកទី ៥ - អធិការកិច្ច ការប្លង់ទម្ងន់ និងការស្តុកសំរាម ដែលអាចកែច្នៃឡើងវិញ

CHAPTER 5 – INSPECTION, WEIGHING AND STORAGE OF RECYCLABLE MATERIALS

Grace P. Sapuay

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Associated with



ការចូលនៃយានយន្ត

បុគ្គលិកធានាគុណភាពត្រូវ៖

១. កត់ត្រា និងអនុញ្ញាតឱ្យយានយន្ត; បដិសេធមិនឱ្យចូលនៅពេលមិនព្រមទទួលយកសំរាម។
២. បដិសេធចំពោះការយកសំរាមចូលដោយអ្នកនៅក្រៅតំបន់ប្រមូល (លើកលែងតែមានការអនុញ្ញាតពីប្រតិបត្តិករ) ។
៣. ណែនាំ និងបង្ហាញពីរបៀបដែលយានយន្តត្រូវធ្វើសកម្មភាពក្នុងការដឹកជញ្ជូនសំរាមកែច្នៃបាននៅក្នុងទីលាន។
 - ❖ សន្តិសុខត្រូវអនុវត្តតាមបទដ្ឋាននៃការចេញចូល រាល់ការចេញចូលនៃយានយន្តទាំងអស់ឬ ការធ្វើអាជីវកម្មផ្ទាល់ខ្លួននៅក្នុងទីលាន។

Entry of Vehicles

The Quality Assurance Personnel shall:

1. Record and confirm vehicles; deny entry when non-acceptable wastes.
2. Deny entry when source is outside of the collection area (except when the Operator allows it).
3. Guide and instruct the activities of vehicles bringing in recyclables in MRF.
 - ❖ Security guard shall follow the standard for logging of the entry and exit of all vehicles/individuals transacting business with MRF.

អធិការកិច្ចបឋម

បុគ្គលិកធានាគុណភាពត្រូវ៖

១. សួរអតិថិជននូវប័ណ្ណទទួល (ផ្ទះសម្បែង) ឬលិខិតសម្គាល់ការចាក់សំរាមក្រុង (អាជីវកម្ម) ដោយសន្តិសុខមុនពេលចូល។
២. ត្រួតពិនិត្យមើលសំរាមកែច្នៃបានទៅលើប្រភេទនៃសំរាម និងសំរាមបំពុល។
៣. ទទួលយកសំរាមអាចកែច្នៃបានដោយផ្អែកលើលក្ខណៈវិនិច្ឆ័យនៃការទទួលយក; និងបដិសេធការយកចូលនូវសំរាមដែលមិនបានបែងចែក និងសំរាមកង្វាក់។
៤. សុំការបញ្ជាក់ពីអ្នកដែលយកសំរាមចូលថាសំរាមនោះត្រូវតាមលក្ខណៈវិនិច្ឆ័យទទួលយក; បើមិនដូច្នោះទេពួកគេនឹងមិនត្រូវអនុញ្ញាតឱ្យចូលក្នុងទីលាន។
៥. កត់ត្រានូវករណីនានាដែលជាប់និងធ្លាក់លក្ខណៈវិនិច្ឆ័យ។

Preliminary Inspection of Contents The Quality Assurance Personnel shall:

1. Ask customers for reception slip (household); or municipal solid waste disposal notification (business), from the security guard prior to entry.
2. Check the recyclable wastes on types of materials and contamination.
3. Accept recyclable materials based on the waste acceptance criteria; deny entry of unsorted/unsegregated and contaminated waste.
4. Ensure that the waste meets waste acceptance criteria; Otherwise, be denied entry into the Facility.
5. Record the types that pass and fail the acceptance criteria.

ការចាក់ ការថ្លឹងទម្ងន់និងការបែងចែក

១. ការចាក់៖ បុគ្គលិកធានាគុណភាពត្រូវផ្តល់ការណែនាំអំពីទី

កន្លែងដែលត្រូវចាក់; កន្លែងទទួលបឋម

ព័ត៌មានពាក់ព័ន្ធនឹងការចាក់សំរាមរបស់អតិថិជននឹងត្រូវ,
(កាលបរិច្ឆេទនិងពេលវេលានៃការចូលនិងចេញ, អត្តសញ្ញាណ
យានយន្ត (ប្រភេទ និងផ្លាកលេខ), ឈ្មោះ និងព័ត៌មានលម្អិត
នៃទំនាក់ទំនងរបស់ក្រុមហ៊ុនដែលនឹងត្រូវចាក់សំរាម, ជាដើម)

២. ការបែងចែក និងការរៀបចំត្រូវតែធ្វើឡើង ប្រសិនបើមិនទាន់

បែងចែក។ សំរាមដែលបានបែងចែកដំបូងត្រូវបានផ្ទេរទៅកន្លែង

ផ្ទុកទីពីរដើម្បីបែងចែក ជាចុងក្រោយ។

Unloading, Weighing and Sorting

Unloading – Quality Assurance Personnel shall
primary receiving area

Pertinent information on the customer
unloading, (e.g. Date and provide
guidance/instructions on where to unload →
time of entry and exit, Vehicle identification
(type and license plate). Name and contact
details of company unloading the waste
materials, etc..)

2. Classification and sorting may be conducted, if
not pre-sorted. Pre-sorted materials may be
transferred to the secondary receiving area for
final sorting



ការដាក់ចុះ ការថ្លឹងទម្ងន់ និងការបែងចែក

៣. ការថ្លឹងទម្ងន់ បុគ្គលិកធានាគុណភាពត្រូវ៖

- i. ថ្លឹងទម្ងន់និងវាស់មាឌនៃកាកសំណល់កែច្នៃទាំងអស់ដែលត្រូវបានយកទៅក្នុងទីលាន ដោយប្រើជញ្ជីង / ឧបករណ៍ផ្សេងៗ។
- ii. កត់ត្រាជាបីច្បាប់នូវទម្ងន់នៃសំរាមមុនពេលយកទៅកន្លែងស្តុកទុកបណ្តោះអាសន្ន។

៤. ការទូទាត់ប្រាក់

តាមរយៈបុគ្គលិកដែលបានចាត់តាំង ប្រតិបត្តិការត្រូវ៖

- i. ទូទាត់ប្រាក់ជូនអ្នកដែលយកសំរាមកែច្នៃបាន ដោយផ្អែកលើតម្លៃទីផ្សារបច្ចុប្បន្ន។
- ii. កត់ត្រាការទូទាត់ប្រាក់សម្រាប់បំណងគណនេយ្យ និងបន្តទៅបេឡាករដើម្បីទទួលប្រាក់។

៥. កន្លែងផ្ទុក កន្លែងសម្រាប់ផ្ទុកសំរាមកែច្នៃបានជាបណ្តោះអាសន្ន។

Unloading, Weighing and Sorting

3. Weighing

The Quality Assurance Personnel shall:

- i. Measure the weight/volume of all the recyclable materials being taken in the Facility, using an approved weighing scale/equipment.
- ii. Record, in triplicates, the weight of the materials before taken to temporary storage/stockyard areas.

4. Payment; the Operator (through their designated personnel) shall:

- i. Pay the people bringing in recyclable materials based on the current market value for said recyclables.
- ii. Record the payments for accounting purposes; customer to proceed to the Cashier for payment.

5. Storage; in areas to temporary store recyclables.

ផ្នែកទី ២ ៖ លក្ខណៈវិនិច្ឆ័យនៃការទទួលយកសំរាម

សម្រាប់តែទទួលយកសំរាមស្អាត (ដែលមិនមានផ្ទុកសំណល់គ្រោះថ្នាក់និង/ឬសំណល់ឆ្លងរោគ) ៖

១. សំរាមចេញពីផ្ទះសំបែង
២. សំរាមចេញពីគ្រឹះស្ថានពាណិជ្ជកម្ម ស្ថាប័ន និងឧស្សាហកម្ម
៣. សំណល់ការដ្ឋាននិងបំបែកកម្ចី ។

កាកសំណល់ ដែលអាចទទួលយក (មានការផ្លាស់ប្តូរពេលប្រតិបត្តិការ) ៖

១. ក្រដាស និងឡាំង
២. វាយនភ័ណ្ឌ
 - សំរាមវាយនភ័ណ្ឌពីរោងចក្រកាត់ដេរ និងសហគ្រាសប្រហាក់ប្រហែលផ្សេងៗ
៣. ប្លាស្ទិក
 - ដប PET
 - ធុងដែលធ្វើពីប្លាស្ទិក HDPE និងរបស់របរផ្សេងៗទៀត
 - សន្លឹក / ថង់ LDPE ឬ ប្លាស្ទិក (បច្ចុប្បន្នត្រូវបានប្រមូលនៅវាលចាក់សំរាមដោយអ្នករើសសំរាម)
៤. ដបកែវ
៥. វត្ថុធាតុធ្វើពីដែក
 - កំប៉ុងសំណប៉ាហាំង
 - កំប៉ុងអាលុយមីញ៉ូម
 - ដែក-ស្ពាន់ ដែកអ៊ីណុកនិងដែកថែប
 - ល្អសទង់ដែង។

Section 2 Waste Acceptance Criteria

Only for dry-source segregated wastes (not containing or contaminated with hazardous wastes and/or infectious wastes):

1. Waste generated from households;
2. Waste generated from commercial establishments, institutions, and industries; and
3. Construction and demolition waste.

Acceptable Recyclable Waste (for updating during operations):

1. Paper and cardboard
2. Textile
 - Textile wastes from garment factories and similar establishments
3. Plastic
 - PET Bottles
 - HDPE consumer plastic containers and other items
 - LDPE or plastic sheets/bags (currently being collected at the dumpsite by waste pickers)
4. Glass bottles
5. Ferrous materials
 - Tin cans
 - Aluminum cans
 - Steel – iron alloys, stainless, galvanized steel
 - Copper wires

ផ្នែកទី ២ ៖ លក្ខណៈវិនិច្ឆ័យនៃការទទួលយកសំរាម (ត)

តើអ្វីជាសំរាមកង្វក់/គ្រោះថ្នាក់៖

- សម្រាប់ការចាត់ថ្នាក់ថាមានគ្រោះថ្នាក់ (ឧទាហរណ៍ថ្នាំពិល ធុងផ្ទុកសារធាតុគីមីឬ ប្រេង ឧបករណ៍អេឡិចត្រូនិច អំពូលភ្លើង អាបេស្តូស ជាដើម) ត្រូវបានរចនាសម្រាប់ផ្ទុកសំរាមទាំងនេះជាបណ្តោះអាសន្ន។
- ប្រតិបត្តិករត្រូវបញ្ជូនទៅឱ្យអ្នកម៉ៅការដឹកជញ្ជូនដែលបានចាត់តាំងក្រោមការគ្រប់គ្រងដោយអាជ្ញាធរពាក់ព័ន្ធ។
- អាជ្ញាធរ (មន្ត្រីក្នុងតំបន់របស់ក្រសួងបរិស្ថាន) គួរតែទទួលដំណឹងអំពីចំណាត់ការសមស្របនិងការចាក់ចោលចុងក្រោយនូវសំរាមទាំងនោះ។

Section 2 Waste Acceptance Criteria (cont)

What to do for Contaminated/Hazardous Waste:

- For classified as hazardous (ex, batteries, containers containing chemicals or spent oil, electronic devices, fluorescent bulbs, asbestos, etc.) temporary storage for these materials can be designated.
- The Operator shall deliver them to a designated collection transportation consignment contractor authorized by the relevant authorities.
- The proper authority (local Ministry of Environment) should be notified for the proper handling and final disposal of these materials.

ផ្នែកទី ២ ៖ លក្ខណៈវិនិច្ឆ័យនៃការទទួលយកសំរាម (ត)

តម្រូវការទីផ្សារ

- ប្រតិបត្តិករត្រូវកំណត់លក្ខណៈវិនិច្ឆ័យជាក់លាក់នៃការទទួលយកសំរាម ក្នុងមួយផ្សារ។
- ប្រតិបត្តិការញែកដោយដៃ (ទោះបីជាមានអត្រាដំណើរការទាប) ដើម្បីផលិតវត្ថុធាតុមានគុណភាពខ្ពស់។
- សម្រាប់តម្លៃដ៏ប្រសើរបំផុតនៃសំរាមកែច្នៃឡើងវិញ ទីលានត្រូវតែបំពេញតាមលក្ខណៈទូទៅរបស់ទីផ្សារ។

Section 2 Waste Acceptance Criteria (cont)

Market Requirements

- The Operator shall determine the exact waste acceptance criteria, as per the market.
- Manual sorting operations, (though with low processing rates), to produce higher quality material.
- For optimum prices of recovered materials, the MRF must satisfy basic market specifications.



