

**ORGANIZATION RESPONSIBLE FOR EACH ACTIVITY OF PROJECT
THE SEWAGE WORKS TECHNOLOGY CENTER PROJECT**

Activities	Leading Organization in Charge	Organization in Charge for Budgeting	Other Collaborating Organization
<p><u>1. Guideline (O&M, P&D) at sewage system are developed</u></p> <p>1-1 Collect data / analyze problems affecting the operation of the plant 1-2 Clarify factors contributing to each problems 1-3 Set the target of operation and maintenance (e.g. BOD, sludge, equipment) 1-4 Improve the target treatment plants 1-5 Test / run the improved system and evaluate data 1-6 Set the guideline for operation and maintenance 1-7 Set strategies to disseminate the guidelines</p>	PWD	PWD, Selected Local Governments	PCD, OEPP, DEQP, WMA, BMA, DOLA, Selected Local Governments
<p><u>2. Public awareness for sewage works is improved</u></p> <p>2-1 Conduct awareness survey on sewage works 2-2 Survey the attitude of the people in the target area 2-3 Study the socio-economic background and attitude of the target community 2-4 Plan the strategy to increase public awareness 2-5 Develop material for public on sewage works 2-6 Prepare draft guideline and methodology 2-7 Implement public relation on sewage works 2-8 Implement awareness campaign of Polluter-Pay Principle to the target population 2-9 Conduct workshop seminar for councillors and executives to pay much attention on sewage works 2-10 Evaluate the result of the implementation 2-11 Establish guideline methodology on public relation on sewage works based on the result of the activities</p>	PWD	PWD	PCD, OEPP, DEQP, WMA, BMA, DOLA, Selected Local Governments
<p><u>3. Personnel for sewage system are allocated at STPs</u></p> <p>3-1 Develop training guideline for municipality staff in STPs 3-2 Develop material for trainees 3-3 Develop material for trainers 3-4 Train trainers for OJT and Training course 3-5 Conduct OJT and training course 3-6 Evaluate the training 3-7 Develop qualification standards of managers and operators for the project that should be achieved by the training 3-8 Establish human resource bank of sewage works (this requires further information and clarification to be set up as a project activity)</p>	PWD	PWD, Selected Local Governments	PCD, OEPP, DEQP, WMA, BMA, DOLA, Selected Local Governments
<p><u>4. Operation and maintenance information is exchanged among local governments and STPs</u></p> <p>4-1 Collect operation and maintenance data report (daily report, quarterly reports, yearly report) from local government by central government 4-2 Collect completed document (Construction drawings, plants specifications, As-built drawings) 4-3 Make information system (e.g. stand-alone, Local LAN, Internet)</p>	PWD	PWD, Selected Local Governments	PCD, OEPP, DEQP, WMA, BMA, DOLA, Selected Local Governments

Sewage Works Technology Center Project

CRITERIA FOR SELECTING TARGET SEWAGE TREATMENT PLANTS

Priority	Criteria	Details of the Criteria	Matters to be Considered
1◎	Inputs for improving STPs	Select STPs for which the Thai side can bear improvement expenses. In particular, it is important for local governments and/or central government to allocate management and modification costs for improving STPs.	It is necessary to identify the costs of inputs. It is necessary to identify the counter budget for the Project.
2◎	Allocation of personnel	There are management, operation and maintenance personnel.	It is necessary for manager or administrator of the STPs to collaborate in coping with the problems in STPs.
3◎	Opinions of municipalities	Select municipalities that will agree to cooperate for the Project.	It is necessary to ensure whether the municipalities will accept the Project and prepare inputs necessary for the Project
4	STP processing types	Select typical STPs according to processing type (AL, OD, and others).	Consider and select appropriate types of wastewater processing.
5	Technical dimension	Focus on typical problems of Thai STPs and select model STPs for each problem.	It is necessary to identify problems among STPs.
6	Locations of STPs	Select STPs that are located in or near the Bangkok metropolitan area for convenience of the Project.	Ensure the validity of the selection of target areas.
7	Scale of STPs	Select large-, middle-, and small-scale STPs.	It is necessary to set the criteria for the scale of STPs.
8	Environment for project implementation	No standing matters, such as concerted action by residents or serious environmental impact, are expected to impact on the project.	Confirm information on these problems.
9	Policy matters	Select STPs that are located in the priority area for improving water quality.	Consider the environment strategy of the Thai government.
10	Managed by government authority	STPs managed by a consultant are not appropriate for technical cooperation	Select STPs managed by government authorities