ផ្នែកទី ៣៖ ការកត់ត្រា

ទម្រង់ផ្លូវការ ត្រូវរៀបចំឡើងដោយអ្នកគ្រប់គ្រងទីតាំង

- សម្រាប់អតិថិជនតាមដាន និងធ្វើវិក្កយបត្រ
- ការគ្រប់គ្រងព័ត៌មាន ដែលពាក់ព័ន្ធក្នុងការធ្វើផែនការសម្រាប់ប្រតិបត្តិការនៃទីលាន។

Section 3: Recording

Official individual forms - to be prepared by the Site Manager:

- For customer tracking and invoicing purposes
- To provide management with pertinent information in planning for the operations of the Facility.

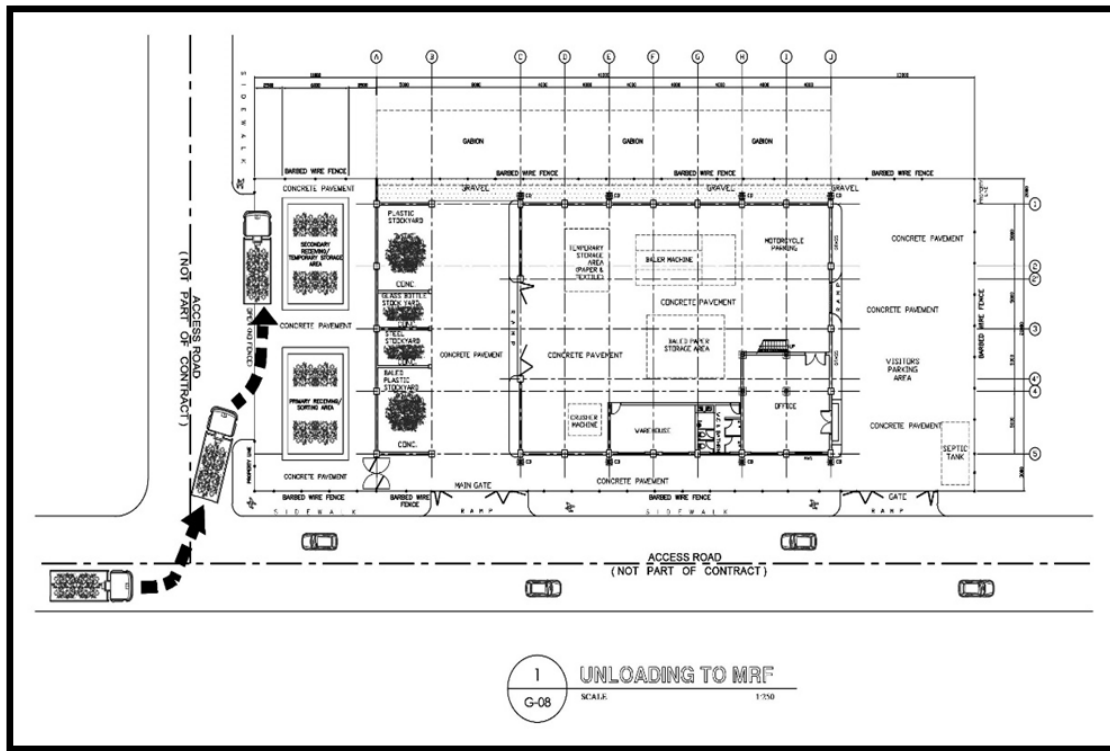
មាតិកាគំរូនៃប័ណ្ណទូទាត់ (Sample Contents of a Voucher)

បរិយាយ (Items)	ព័ត៌មានលម្អិត (Information)	កំណត់សម្គាល់ (Remarks)
កាលបរិច្ឆេទ / ពេលវេលា (Date/time)		
លេខយានយន្ត (Vehicle Number)		
ឈ្មោះអ្នកបើកបរ (Driver name)		
ប្រភេទនៃសំរាម (វត្ថុធាតុ) នាំយកចូល (Kind of waste (material) brought in)		
ទម្ងន់/មាឌនៃប្រភេទវត្ថុធាតុនីមួយៗ (Weight/volume of each type of material)		
ទីតាំងប្រមូល (Collection area)		
អាជីវកម្ម / ឯកជន (Business/private)		
ការគិតថ្លៃ / ការទូទាត់ (Waste charge/payment)		
ឈ្មោះអ្នកកត់ត្រា (Name of recorder)		

ផ្នែកទី ៤ ៖ ផែនការចរាចរណ៍យានយន្ត

- សម្រាប់រថយន្តដឹកដំឡូងចូល ត្រូវគោរពតាមច្បាប់ចរាចរណ៍សុវត្ថិភាពដែលពាក់ព័ន្ធ។
- ក្នុងស្ថានភាពអាសន្ន អាជ្ញាធរពាក់ព័ន្ធត្រូវធ្វើ និងគ្រប់គ្រងសណ្តាប់ធ្នាប់។

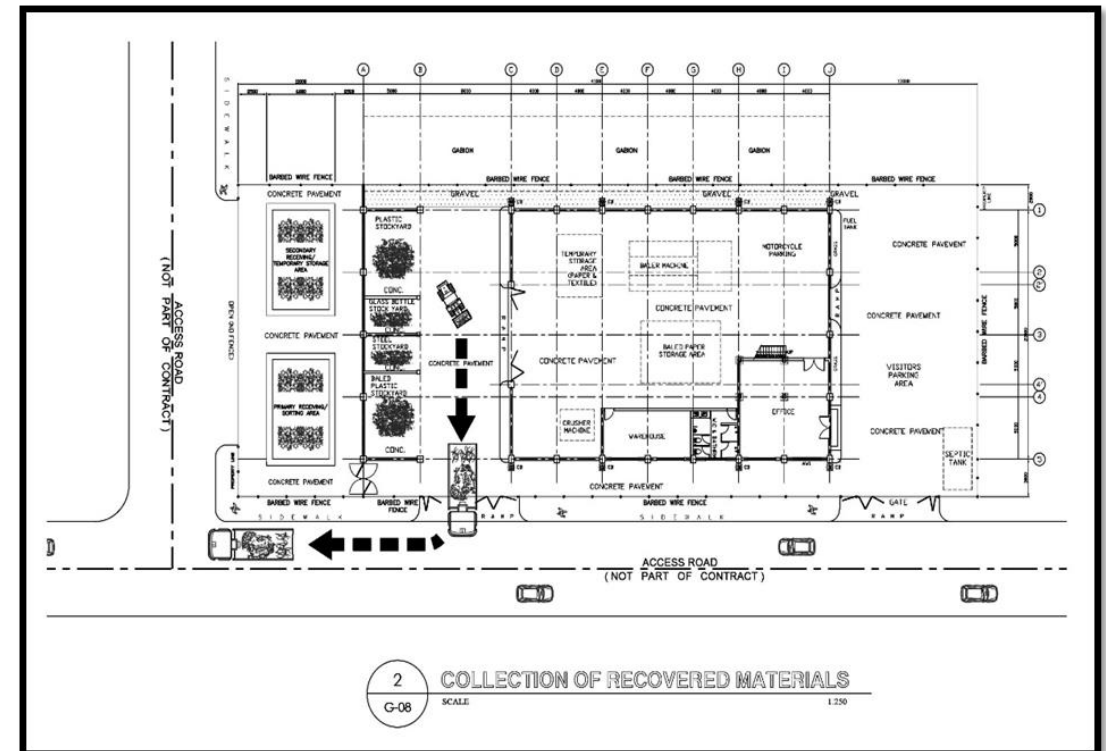
ផែនការចរាចរណ៍យានយន្ត-ការចាក់សំរាមនៅក្នុងទីលានព្រែកសំរាម
Vehicular Traffic Plan: Unloading to MRF



Section 4 Vehicular Traffic Plan

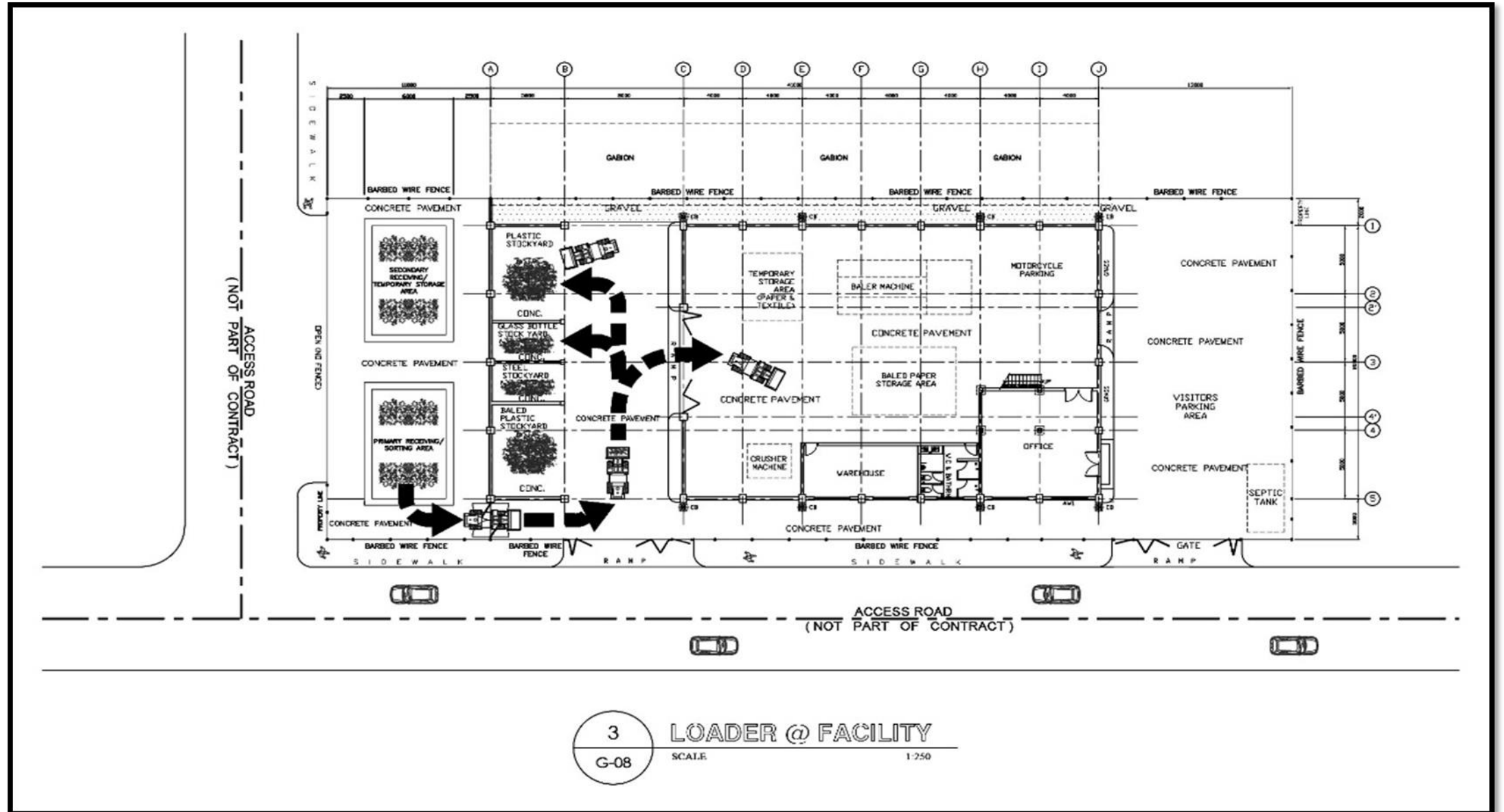
- For queuing for trucks within, relevant safety traffic rules should be observed.
- In emergency situations, relevant authorities shall conduct and manage the queue.

ផែនការចរាចរណ៍យានយន្ត-ការដឹកដំឡូងវត្ថុធាតុព្រែករួចចេញពីទីលាន
Vehicular Traffic Plan: Transporting Recovered Materials from the Facility



ផែនការចរាចរណ៍សម្រាប់ត្រាក់ទ័រលើកដាក់

Traffic Plan for the Payloader



យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង របៀង ខាងត្បូង

GMS: Southern Economic Corridor Towns Development Project

ជំពូកទី ៦៖ ដំណើរការនិងការប្រមូលព័ត៌មានអំពីសម្ភារៈ ប្រើប្រាស់

CHAPTER 6 : PROCESSING AND STORAGE OF PROCESSED MATERIALS

Grace P. Sapuay

International Solid Waste Management Specialist

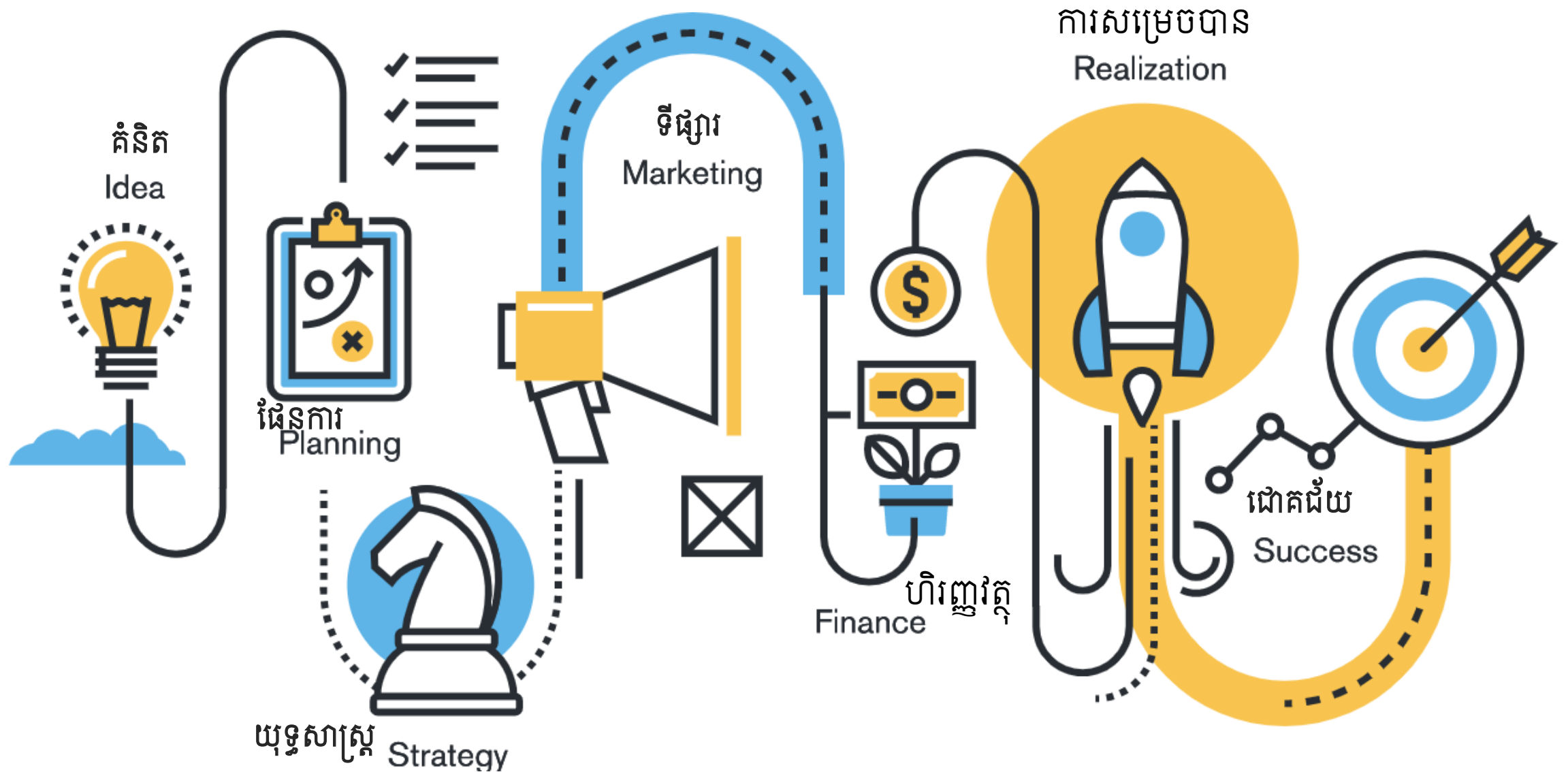


Associated with



ការដំណើរការ និងការស្តុកសំរាមព្រែករួច

Processing and Storage of Processed Materials



ផ្នែកទី ១៖ ទិដ្ឋភាពទូទៅនៃប្រតិបត្តិការ

ទីលានត្រូវបានផ្តល់ជូននូវឧបករណ៍សង្កត់ និងបង្រួមទំហំ។ វានឹងជួយឱ្យប្រតិបត្តិការ ទទួលបានតម្លៃខ្ពស់សម្រាប់ការលក់សំរាមកែ ច្នៃ។



Section 1: Operation Overview

The Facility is provided with compaction and size reduction equipment. This will allow the Operator to command higher prices for the sale of recyclables.



ម៉ាស៊ីនសង្កត់

នៅពេលមានបរិមាណគ្រប់គ្រាន់ នៃវត្ថុធាតុដូចជា ក្រដាស ឡាំង ដប ប្លាស្ទិក វាយនភ័ណ្ឌ និងដែកទន់ៗ (កំប៉ុងសំណប៉ាហាំង កំប៉ុងអាឡុយមីញ៉ូម) ត្រូវបានដាក់នៅ ក្នុងកន្លែងស្តុកបណ្តោះអាសន្នរៀងៗខ្លួន ហើយរបស់ទាំង នោះនឹងត្រូវដឹកជញ្ជូន (តាមប្រភេទ) ទៅម៉ាស៊ីនសង្កត់ដើម្បី បង្រួមមាឌ។ មុនពេលសង្កត់ សំរាមដើមគឺត្រូវប្លឺង និងកត់ ត្រាទុក។

នៅពេលដែលបង្រួម ចងនិងប្លឺងរួច វានឹងត្រូវបានដឹក ជញ្ជូនដោយត្រាក់ទ័រចូកទៅកាន់កន្លែងស្តុកសំរាមសង្កត់រួច ដែលនៅជិតនឹងម៉ាស៊ីនសង្កត់ ហើយរៀបចំសម្រាប់លក់។

Hydraulic Baler

When sufficient quantities of segregated materials such as paper, cardboard, plastic bottles, plastics, textiles, and soft ferrous containers (tin cans, aluminum cans) are accumulated in their designated temporary storage areas, these are to be transported (by type) into the hydraulic baler for compaction. Prior to compaction, the bulk materials are to be weighed and recorded.

Once compacted, tied, and weighed, this will be picked up by the payloader then transported to the baled storage area just adjacent to the baling machine and made ready for sale.



ម៉ាស៊ីនកម្ទេច

នៅពេលដែលបរិមាណកញ្ចក់កែវ (កញ្ចក់កែវមិនអាចលក់បានក្នុងទម្រង់ និងលក្ខណៈដើមរបស់វា) ត្រូវដាក់បញ្ចូលគ្នា ហើយវាត្រូវយកទៅម៉ាស៊ីនកម្ទេច ដែលមានទីតាំងនៅខាងក្នុងអាគារឃ្លាំងធំៗ កញ្ចក់ដែលត្រូវបំបែកគឺត្រូវទុកក្នុងធុងសំរាមធំៗ ឬដាក់ក្នុងធុងប្លាស្ទិកធំៗ មុនពេលដឹកជញ្ជូនចេញដើម្បីការពារកុំអោយកំពប់អំបែង។

Crushing Machine

When sufficient quantities of glass (those that cannot be sold in their current form and condition) are accumulated, these are to be transported to the crushing machine located inside the main warehouse building. The crushed glass materials are to be stored in the large trash bins or in huge plastic containers prior to transport to prevent spillage of the culets.



លក្ខណៈទីផ្សារគម្របនៃសំរាមដែលអាចកែច្នៃឡើងវិញ

ប្រភេទសំរាម	លក្ខណៈទីផ្សារ
ក្រដាស (តាមប្រភេទ)	- បែងចែកតាមគុណភាព - សង្កត់រួច (បញ្ជាក់ទំហំ និងទម្ងន់) ឬមិនទាន់សង្កត់ - ស្អាត ឬមានលាយក្រដាសសើម - ស្អាត ឬកង្វក់តាមកម្រិត
ប្រភេទដែក	- ត្រូវបានពង្រាប មិនបានពង្រាប ឬត្រូវបានជ្រៀក - មានផ្លាក ឬអត់ផ្លាក - ស្អាត ឬកង្វក់តាមកម្រិត - មានលាយលោហៈប្រភេទផ្សេងៗ ឬតែមួយ - រាយ ចងកៀប ឬគ្រឿងបញ្ចូលគ្នា (បញ្ជាក់ទំហំ និងទម្ងន់)
ប្រភេទអាលុយមីញ៉ូម	- ត្រូវបានពង្រាប មិនបានពង្រាប ឬត្រូវបានជ្រៀក - មិនមានសំណើម ដី សំណរ ឬកែវ...
ប្រភេទប្លាស្ទិក	- ត្រូវបានសង្កត់បញ្ចូលគ្នា មួយៗ ឬ រាយ - ចែកតាមពណ៌ ប្រភេទ ឬលាយគ្នា - មាន ឬអត់គម្រប
ប្រភេទកែវ (អាចជាដប ប៉ូរ ជាដើម)	- ចែកតាមពណ៌ ឬលាយគ្នា - ទំហំអំបែង (បញ្ជាក់) - កម្រិតកង្វក់

Sample Market Specification of Recyclable Materials

Materials	Market Specification
Paper (Assorted types)	Separated by grade Baled (size and weight specified) or loose Dry or including some wet Clean or some degree of contamination
Ferrous containers	Flattened, un-flattened or shredded Labels removed or not removed Clean or with a degree of contamination Including bimetal or no bimetal Loose, baled or densified (weight and size specified)
Aluminum containers	Flattened, shredded, baled or densified Free of moisture, dirt, foil, lead, glass, etc.
Plastic containers	Baled, granulated or loose Separated by color or type or mixed With or without caps
Glass (can be bottles, jars, etc of any color)	Separated by color or mixed Size of cullet (specified) Degree of contamination

ផ្នែកទី ២៖ ដំណើរការបន្ត

សំរាមដែលអាចកែច្នៃឡើងវិញដែលមិនអាចប្រមូល និង ត្រូវការដំណើរការច្រើនបន្ថែមទៀត នឹងត្រូវរក្សាទុកជា បណ្តោះអាសន្ននៅក្នុងទីលាន។ វានឹងត្រូវបានកត់ត្រាទុក ហើយអ្នកម៉ៅការកែច្នៃសំរាមនឹងត្រូវទាក់ទងដើម្បីដំណើរ ការបន្ត ប្រសិនបើទីលានមិនអាចដំណើរការលើសំរាមទាំង នេះ។

Section 2: Further Processing

Those recyclables that cannot be collected and require more thorough processing shall be stored temporarily in the Facility. This will be recorded, and a consignment processing contractor will be contacted for further processing if the Facility is not able to handle such processing.

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង
របៀង ខាងត្បូង

GMS: Southern Economic Corridor
Towns Development Project

ជំពូកទី ៧ ៖ ការបញ្ចេញសំរាមប្រែក្លាយ

Chapter 7: Releasing of Recovered Materials

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



ការបញ្ចេញសំរាមវិញក្នុង

ការកត់ត្រាការលក់សំរាមវិញក្នុង

ប្រតិបត្តិករត្រូវមានកំណត់ត្រាអំពីទំងន់ / បរិមាណ និងចំនួនប្រតិបត្តិការនៃវត្ថុធាតុដើមដែលពួកគេនឹងនាំទៅកាន់ទីផ្សារមិនថានៅក្នុងឬក្រៅប្រទេសទេ។

- កាលបរិច្ឆេទ និងពេលវេលា នៃការចូល និងចេញ
- អត្តសញ្ញាណសម្គាល់យានយន្ត (ប្រភេទ និងផ្លាកលេខ)

Releasing of Recovered Materials

Recording of Sale of Recovered Materials

The Operator shall have a record of the weight/volume and transaction amount of the materials that they are going to bring to the market, whether in or out of the country.

- Date and time of entry and exit
- Vehicle Identification (type and license plate)



ការបញ្ចេញសំណល់ប្លាស្ទិក

- ឈ្មោះ និងព័ត៌មានលម្អិតនៃមធ្យោបាយទំនាក់ទំនងរបស់ក្រុមហ៊ុនដែលទិញវត្ថុធាតុប្លាស្ទិក
- ឈ្មោះ និងព័ត៌មានលម្អិតនៃមធ្យោបាយទំនាក់ទំនងរបស់អ្នកបើកបរ / អតិថិជនដែលទិញវត្ថុធាតុប្លាស្ទិក

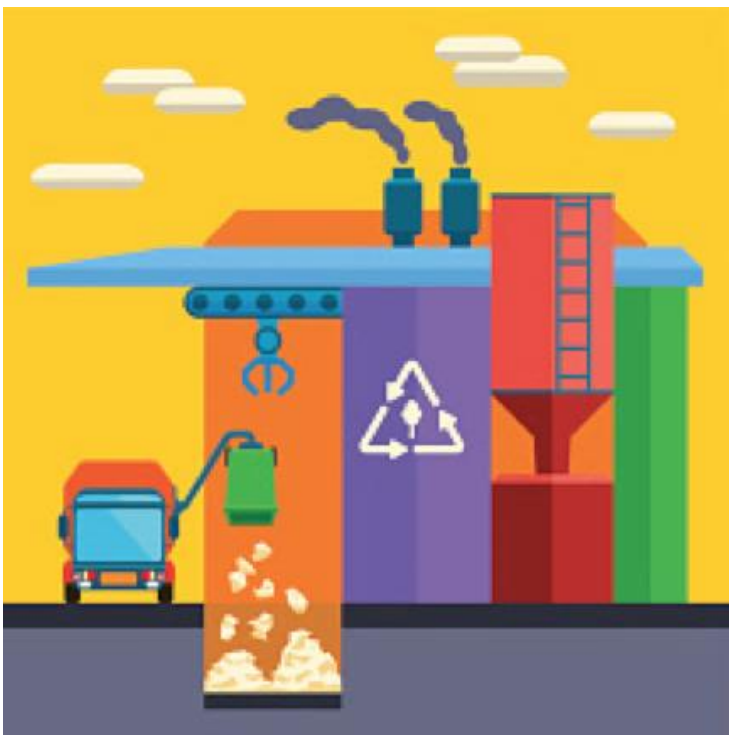


Releasing of Recovered Materials

- Name and contact details of company buying the recovered materials
- Name and contact details of driver/customer buying the recovered materials

ការបញ្ចេញសំណល់ប្រភេទ

- ព័ត៌មានលម្អិតនៃវត្ថុធាតុប្រភេទ (ប្រភេទ ទម្ងន់/ចំនួន តម្លៃ)
- ឈ្មោះបុគ្គលិកដែលធ្វើការទិញលក់។



Releasing of Recovered Materials

- Details of recovered materials (type, weight/amount, price)
- Name of personnel processing the sale.



ការបញ្ចេញសំរាមប្លាស្ទិក

ការដឹកជញ្ជូននៃសំរាមប្លាស្ទិក

- ដឹកជញ្ជូនសំរាមប្លាស្ទិកទៅកន្លែងណាមួយដែលចាត់ទុកជាទីផ្សាររបស់ពួកគេ មិនថានៅក្នុង ឬក្រៅប្រទេស។
- អនុលោមតាមច្បាប់ និងបទប្បញ្ញត្តិពាក់ព័ន្ធនានាក្នុងការដឹកជញ្ជូននូវសំរាមប្លាស្ទិក។



Releasing of Recovered Materials

Transport of Recovered Materials

- Transport recovered materials to any place which are considered their market, whether in or out of the country.
- Comply with relevant laws and regulations in the transport of the recovered materials.

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង របៀង ខាងត្បូង

GMS: Southern Economic Corridor Towns Development Project

ជំពូកទី ៨ ៖ ការថែទាំ

CHAPTER 8 : MAINTENANCE

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



ផ្នែកទី ១ ៖ ទិដ្ឋភាពទូទៅនៃការថែទាំ

រួមមាន៖

- គុណភាព និងសោភ័ណភាពនៃទីលាន
- ឧបករណ៍បន្ថយទំហំ (ដូចជាម៉ាស៊ីនសង្កត់ និងម៉ាស៊ីនកំបំបែក) និងឧបករណ៍អគ្គិសនី
- អគារទីលានត្រូវបានថែទាំយ៉ាងទៀងទាត់
- ការថែទាំ បង្ការនឹងត្រូវអនុវត្តដើម្បីកាត់បន្ថយការកើតឡើង នៃការងារជួសជុលធំៗ
- នីតិវិធី នៃអធិការកិច្ច
- ការខូចខាតមានកាន់តែតិចនឹងកាត់បន្ថយការកកស្ទះការងាររបស់ទីលានកាន់តែល្អប្រសើរ។

Section 1: Maintenance Overview

Includes:

- The integrity and aesthetic of the building,
- The size reduction equipment (such as the baler and glass crusher) and electrical equipment.
- The site buildings - to be maintained at regular intervals
- Preventive maintenance will be practiced, mitigating major repairs.
- Regular inspection
- Less breakdown of equipment will minimize MRF's downtime.

ផ្នែកទី ២ ៖ ផែនការថែទាំ

១. ផែនការត្រួតពិនិត្យ/អធិការកិច្ច

- គោលបំណង៖ ការត្រួតពិនិត្យ និងអធិការកិច្ចទាំងឡាយ នឹងអាចអនុវត្តប្រកបដោយប្រសិទ្ធភាព ដោយមិនប៉ះពាល់ដល់ប្រតិបត្តិការរបស់ទីលាន។
- ផែនការត្រួតពិនិត្យ/អធិការកិច្ច (សម្រាប់ឆ្នាំសារពើពន្ធ នីមួយៗ) ដែលពិពណ៌នាអំពីអធិការកិច្ចប្រចាំថ្ងៃ ប្រចាំ កាលកំណត់ អធិការកិច្ច/ការត្រួតពិនិត្យផ្នែកច្បាប់ និង មាតិកានៃការត្រួតពិនិត្យដោយស្ម័គ្រចិត្តជាដើម។

Section 2: Maintenance Plans

1. Check/Inspection Plan

- Purpose: For checks and inspections can be carried out efficiently without affecting the operation of the Facility.
- Check/inspection plan (for each fiscal year) Consist of: Daily inspections, Periodic inspections, Legal inspections/checks, Contents of voluntary inspection, etc.

ផ្នែកទី ២ ៖ ផែនការថែទាំ

Section 2: Maintenance Plans

បរិយាយ (Item)	ច្បាប់ / បទប្បញ្ញត្តិ Laws/Regulations, etc.	ភាពញឹកញាប់នៃការអនុវត្ត Frequency of implementation
ម៉ាស៊ីនប្លឺងទម្ងន់ (Weighing Machine)	ច្បាប់ស្តីពី មាត្រាសាស្ត្រ (Law on Metrology)	រៀងរាល់ពីរឆ្នាំម្តង (Once every two years)
ឧបករណ៍អគ្គិសនី (Electrical equipment)	ច្បាប់ស្តីពី អគ្គិសនីនៃព្រះរាជាណាចក្រកម្ពុជា (Electricity Law of the Kingdom of Cambodia)	មួយខែម្តង (Once a month)
កន្លែងផ្ទុក (Storage Place)	ច្បាប់កម្ពុជាស្តីពីការបង្ការនិងពន្លត់អគ្គិភ័យឆ្នាំ ២០១៣ (Cambodia Law on Fire Prevention and Firefighting 2013)	មួយឆ្នាំម្តង (Once a year)
ឧបករណ៍ពន្លត់អគ្គិភ័យ (Firefighting equipment)	ច្បាប់កម្ពុជាស្តីពី ការបង្ការនិងការពន្លត់អគ្គិភ័យឆ្នាំ ២០១៣ (Cambodian Law on Fire Prevention and Firefighting 2013)	រៀងរាល់ ៦ ខែម្តង (Once every 6 months)
របស់ចាំបាច់ផ្សេងៗទៀត (Other necessary items)	ច្បាប់ និងបទប្បញ្ញត្តិពាក់ព័ន្ធ (Relevant laws and regulations)	បទប្បញ្ញត្តិនៃច្បាប់ និងបទប្បញ្ញត្តិពាក់ព័ន្ធតាមតម្រូវការ (Relevant laws and regulation as required)

ផ្នែកទី ២ ៖ ផែនការថែទាំ

ត្រូវគិតគូររាល់ការត្រួតពិនិត្យ/អធិការកិច្ច

- ត្រូវគិតគូរពីប្រសិទ្ធភាពនៃប្រតិបត្តិការ
- ត្រូវធ្វើឡើងដោយផ្អែកលើផែនការត្រួតពិនិត្យ/អធិការកិច្ចប្រចាំឆ្នាំ
- ក្នុងករណីមានឧបទ្វីហេតុណាមួយកើតឡើង ប្រតិបត្តិករត្រូវធ្វើការត្រួតពិនិត្យ/អធិការកិច្ចជាបន្ទាន់មួយភ្លាមៗទៅលើបញ្ហា និងលើចំណុចស្រដៀងគ្នា
- កំណត់ត្រាទាក់ទងទៅនឹងការត្រួតពិនិត្យ/អធិការកិច្ចត្រូវគ្រប់គ្រង និងរក្សាទុកត្រឹមត្រូវឱ្យបានច្រើនឆ្នាំ (យ៉ាងតិច ៥ ឆ្នាំ)
- បន្ទាប់ពីការត្រួតពិនិត្យ/អធិការកិច្ច របាយការណ៍ត្រូវធ្វើ និងប្រគល់ជូនអោយបានឆាប់រហ័សទៅអាជ្ញាធរពាក់ព័ន្ធ។

Section 2: Maintenance Plans

Considerations for Check/inspection:

- To be planned considering the efficiency of operation.
- To be conducted based on the annual check/inspection plan.
- In case of irregularity or accident - Operator shall do immediate check/inspection on the event and on similar points .
- Records relating to the check/inspection shall be properly managed and stored (e.g., minimum of 5 years).
- After the check/inspection, report shall be created and submitted to the relevant authorities.

២. ផែនការជួសជុល/ថែទាំ

ប្រតិបត្តិការត្រូវ៖

1. រៀបចំផែនការជួសជុល និងថែទាំទីលាន
2. កំណត់ភាពធន់ និងគុណភាពប្រតិបត្តិការនៃទីលាន និងឧបករណ៍
3. អនុវត្តការជួសជុល/ការថែទាំ
4. រៀបចំរបាយការណ៍ស្តីពីលទ្ធផលនៃការជួសជុល/ថែទាំនិងរាយការណ៍ជូនអាជ្ញាធរពាក់ព័ន្ធ; និងត្រូវគ្រប់គ្រងនិងរក្សាទុកឱ្យបានត្រឹមត្រូវ (យ៉ាងតិច ៥ឆ្នាំ)។

2. Repair/Maintenance Plan

The Operator shall:

1. Prepare a repair and maintenance plan.
2. Determine the durability and operational integrity of the Facility and equipment.
3. Perform necessary repair/maintenance.
4. Prepare a report on repair/maintenance results and report it to the relevant authorities; and shall be properly managed and stored (minimum of 5 years).

៣. ផែនការការជំនួស - ប្រតិបត្តិករត្រូវ៖

១. រៀបចំផែនការការជំនួសដោយពិចារណាលើអាយុកាលប្រើប្រាស់របស់ឧបករណ៍។
២. រៀបចំផែនការការជំនួសថ្មីចុងក្រោយជាទៀងរាល់ឆ្នាំដោយផ្អែកលើលទ្ធផលនៃការត្រួតពិនិត្យ ការជួសជុល/ការថែទាំ ការត្រួតពិនិត្យមុខងារសុក្រិតភាពជាដើម។

៤. ផែនការលទ្ធកម្ម - ប្រតិបត្តិករត្រូវ៖

១. រៀបចំផែនការលទ្ធកម្មសម្រាប់ឧបករណ៍គ្រឿងបន្លាស់ និងសំភារៈផ្សេងៗសម្រាប់ទីលាន។
២. កត់ត្រាលទ្ធផលលទ្ធកម្មនៃឧបករណ៍ គ្រឿងបន្លាស់ និងសំភារៈ។

៥. ផែនការថែទាំទីលាន - ជាទៀងរាល់ឆ្នាំប្រតិបត្តិករត្រូវធ្វើបច្ចុប្បន្នភាពតំហែទាំទីលាន ដោយផ្អែកទៅលើលទ្ធផលនៃការត្រួតពិនិត្យ/អធិការកិច្ច ការជួសជុល/ការថែទាំ ត្រួតពិនិត្យមុខងារសុក្រិតភាព អោយបានត្រឹមត្រូវជាដើម ។

3. Replacement Plan - The Operator shall:

1. Prepare a replacement plan considering the useful life of the equipment.
2. Formulate the latest replacement plan every year based on the results of check/inspection, repair/maintenance, precision function inspection, etc.

4. Procurement Plan - The Operator shall:

1. Prepare a procurement plan for equipment, spares, consumables, and utilities for the Facility.
2. Record the procurement results of procured equipment, spare parts, consumables and utilities.

5. Facility Maintenance Plan - The Operator shall update the Facility maintenance plan every year based on the results of check/inspection, repair/maintenance, precision function inspection, etc.

៦. ផែនការគេហកិច្ច – គោលបំណង៖ ដើម្បីបង្ការ ឬគ្រប់គ្រងបញ្ហាដូចជា សត្វដែលចូលចិត្តកាកសំណល់ ក្លិនស្អុយ និងសំរាមរាយប៉ាយផ្សេងៗ ។ ទាំងនោះរួមបញ្ចូលនូវរបៀប និងពេលវេលាសម្អាតឱ្យបានត្រឹមត្រូវ ទាំង ក្នុងនិងក្រៅទីលាន និងគ្រឿងបរិក្ខារផ្សេងៗ (ឧបករណ៍លាងសម្អាតត្រូវ បានផ្តល់នៅក្នុងការងារនេះ) ។ល។ ប្រតិបត្តិករត្រូវ៖

- ១. បង្កើតផែនការសម្អាតទីលាន
- ២. រក្សាភាពស្អាតនៃទីលាន រួមទាំងបរិវេណជុំវិញគ្រប់ពេលវេលា ជា ពិសេសរួមទាំងកន្លែងដែលមានភាគីទី៣ចូលមកទស្សនាផងដែរ ដូចជា កន្លែងភ្ញៀវចេញចូលជាដើម។

៧. ផែនការគ្រប់គ្រងទេសភាព – ប្រតិបត្តិករត្រូវ៖

- ១. រៀបចំផែនការគ្រប់គ្រងទេសភាព ដែលពិពណ៌នាអំពីការកាត់តម្រឹមរុក្ខ ជាតិ ការបាញ់ថ្នាំ បើចាំបាច់ ការស្រោចទឹកជាដើម និងទទួលការយល់ឯក ភាពពីអាជ្ញាធរពាក់ព័ន្ធ។
- ២. គ្រប់គ្រងឱ្យបានត្រឹមត្រូវនូវទេសភាពនៃបរិវេណជុំវិញទីលានដោយផ្អែក លើផែនការគ្រប់គ្រងទេសភាព។

6. Housekeeping Plan – Purpose:

To prevent or control vector and vermin infestation, odor and litter, among others. Include proper cleaning procedures/schedules for outdoor and indoor facilities and equipment (pressure washers are provided to aid in this task), etc. The Operator shall:

- 1. Formulate cleaning plan of the Facility.
- 2. Maintain the cleanliness of the Facility, including its surroundings at all times, especially along the area where third party such as visitors enter.

7. Landscaping Management Plan -
The Operator shall:

- 1. Prepare a landscaping management plan describing pruning, spraying of fertilizers, if necessary, watering, etc. and obtain approval of the relevant authorities.
- 2. Properly manage landscaping of the Facility's surroundings based on the landscape management plan.

៨. ផែនការថែទាំកែលម្អ - ប្រតិបត្តិករត្រូវស្នើ
ទៅអាជ្ញាធរពាក់ព័ន្ធនូវគម្រោងមួយសម្រាប់
ការថែទាំកែលម្អ។

ផ្នែកទី ៣ ៖ ការគ្រប់គ្រងព័ត៌មាន

ប្រតិបត្តិករត្រូវ(អនុម័តពីអាជ្ញាធរពាក់ព័ន្ធ) ៖

1. គ្រប់គ្រងឱ្យបានត្រឹមត្រូវនូវសៀវភៅណែនាំ
គំនូសប្លង់ផ្សេងៗ។
២. ពិនិត្យឡើងវិញ និងធ្វើបច្ចុប្បន្នភាពវាតាមតម្រូវការ។

8. Improved Maintenance Plan - Operator shall
propose to the relevant authorities a plan for
improvement maintenance.

Section 3: Information Management (for the MRF)

The Operator shall (with approval of relevant
authorities):

1. Properly manage various manuals, drawings,
etc.
2. Revise and update them as needed.

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង
របៀង ខាងត្បូង

GMS: Southern Economic Corridor
Towns Development Project

ជំពូកទី ៩ ៖ ការត្រួតពិនិត្យ និង
ការធ្វើរបាយការណ៍

Chapter 9: Monitoring and Reporting

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



ការត្រួតពិនិត្យ និងការធ្វើរបាយការណ៍

ការត្រួតពិនិត្យដោយខ្លួនឯង និងអធិការកិច្ចដោយអាជ្ញាធរ

ប្រតិបត្តិករគួរតែធ្វើការត្រួតពិនិត្យដោយខ្លួនឯងនូវរាល់សកម្មភាពនៅទីលាន មុនពេលមានការធ្វើអធិការកិច្ចនៅនឹងកន្លែងដោយអាជ្ញាធរពាក់ព័ន្ធ។

នៅពេលដែលអាជ្ញាធរពាក់ព័ន្ធធ្វើអធិការកិច្ចនៅនឹងកន្លែងលើការគ្រប់គ្រង និងប្រតិបត្តិការទូទៅនៅទីលាន ដូចជាប្រតិបត្តិការដាក់ស្បែងនិងការត្រួតពិនិត្យនូវឧបករណ៍នីមួយៗជាដើម ប្រតិបត្តិករគួរតែផ្តល់នូវសហប្រតិបត្តិការពេញលេញជាមួយនឹងសវនកម្ម និងអធិការកិច្ចដោយប្រគល់ជូននូវសម្ភារៈដែលត្រូវការភ្លាមៗ។ អ្នកត្រួតពិនិត្យ និងអ្នកគ្រប់គ្រងពលកម្មមានសិទ្ធក្នុងការចុះមើល និងត្រួតពិនិត្យអំពីសុខភាព លក្ខខណ្ឌការងារ និងសុវត្ថិភាពនៅក្នុងទីលាន។

Monitoring and Reporting

Self-Monitoring and Inspection by Authorities

The Operator should carry out self-monitoring of the activities within the Facility prior to the on-site inspection by the relevant authorities.

When the relevant authorities carry out an on-site inspection of general management and operation of the Facility including actual operations and checks of each equipment, the Operator should provide full cooperation with the audit and inspection submitting required materials etc. immediately. Also, Labor Inspectors and Labor Controllers have the right to visit and inspect the health, working conditions and safety of the Facility.

ការត្រួតពិនិត្យ និងការធ្វើរបាយការណ៍

ការធ្វើរបាយការណ៍

ប្រតិបត្តិករតាមរយៈបុគ្គលិក ដែលបានចាត់តាំង ត្រូវកត់ត្រានូវរាល់ទិន្នន័យប្រតិបត្តិការ នៃឧបករណ៍នៅទីលាន និងសម្ភារៈនីមួយៗដូចជាអគ្គិសនី និងទឹក និងកំណត់ហេតុប្រតិបត្តិការប្រចាំថ្ងៃ របាយការណ៍ប្រចាំថ្ងៃ របាយការណ៍ប្រចាំខែ របាយការណ៍ប្រចាំឆ្នាំជាដើម ដោយរួមបញ្ចូលខ្លឹមសារនានាដូចជា តម្លៃវិភាគ ការពិនិត្យ/អធិការកិច្ច ការជួសជុល ជាដើម ។ល។

ប្រតិបត្តិករគួរតែរៀបចំ និងប្រគល់ជូននូវរបាយការណ៍ប្រចាំខែ និងប្រចាំឆ្នាំ ដែលទាក់ទងទៅនឹងប្រតិបត្តិការនៅទីលានទៅអាជ្ញាធរពាក់ព័ន្ធ ក៏ដូចជាសម្ភារៈ និង/ឬឯកសារចាំបាច់នានាទៅតាមការណែនាំ នៅពេលអាជ្ញាធរត្រូវការ។

Monitoring and Reporting

Reporting

The Operator, through their designated personnel, shall record the operation data of each Facility equipment and utility data such as electricity and water, and also operation diary, daily report, monthly report, annual report, etc. including contents such as analysis value, check/inspection, repair, etc.

The Operator should prepare and submit monthly and annual reports related to the operations of the Facility to relevant authorities, as well as necessary materials and/or documents as instructed when the relevant authorities requires such submission.



ការត្រួតពិនិត្យ និងការធ្វើរបាយការណ៍

របាយការណ៍គ្រប់គ្រងប្រតិបត្តិការ

ប្រតិបត្តិការត្រូវ:

1. រៀបចំរបាយការណ៍ស្តីពីប្រតិបត្តិការនិងការគ្រប់គ្រងដូចជា របាយការណ៍ប្រចាំថ្ងៃប្រចាំខែនិងប្រចាំឆ្នាំនៃចំនួនទឹកប្រាក់ដែលអាចយកមកប្រើប្រាស់បានតាមប្រភេទទិន្នន័យប្រតិបត្តិការទិន្នន័យឧបករណ៍ប្រើប្រាស់កំណត់ហេតុប្រតិបត្តិការ។ ល។
2. បង្កើតរបាយការណ៍លទ្ធផលត្រួតពិនិត្យ / ត្រួតពិនិត្យដែលពិពណ៌នាអំពីលទ្ធផលត្រួតពិនិត្យ / ត្រួតពិនិត្យសម្រាប់គោលបំណងកត់ត្រានិងការដាក់ជូនទៅអាជ្ញាធរពាក់ព័ន្ធប្រសិនបើចាំបាច់។

Monitoring and Reporting

Operation Management Report

1. Prepare reports on operations and management, such as daily, monthly, and annual reports of carried-in/carried-out recyclable amounts by type, operation data, utility data, operations diary, etc.
2. Formulate a check/inspection result report that describes check/inspection results, for records purposes and for submission to the relevant authorities, if they so require.



ការត្រួតពិនិត្យ និងការធ្វើរបាយការណ៍

របាយការណ៍នៃការគ្រប់គ្រងប្រតិបត្តិការ

- ភាពញឹកញាប់ ពេលវេលា ធាតុលម្អិតនានា នៃការប្រគល់ជូនរបាយការណ៍ត្រូវសម្រេចដោយធ្វើការប្រឹក្សា ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។
- កំណត់ត្រាទាក់ទងនឹងទិន្នន័យប្រតិបត្តិការត្រូវបានគ្រប់គ្រង និងរក្សាទុកឱ្យបានត្រឹមត្រូវ តាមចំនួនឆ្នាំដូចដែលបានកំណត់ដោយច្បាប់ និងបទប្បញ្ញត្តិ ឬក៏ដោយការប្រឹក្សាយោបល់ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។

Monitoring and Reporting

Operation Management Report

- Submission frequency, time, detailed items of the report shall be decided in consultation with the relevant authorities.
- The records relating to operation data shall be properly managed and stored for a number of years as determined by laws and regulations or in consultation with the relevant authorities.



កំណត់ត្រាការគ្រប់គ្រងដទៃទៀត

ប្រតិបត្តិការត្រូវធ្វើរបាយការណ៍កំណត់ត្រាការគ្រប់គ្រងមួយ ដើម្បីបន្ថែមទៅលើ កំណត់ត្រាការគ្រប់គ្រងដទៃទៀតដែលអាច ត្រូវការដោយអាជ្ញាធរពាក់ព័ន្ធ។ រាល់ឧបករណ៍ដែលគ្រប់គ្រង និងកត់ត្រាបាន នឹងក្លាយជាឧបករណ៍របស់ទីលាន ឬក៏របស់ដទៃទៀតដែលប្រតិបត្តិការស្ម័គ្រចិត្តគ្រប់គ្រង និងកត់ត្រា។

ភាពញឹកញាប់ ពេលវេលា ធាតុលម្អិតនានា នៃរបាយការណ៍ ត្រូវបានសម្រេច ដោយធ្វើការប្រឹក្សាយោបល់ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។ ពេលណាដែលអាជ្ញាធរ ពាក់ព័ន្ធត្រូវការនូវការប្រគល់ជូនរបាយការណ៍ កំណត់ត្រា ឯកសារ ជាក់លាក់ ណាមួយ អំពីការគ្រប់គ្រងនិងប្រតិបត្តិការនៅទីលាន ប្រតិបត្តិការគួរតែឆ្លើយតប អោយបានត្រឹមត្រូវនិងទាន់ពេលវេលា និងប្រគល់ជូនរបាយការណ៍ កំណត់ត្រា ឯកសារ -ល- ទៅតាមតម្រូវការរបស់អាជ្ញាធរពាក់ព័ន្ធដោយមិនពន្យារពេល។

កំណត់ត្រានៃការគ្រប់គ្រងដែលត្រូវការដោយអាជ្ញាធរពាក់ព័ន្ធ ត្រូវគ្រប់គ្រង និង រក្សាទុកឱ្យបានត្រឹមត្រូវតាមចំនួនឆ្នាំ(អប្បបរមា៥ឆ្នាំ)ដែលបានកំណត់ដោយ ច្បាប់និងបទប្បញ្ញត្តិ ឬក៏ដោយការប្រឹក្សាយោបល់ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។



Other Operation Record

The Operator shall create a management record report to add to the other management records that might be required by the relevant authorities. Among the items that can be managed and recorded will be the equipment of the Facility or other items that the Operator voluntarily manages and records.

Submission frequency, time, detailed items of the report shall be decided in consultation with the relevant authorities. Whenever the relevant authorities will require submission of specific reports, records, materials etc. concerning the management and operation of the Facility, the Operator should respond accordingly and promptly, and submit the reports, records, materials, etc. required by the relevant authorities without delay.

The management records required by the relevant authorities shall be properly managed and stored for a number of years (minimum of 5 years) or as determined by laws and regulations or in consultation with the relevant authorities.

យោបល់ ឬ សំណួរ ?

Comments or Questions





ADB

GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង
របៀង ខាងត្បូង

GMS: Southern Economic Corridor
Towns Development Project

ជំពូកទី ៩ ៖ ការត្រួតពិនិត្យ និង
ការធ្វើរបាយការណ៍

Chapter 9: Monitoring and Reporting

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Associated with



ការត្រួតពិនិត្យ និងការធ្វើរបាយការណ៍

ការត្រួតពិនិត្យដោយខ្លួនឯង និងអធិការកិច្ចដោយអាជ្ញាធរ

ប្រតិបត្តិករគួរតែធ្វើការត្រួតពិនិត្យដោយខ្លួនឯងនូវរាល់សកម្មភាពនៅទីលាន មុនពេលមានការធ្វើអធិការកិច្ចនៅនឹងកន្លែងដោយអាជ្ញាធរពាក់ព័ន្ធ។

នៅពេលដែលអាជ្ញាធរពាក់ព័ន្ធធ្វើអធិការកិច្ចនៅនឹងកន្លែងលើការគ្រប់គ្រង និងប្រតិបត្តិការទូទៅនៅទីលាន ដូចជាប្រតិបត្តិការដាក់ស្បែងនិងការត្រួតពិនិត្យនូវឧបករណ៍នីមួយៗជាដើម ប្រតិបត្តិករគួរតែផ្តល់នូវសហប្រតិបត្តិការពេញលេញជាមួយនឹងសវនកម្ម និងអធិការកិច្ចដោយប្រគល់ជូននូវសម្ភារៈដែលត្រូវការភ្លាមៗ។ អ្នកត្រួតពិនិត្យ និងអ្នកគ្រប់គ្រងពលកម្មមានសិទ្ធក្នុងការចុះមើល និងត្រួតពិនិត្យអំពីសុខភាព លក្ខខណ្ឌការងារ និងសុវត្ថិភាពនៅក្នុងទីលាន។

Monitoring and Reporting

Self-Monitoring and Inspection by Authorities

The Operator should carry out self-monitoring of the activities within the Facility prior to the on-site inspection by the relevant authorities.

When the relevant authorities carry out an on-site inspection of general management and operation of the Facility including actual operations and checks of each equipment, the Operator should provide full cooperation with the audit and inspection submitting required materials etc. immediately. Also, Labor Inspectors and Labor Controllers have the right to visit and inspect the health, working conditions and safety of the Facility.

ការត្រួតពិនិត្យ និងការធ្វើរបាយការណ៍

ការធ្វើរបាយការណ៍

ប្រតិបត្តិករតាមរយៈបុគ្គលិក ដែលបានចាត់តាំង ត្រូវកត់ត្រានូវរាល់ទិន្នន័យប្រតិបត្តិការ នៃឧបករណ៍នៅទីលាន និងសម្ភារៈនីមួយៗដូចជាអគ្គិសនី និងទឹក និងកំណត់ហេតុប្រតិបត្តិការប្រចាំថ្ងៃ របាយការណ៍ប្រចាំថ្ងៃ របាយការណ៍ប្រចាំខែ របាយការណ៍ប្រចាំឆ្នាំជាដើម ដោយរួមបញ្ចូលខ្លឹមសារនានាដូចជា តម្លៃវិភាគ ការពិនិត្យ/អធិការកិច្ច ការជួសជុល ជាដើម ។ល។

ប្រតិបត្តិករគួរតែរៀបចំ និងប្រគល់ជូននូវរបាយការណ៍ប្រចាំខែ និងប្រចាំឆ្នាំ ដែលទាក់ទងទៅនឹងប្រតិបត្តិការនៅទីលានទៅអាជ្ញាធរពាក់ព័ន្ធ ក៏ដូចជាសម្ភារៈ និង/ឬឯកសារចាំបាច់នានាទៅតាមការណែនាំ នៅពេលអាជ្ញាធរត្រូវការ។

Monitoring and Reporting

Reporting

The Operator, through their designated personnel, shall record the operation data of each Facility equipment and utility data such as electricity and water, and also operation diary, daily report, monthly report, annual report, etc. including contents such as analysis value, check/inspection, repair, etc.

The Operator should prepare and submit monthly and annual reports related to the operations of the Facility to relevant authorities, as well as necessary materials and/or documents as instructed when the relevant authorities requires such submission.



ការត្រួតពិនិត្យ និងការធ្វើរបាយការណ៍

របាយការណ៍គ្រប់គ្រងប្រតិបត្តិការ

ប្រតិបត្តិការត្រូវ:

1. រៀបចំរបាយការណ៍ស្តីពីប្រតិបត្តិការនិងការគ្រប់គ្រងដូចជា របាយការណ៍ប្រចាំថ្ងៃប្រចាំខែនិងប្រចាំឆ្នាំនៃចំនួនទឹកប្រាក់ដែលអាចយកមកប្រើប្រាស់បានតាមប្រភេទទិន្នន័យប្រតិបត្តិការទិន្នន័យឧបករណ៍ប្រើប្រាស់កំណត់ហេតុប្រតិបត្តិការ។ ល។
2. បង្កើតរបាយការណ៍លទ្ធផលត្រួតពិនិត្យ / ត្រួតពិនិត្យដែលពិពណ៌នាអំពីលទ្ធផលត្រួតពិនិត្យ / ត្រួតពិនិត្យសម្រាប់គោលបំណងកត់ត្រានិងការដាក់ជូនទៅអាជ្ញាធរពាក់ព័ន្ធប្រសិនបើចាំបាច់។

Monitoring and Reporting

Operation Management Report

1. Prepare reports on operations and management, such as daily, monthly, and annual reports of carried-in/carried-out recyclable amounts by type, operation data, utility data, operations diary, etc.
2. Formulate a check/inspection result report that describes check/inspection results, for records purposes and for submission to the relevant authorities, if they so require.



ការត្រួតពិនិត្យ និងការធ្វើរបាយការណ៍

របាយការណ៍នៃការគ្រប់គ្រងប្រតិបត្តិការ

- ភាពញឹកញាប់ ពេលវេលា ធាតុលម្អិតនានា នៃការប្រគល់ជូនរបាយការណ៍ត្រូវសម្រេចដោយធ្វើការប្រឹក្សា ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។
- កំណត់ត្រាទាក់ទងនឹងទិន្នន័យប្រតិបត្តិការត្រូវបានគ្រប់គ្រង និងរក្សាទុកឱ្យបានត្រឹមត្រូវ តាមចំនួនឆ្នាំដូចដែលបានកំណត់ដោយច្បាប់ និងបទប្បញ្ញត្តិ ឬក៏ដោយការប្រឹក្សាយោបល់ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។

Monitoring and Reporting

Operation Management Report

- Submission frequency, time, detailed items of the report shall be decided in consultation with the relevant authorities.
- The records relating to operation data shall be properly managed and stored for a number of years as determined by laws and regulations or in consultation with the relevant authorities.



កំណត់ត្រាការគ្រប់គ្រងដទៃទៀត

ប្រតិបត្តិការត្រូវធ្វើរបាយការណ៍កំណត់ត្រាការគ្រប់គ្រងមួយ ដើម្បីបន្ថែមទៅលើ កំណត់ត្រាការគ្រប់គ្រងដទៃទៀតដែលអាច ត្រូវការដោយអាជ្ញាធរពាក់ព័ន្ធ។ រាល់ឧបករណ៍ដែលគ្រប់គ្រង និងកត់ត្រាបាន នឹងក្លាយជាឧបករណ៍របស់ទីលាន ឬក៏របស់ដទៃទៀតដែលប្រតិបត្តិការស្ម័គ្រចិត្តគ្រប់គ្រង និងកត់ត្រា។

ភាពញឹកញាប់ ពេលវេលា ធាតុលម្អិតនានា នៃរបាយការណ៍ ត្រូវបានសម្រេច ដោយធ្វើការប្រឹក្សាយោបល់ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។ ពេលណាដែលអាជ្ញាធរ ពាក់ព័ន្ធត្រូវការនូវការប្រគល់ជូនរបាយការណ៍ កំណត់ត្រា ឯកសារ ជាក់លាក់ ណាមួយ អំពីការគ្រប់គ្រងនិងប្រតិបត្តិការនៅទីលាន ប្រតិបត្តិការគួរតែឆ្លើយតប អោយបានត្រឹមត្រូវនិងទាន់ពេលវេលា និងប្រគល់ជូនរបាយការណ៍ កំណត់ត្រា ឯកសារ -ល- ទៅតាមតម្រូវការរបស់អាជ្ញាធរពាក់ព័ន្ធដោយមិនពន្យារពេល។

កំណត់ត្រានៃការគ្រប់គ្រងដែលត្រូវការដោយអាជ្ញាធរពាក់ព័ន្ធ ត្រូវគ្រប់គ្រង និង រក្សាទុកឱ្យបានត្រឹមត្រូវតាមចំនួនឆ្នាំ(អប្បបរមា៥ឆ្នាំ)ដែលបានកំណត់ដោយ ច្បាប់និងបទប្បញ្ញត្តិ ឬក៏ដោយការប្រឹក្សាយោបល់ជាមួយអាជ្ញាធរពាក់ព័ន្ធ។



Other Operation Record

The Operator shall create a management record report to add to the other management records that might be required by the relevant authorities. Among the items that can be managed and recorded will be the equipment of the Facility or other items that the Operator voluntarily manages and records.

Submission frequency, time, detailed items of the report shall be decided in consultation with the relevant authorities. Whenever the relevant authorities will require submission of specific reports, records, materials etc. concerning the management and operation of the Facility, the Operator should respond accordingly and promptly, and submit the reports, records, materials, etc. required by the relevant authorities without delay.

The management records required by the relevant authorities shall be properly managed and stored for a number of years (minimum of 5 years) or as determined by laws and regulations or in consultation with the relevant authorities.

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង របៀង ខាងត្បូង

GMS: Southern Economic Corridor Towns Development Project

ជំពូកទី ១០ ៖ ការគិតគូរអំពីសុខភាព និងសុវត្ថិភាព
ការងារ

Chapter 10 : Occupational Health and Safety Considerations

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



ផ្នែកទី ១ ៖ ទិដ្ឋភាពទូទៅនៃសុខភាព និងសុវត្ថិភាពការងារ

រួមមាន៖

- ការប្រតិបត្តិការនៅក្នុងទីលាន
- រាល់បុគ្គលិកទាំងអស់ត្រូវទទួលបានការបណ្តុះបណ្តាលអោយស្គាល់ពីប្រភេទផ្សេងៗគ្នា នៃគ្រោះថ្នាក់
- កម្មវិធីសុខភាព និងសុវត្ថិភាពការងារមួយត្រូវការអនុវត្តនៅក្នុងទីលាន និងការទទួលខុសត្រូវទូទៅរបស់ប្រតិបត្តិករ។
- ស្របតាមច្បាប់ការងារនៃប្រទេសកម្ពុជា ប្រតិបត្តិករជានិយោជកត្រូវទទួលខុសត្រូវលើការថែទាំសុខភាព និងសុវត្ថិភាពរបស់កម្មករនៅទីលាន។
- ប្រតិបត្តិករត្រូវរក្សាកន្លែងការងារស្ថិតនៅក្នុងសភាពស្អាត មានអនាម័យ និងសុវត្ថិភាព ដែលចាំបាច់សម្រាប់សុខភាព និងសុវត្ថិភាពរបស់កម្មករ។

Section 1: Occupational Health and Safety Overview

Includes:

- with the operations of the Facility.
- All personnel need to be trained to recognize different types of hazards
- An occupational health and safety program needs to be instituted within the Facility - fundamental responsibility of the Operator.
- As per Labor Law of Cambodia, the Operator, as employer, is responsible for maintaining health and safety of the workers at the Facility.
- The Operator is required to keep the workplace in a common state of cleanliness and presentation of hygiene and safety necessary for the health and safety of workers.

ទីលានគួរតែ ត្រូវត្រួតពិនិត្យទៅលើ៖

- គុណភាពនៃបរិវេណ
- ភាពស្អាត
- ការរៀបចំអនាម័យសម្រាប់តម្រូវការបុគ្គលិក
- កន្លែងធម្មជាតិ
- ប្រព័ន្ធខ្យល់ចេញចូល និងប្រព័ន្ធទឹកស្អាត
- ឧបករណ៍ការពារខ្លួន
- កម្រិតពន្លឺ និងសំឡេងនៅកន្លែងការងារ។

សុវត្ថិភាពរបស់កម្មករត្រូវបានធានា ដោយតំឡើង និងការថែទាំនូវគ្រឿងម៉ាស៊ីន ប្រដាប់ប្រដារ និងឧបករណ៍នៅលក្ខខណ្ឌសុវត្ថិភាពល្អបំផុត។

The MRF should be monitored to check:

- Quality of the premises;
- Cleanliness;
- Hygienic arrangements for the needs of personnel;
- Workstations;
- Ventilation and sanitation;
- Personnel protection equipment (PPEs);
- Lighting and noise levels in the workplace.

Safety of the workers must be ensured by installing and maintaining the machinery, tools and equipment in the best possible safety conditions.

ដើម្បីគោរពតាមបទប្បញ្ញត្តិរបស់ច្បាប់ការងារនៃប្រទេសកម្ពុជា ប្រតិបត្តិករត្រូវ៖

- ១. បង្កើតប្រព័ន្ធគ្រប់គ្រងមួយសម្រាប់សុខភាព និងសុវត្ថិភាព ការងារដើម្បីធានានូវសុខភាព និងសុវត្ថិភាពរបស់ បុគ្គលិក។
- ២. លើកកម្ពស់បរិស្ថានការងារអោយល្អដើម្បីជំរុញអោយ បុគ្គលិកធ្វើការងារប្រកបដោយប្រសិទ្ធភាព។
- ៣. ផ្តល់នូវឧបករណ៍ការពារខ្លួន និងប្រដាប់វាស់ចាំបាច់នានា សម្រាប់ប្រតិបត្តិការ។
- ៤. ធ្វើការពិនិត្យសុខភាពរបស់បុគ្គលិកដោយផ្អែកទៅលើ (Industrial Safety and Health Act- ILO) ច្បាប់ការងារនៃ ប្រទេសកម្ពុជា។

In order to adhere to the stipulations of **Cambodia’s Labor Law**, the Operator shall:

- 1. Establish a management system for occupational health and safety of personnel.
- 2. Promote a good working environment to motivate personnel to work efficiently.
- 3. Provide personnel protection equipment (PPE) and measuring devices necessary for the operations.
- 4. Carry out medical checkups of personnel based on the (Industrial Safety and Health Act- ILO), the Cambodia Labor Law.

៥. ធ្វើការអនុវត្តលើការអប់រំនៃសុវត្ថិភាព និងសុខភាព
អោយបានទៀងទាត់តាមរយៈការបណ្តុះបណ្តាលនិង
ហ្វឹកហាត់ទៅលើសុវត្ថិភាព។
៦. អនុវត្តការបណ្តុះបណ្តាលដែលចាំបាច់ដើម្បីធ្វើឱ្យប្រាកដ
នូវសុវត្ថិភាពរបស់បុគ្គលិកអោយបានទៀងទាត់។
៧. ថែទាំបរិស្ថានការងារអោយបានសមរម្យនៅក្នុងទី
លានតាមរយៈការរៀបចំ និងសម្អាតកន្លែងការងារ។
៨. ប្រឹក្សាជាមួយអាជ្ញាធរពាក់ព័ន្ធដើម្បីធ្វើអោយមាន
ភាពប្រសើរឡើងនៅក្នុងទីលាន។

5. Carry out safety and health education to
the personnel regularly, through
trainings and safety drills.
6. Carry out training necessary for
ensuring the safety of the personnel
regularly.
7. Maintain a suitable work environment
in the facility through providing
organized and clean workplace.
8. Consult the relevant authorities to
improve the Facility.

ផ្នែកទី៣ ៖ ឧបករណ៍ការពារខ្លួន (PPE)

- បុគ្គលិក និងភ្ញៀវទាំងអស់ តែងតែតម្រូវអោយប្រើឧបករណ៍ការពារខ្លួនអោយបានសមរម្យនៅក្នុងទីលាន។
- ការស្តុកទុកនៃសម្ភារៈ និងឧបករណ៍សង្គ្រោះបឋមទាំងនោះគួរតែត្រូវបានពិនិត្យ និងបំពេញបន្ថែមមុនពេលខ្វះខាត ឬក៏ប្តូរអោយបានទៀងទាត់មុនថ្ងៃផុតកំណត់។
- ការបណ្តុះបណ្តាលបុគ្គលិកត្រូវធ្វើឡើងដោយការគ្រប់គ្រងពីរបៀប និងការប្រើប្រាស់នៃឧបករណ៍ និងសម្ភារៈសង្គ្រោះបន្ទាន់។

Section 3 - Personnel Protection Equipment (PPE)

- All personnel and visitors are always required to use the appropriate personnel protective equipment (PPE) within the Facility.
- The stocks of these kits and equipment should be regularly monitored and replenished prior to being depleted or changed regularly before the expiry date.
- Personnel trainings are to be conducted by management for the procedures and use of the first-aid kits and equipment.

ផ្នែកទី៤ ៖ ការគ្រប់គ្រងសុខភាព

- ប្រតិបត្តិករត្រូវធ្វើអោយប្រាកដនូវ សុខភាព និងសុវត្ថិភាព របស់បុគ្គលិកនៅកន្លែងការងារ ផ្អែកទៅលើប្រព័ន្ធគ្រប់គ្រងសម្រាប់សុខភាព និងសុវត្ថិភាពការងារ។
- លក្ខខណ្ឌអាឡែកស៊ី និងជំងឺ៖ ក្នុងកំឡុងពេលមានអាឡែកស៊ី និងជំងឺ បុគ្គលិកដែលប៉ះពាល់គួរបញ្ជូនទៅមន្ទីរពេទ្យដែលនៅជិតទីលានបំផុត។
- លក្ខខណ្ឌធាតុអាកាសមិនល្អ៖ បើសិនជាអាកាសធាតុមិនអំនោយផលដល់ការងារនៅទីលាន ប្រតិបត្តិករត្រូវផ្តល់នូវវិធានការសុខភាព និងសុវត្ថិភាពផ្សេងទៀត អោយបានត្រឹមត្រូវ។

Section 4 - Health Management

- The Operator shall ensure the health and safety of personnel at the workplace based on the management system for occupational health and safety.
- Allergies and Medical Conditions - During any allergies and medical conditions, the affected personnel should be delivered to the nearest medical facility as needed.
- Adverse Weather Conditions - When the weather is adverse or unsuitable for work at the Facility, the Operator shall provide other health and safety measures as appropriate.

ផ្នែកទី ៥ ៖ គ្រោះថ្នាក់ និងការសង្គ្រោះបន្ទាន់

គ្រោះថ្នាក់បុគ្គលិក

- សម្រាប់គ្រោះថ្នាក់ និងរបួសស្រាលៗ បុគ្គលិកដែលត្រូវបានបណ្តុះបណ្តាលនៅទីលាន ត្រូវផ្តល់ការសង្គ្រោះបន្ទាន់ដល់ជនរងគ្រោះ។
- សម្រាប់របួសធ្ងន់ធ្ងរ ជនរងគ្រោះត្រូវបញ្ជូនទៅមន្ទីរពេទ្យដែលនៅជិតទីលានបំផុត។ ក្នុងករណីដែលគ្រោះថ្នាក់ និងរបួសធ្ងន់ធ្ងរកើតឡើង ប្រតិបត្តិករត្រូវផ្អាកប្រតិបត្តិការរហូតដល់មូលហេតុនៃគ្រោះថ្នាក់ត្រូវបានកំណត់អត្តសញ្ញាណ ហើយបង្កើតវិធានការដើម្បីបញ្ចៀសការកើតឡើងម្តងទៀតនៃគ្រោះថ្នាក់នេះ។
- រាល់គ្រោះថ្នាក់ និងរបួសធ្ងន់/ស្រាល ត្រូវធ្វើរបាយការណ៍។

Section 5- Accidents and Emergencies

Personnel Accidents

- For minor accidents and injuries - trained personnel on-site shall administer first aid to the victim.
- For more serious injuries - the victim must be transferred to the nearest medical facility. The Operator may need to suspend operations until the cause of the accident has been identified and measures to prevent its reoccurrence are formulated.
- All minor and major accidents and injuries must be reported.

ផ្នែកទី ៥ ៖ គ្រោះថ្នាក់ និងការសង្គ្រោះបន្ទាន់ (ត)
ការបង្ការ និងការឆ្លើយតបទៅនឹងគ្រោះថ្នាក់បន្ទាន់/គ្រោះមហន្តរាយ

ប្រតិបត្តិការត្រូវ៖

១. ផ្តល់អទិភាពសុវត្ថិភាពក្នុងករណីដែលមានការគ្រោះថ្នាក់បន្ទាន់ដូចជា គ្រោះមហន្តរាយរញ្ជួយដី អគ្គិភ័យ និង/ឬការផ្ទុះនៅក្នុងទីលាន និងដំណើរការខុសប្រក្រតីនៃឧបករណ៍។ ប្រតិបត្តិការគួរតែផ្តល់អទិភាពខ្ពស់បំផុតទៅលើសុវត្ថិភាពរបស់ភ្ញៀវ។
២. រៀបចំសៀវភៅណែនាំអំពីការឆ្លើយតបនឹងគ្រោះថ្នាក់បន្ទាន់; ស្តារទីលានភ្លាមៗ; និងកែប្រែឡើងវិញនូវសៀវភៅណែនាំអំពីការឆ្លើយតបនឹងគ្រោះថ្នាក់បន្ទាន់នៅពេលចាំបាច់។
៣. កាត់បន្ថយផលប៉ះពាល់ទៅលើទីលានពេលមានការដឹងមុនថាទំនងនឹងមានគ្រោះមហន្តរាយកើតឡើង។
៤. ផ្តល់ប្រព័ន្ធជូនដំណឹងមួយដែលទទួលបានការយល់ស្របអនុវត្តការ
៥. បណ្តុះបណ្តាលពីការការពារខ្លួនពីគ្រោះមហន្តរាយ
៦. ធ្វើរបាយការណ៍អំពីគ្រោះថ្នាក់បន្ទាន់នានា និងកត់ត្រាស្ថានភាពទៅក្នុងកំណត់ត្រាប្រតិបត្តិការ។

Section 5- Accidents and Emergencies (cont.)
Emergency/Disaster Preparedness and Response

The Operator shall:

1. Prioritize safety in case of emergencies such as disaster of earthquake, accidents of fire and/or explosion in the Facility, and malfunctions of equipment. The Operator should put highest priority to the safety of visitors.
2. Prepare an emergency response manual; restore the Facility immediately; and revise the emergency response manual when necessary.
3. Minimize the impact to the Facility when a disaster is expected.
4. Provide a notification system for notifying disaster.
5. Carry out disaster prevention training etc. .
6. Report any emergency and record the situation in the operation records.

ផ្នែកទី ៥ ៖ គ្រោះថ្នាក់ និងការសង្គ្រោះបន្ទាន់(ត)

ការការពារគ្រោះអគ្គិភ័យ

- អគារនិងប្រព័ន្ធអគ្គិភ័យត្រូវតែបំពាក់ប្រព័ន្ធការពារអគ្គិភ័យនាពេលអនាគត។
- ការអនុវត្តគេហកិច្ចត្រូវតែបានបង្កើតឡើង; ការដក់បារីមិនត្រូវបានអនុញ្ញាតនៅក្នុងទីលានឡើយ។
- ដើម្បីគ្រប់គ្រងអគ្គិភ័យតូចៗ បំពង់ពន្លត់អគ្គិភ័យត្រូវបានដាក់នៅក្បែរឧបករណ៍ និងទីតាំងណាដែលងាយឆេះ។
- នៅពេលអគ្គិភ័យធំកើតឡើង អាជ្ញាធរអគ្គិភ័យក្នុងតំបន់ត្រូវតែបានជូនជាព័ត៌មានភ្លាមៗ។

ប្រតិបត្តិការត្រូវតែ៖

១. បង្កើតប្រព័ន្ធការពារអគ្គិភ័យ។
២. រៀបចំសេចក្តីជូនដំណឹងនៃការតែងតាំង ឬការបញ្ឈប់ប្រធានផ្នែកការពារអគ្គិភ័យ/គ្រោះមហន្តរាយ ផែនការពន្លត់អគ្គិភ័យ ជាដើម។
៣. អនុវត្តការបណ្តុះបណ្តាលពន្លត់អគ្គិភ័យអោយបានទៀងទាត់។
៤. កែលម្អ / លើកកម្ពស់ឧបករណ៍ការពារអគ្គិភ័យ។

Section 5- Accidents and Emergencies (cont.)

Fire Prevention

- The building and electrical systems must be provided with fire prevention systems in the future.
- Good housekeeping practices must be instituted; smoking must not be allowed within Facility.
- For the control of minor fires - fire extinguishers are to be placed nearby equipment and areas susceptible to fires.
- In major fires- the local fire authority must be informed immediately.

The Operator shall:

1. Formulate a fire prevention system.
2. Prepare notification of appointment or removal of the fire prevention/disaster prevention manager, the firefighting plan, etc.
3. Conduct regular fire drills and continuously train.
4. Improve/enhance the fire prevention facilities.

ផ្នែកទី ៥ ៖ គ្រោះថ្នាក់ និងការសង្គ្រោះបន្ទាន់ (ត)

ការធានារ៉ាប់រង

តាមរយៈការសម្រេចចិត្តរបស់ពួកគេ ប្រតិបត្តិករត្រូវផ្តល់យ៉ាងហោចណាស់ការធានារ៉ាប់រង ២ ប្រភេទ ដូចខាងក្រោម៖ (i). ការធានារ៉ាប់រងជាទំនួលខុសត្រូវរបស់ភាគីទី៣; (ii). ធានារ៉ាប់រងអគ្គិភ័យ។

ផ្នែកទី ៦ ៖ ការគ្រប់គ្រងសន្តិសុខ

ប្រតិបត្តិករត្រូវតែ៖

១. បង្កើតប្រព័ន្ធសន្តិសុខ / ការការពារឧក្រិដ្ឋកម្មសម្រាប់ទីលាន។
២. ផ្តល់ព័ត៌មានទៅកាន់អាជ្ញាធរពាក់ព័ន្ធ ពេលដែលប្រព័ន្ធសន្តិសុខ / ការការពារឧក្រិដ្ឋកម្មសម្រាប់ទីលាន បានបង្កើត។

Section 5 - Accidents and Emergencies (cont.)

Insurance

The Operator, may provide at least two (2) kinds of insurance as shown below; (i) Third Party Liability Insurance; and (ii) Fire Insurance.

Section 6 - Security Management

The Operator shall:

1. Establish a security/crime-prevention system for the Facility.
2. Inform the relevant authorities regarding the Facility security/crime prevention system established.

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង
របៀង ខាងត្បូង

GMS: Southern Economic Corridor
Towns Development Project

ជំពូកទី ១១៖ ការគ្រប់គ្រងបរិស្ថាន

Chapter 11: Environmental Management

Grace P. Sapuay

International Solid Waste Management Specialist



Associated with



ការគ្រប់គ្រងបរិស្ថាន

ផែនការគ្រប់គ្រងបរិស្ថាន

ប្រតិបត្តិករត្រូវអនុលោមតាមវិធានការសម្រាប់ការការពារបរិស្ថាន ដែលបានពិពណ៌នានៅក្នុងផែនការគ្រប់គ្រងបរិស្ថាន (**EMP**) ភ្ជាប់ជាមួយឧបសម្ព័ន្ធទី៣ ក៏ដូចជាវិធានការដោះស្រាយដែលត្រូវការសម្រាប់ផលប៉ះពាល់នីមួយៗ។

ក្នុងករណីរកឃើញថាប្រតិបត្តិការបានប៉ះពាល់លើបរិស្ថាន គួរតែ មានដំណោះស្រាយភ្លាមៗដោយស្របតាមការណែនាំពីអាជ្ញាធរក្រុង។

Environmental Management

Environmental Management Plan

The Operator shall conform to the measures for environmental protection described in the Environmental Management Plan (EMP), attached herewith as Appendix 3, as well as the mitigation measures required for each impact.

In case there are findings that operations have impacted on the environment, it should be immediately mitigated in accordance with the instructions from the municipality's proper authorities.



ការគ្រប់គ្រងបរិស្ថាន

ការបញ្ចេញសំឡេង រំញ័រ និងក្លិន

ប្រតិបត្តិការនៃគ្រឿងម៉ាស៊ីន និងឧបករណ៍អគ្គិសនីដទៃទៀតអាចបង្កជាសំឡេង និងរំញ័រ។ ទោះបីជាទីលានស្ថិតនៅឆ្ងាយពីលំនៅដ្ឋានរបស់ប្រជាជនក៏ដោយ ត្រូវតែមានការប្រុងប្រយ័ត្នជាមុនទាក់ទងនឹងផលប៉ះពាល់បរិស្ថានដូចជា សំឡេង រំញ័រ និងក្លិន។ ខាងក្រោមនេះជាស្តង់ដារសម្រាប់ការបញ្ចេញសំឡេង រំញ័រ និងក្លិន៖

Environmental Management

Noise Emissions, Vibrations and Odors

Operation of machinery and other electrical equipment may cause noise and vibration. Although the Facility is situated far from residential areas, precautions must also be taken in terms of environmental impacts such as noise, vibrations, and odors. The following are the standards for noise emissions, vibrations and odors:



ការគ្រប់គ្រងបរិស្ថាន

ការបញ្ចេញសំឡេង

ប្រតិបត្តិករ គួរតែប្រកាន់ខ្ជាប់នូវស្តង់ដារសម្រាប់ការបញ្ចេញសំឡេងដូចមានចែងក្នុងតារាងខាងក្រោមសម្រាប់ស្តង់ដារត្រួតពិនិត្យសំឡេងនៅក្នុងសិក្ខាសាលា រោងចក្រ និងឧស្សាហកម្ម។

កម្រិតសំឡេង (dB (A))	រយៈពេលអតិបរមា (នាទី)	កម្រិត
75	32	ឧបករណ៍ការពារត្រចៀក នឹងត្រូវបានផ្តល់អោយទៅ កម្មករដែលធ្វើការនៅទីតាំង ដែលមានកម្រិត សំឡេងលើសពី ៨០dB(A)
80	16	
85	8	
90	4	
95	2	
100	1	
105	0.5	
110	0.25	
115	0.125	

Environmental Management

Noise Emissions

The Operator should adhere to the standards for noise emission as stipulated in the table below for noise control standard at workshops, factories and industries.

Noise Level (dB (A))	Max Period of Time (min)	Level
75	32	Ear protection equipment shall be provided to worker who works at a location with noise level over 80dB(A)
80	16	
85	8	
90	4	
95	2	
100	1	
105	0.5	
110	0.25	
115	0.125	

ការគ្រប់គ្រងបរិស្ថាន

រំញ័រ

ទោះបីជាប្រទេសកម្ពុជាមិនមានស្តង់ដារសម្រាប់រំញ័រ យ៉ាងណាក៏ដោយប្រតិបត្តិការត្រូវគោរពតាមច្បាប់ស្តីពីសុខភាព និងសុវត្ថិភាពការងារ ដើម្បីការពារសុខភាពនិងសុវត្ថិភាពរបស់កម្មកររបស់ពួកគេ នៅពេលប្រតិបត្តិការម៉ាស៊ីន។



Environmental Management Vibration

Although there is no standard for vibrations in Cambodia, the Operator must follow the labor law on Occupational Health and Safety to protect the health and safety of their workers when operating machines.

ការគ្រប់គ្រងបរិស្ថាន

សម្រាប់ក្លិនមិនល្អ

ប្រទេសកម្ពុជាមិនមានស្តង់ដារសម្រាប់ក្លិនមិនល្អទេ។ យ៉ាងណាក៏ដោយ ប្រតិបត្តិករតម្រូវអោយការពាររាល់ក្លិនមិនល្អដែលចេញពីទីលានដើម្បី ការពារសុខភាពរបស់កម្មករ។

អនុក្រឹត្យរបស់ប្រទេសកម្ពុជាស្តីពី ការត្រួតពិនិត្យការបំពុលខ្យល់ និងការ រំខានដោយសំឡេង ដែលផ្តល់នូវកំហាប់អតិបរមានៃសារធាតុដែលអាច អនុញ្ញាតបាន នៅក្នុងបរិយាកាស។



Environmental Management

Offensive Odor

Cambodia has no standards for offensive odor.

Nevertheless, the Operator is required to prevent any offensive odor from being generated in the Facility to protect the health of the workers.

Cambodia's Sub-decree on the Control of Air Pollution and Noise Disturbance provides the maximum allowable concentration of substances in the ambient air of immobile sources.

យោបល់ ឬ សំណួរ ?

Comments or Questions





GMS: គម្រោងអភិវឌ្ឍន៍សេដ្ឋកិច្ចក្រុង របៀង ខាងត្បូង

GMS: Southern Economic Corridor Towns Development Project

ការប្រាស្រ័យទាក់ទងជាមួយភ្ញៀវ

Resident and Visitor Correspondence

Grace P. Sapuay

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Associated with



ការប្រាស្រ័យទាក់ទងជាមួយប្រជាជន និងភ្ញៀវ

ការប្រាស្រ័យទាក់ទងជាមួយប្រជាជន

១. ធ្វើអោយមាននូវទំនុកចិត្ត ការយល់ដឹង និងសហប្រតិបត្តិការ ពីប្រជាជននៅក្បែរទីលាន ដោយអនុវត្តនូវការគ្រប់គ្រងប្រតិបត្តិការអោយបានសមស្រប។

២. ឆ្លើយតបនូវសំនួរពីប្រជាជនជិតខាង ដោយសារតែមានសំនួរជាច្រើនទាក់ទងនឹងរបៀបបែងចែកសំរាម ប្រតិបត្តិការត្រូវតែរៀបចំសៀវភៅណែនាំដើម្បីឆ្លើយតបទៅសំនួរទាំងនោះអោយបានសមស្រប។

Resident and Visitor Correspondence

Resident Correspondence

1. Earn the trust, understanding and cooperation of nearby residents by always carrying out appropriate management operations.
2. Respond to inquiries from nearby residents, etc.
As there are a lot of inquiries about garbage separation method in particular, the Operator shall prepare correspondence manual to respond to queries appropriately.

យោបល់ ឬ សំណួរ ?



Comments or Questions