◎=Target STPs must satisfy these criteria.

CONTENTS OF THE PROJECT DOCUMENT FOR THE SEWAGE WORKS TECHNOLOGY CENTER(1/5)

	Chapter, Clause	Description
1	INTRODUCTION	
2	BACKGROUND 1) Socioeconomic Context 2) Sewage Sector 3) Country Strategy for Sewage Management 4) Previous or On-going External Assistance	① Economic performance and growth for the last 5 years in Thailand ② Population and its growth for the last 5 years in Thailand ③ Water consumption and growth for urban and industries for the last 5 years ④ Yearly investment for pollution prevention for the last 5 years ⑤ Yearly investment for sewerage and sewage treatment for the last 5 years ⑥ Recorded numbers of accidents and problems about water environment for the last 5 years ① How to prevent the water environment by implementation of the sewage management ② The present condition of the sewerage and sewage treatment plants in Thailand ③ The major problems for the sewage management in Thailand including operating performance and condition of the existing sewage plants ① Policy for the sewage management by the government in Thailand ② Legal framework for environmental protection including the sewage management in Thailand ③ Institutional arrangements for the sewage management in Thailand ① World Bank, Asian Development Bank, Japan Bank of International Cooperation, Japan International Cooperation Agency, etc
3	PROBLEMS TO BE ADDRESSED AND THE CURRENT SITUATION OF THE SECTOR 1) Framework of Sewage Management	① Sewage tariff and its implementation ② The management system for the operation of sewage treatment plants (based on the provided questionnaire)

CONTENTS OF THE PROJECT DOCCUMENT FOR THE SEWAGE WORKS TECHNOLOGY CENTER(2/5)

Chapter, Clause		Description
3	<p>1) Framework of Sewage Management</p> <p>2) Problems to be Addressed and Current Situation of Sewage Management</p> <p>3) Current Situation of Private Sector Concerning to the Sewage Treatment Plant</p>	<p>③ The existing standards of design and operation for the sewage treatment plant in Thailand</p> <p>④ Framework and its application of the environmental fund in Thailand</p> <p>⑤ Current working engineer for design and operation of sewage treatment plant in Thailand (section, category, level, number)</p> <p>⑥ Production and training of the sewage engineer</p> <p>① Problems about management for operation and maintenance of sewerage and sewage treatment plants</p> <p>② Lack of budget for the sewage management</p> <p>③ The current condition and problems about revenue for sewage tariff</p> <p>④ Problems about arrangement of sewage engineers</p> <p>⑤ The current condition and problems about training of the operators for sewage treatment plants</p> <p>① The current situation of private sectors about design, construction, operation, maintenance, etc for sewage treatment plant in Thailand</p> <p>② The current situation of machinery industry about sewage treatment plant in Thailand</p>
4	<p>PROJECT STRATEGY</p> <p>1) Strategy of Improvement for the Problems About Sewage Management</p>	<p>① The reasons and justification of the first priority which is the improvement of problems about management and operation for sewage treatment plant, regarding to be improve the sewage management problems</p> <p>② The definition and its explanation of appraisal indexes about improved problems for management and operation performance of sewage treatment plants (actual sewage treatment capacity, water quality at monitoring points, treated water quality, non stop operation of treatment plant, operation and maintenance expense of treatment plant, public interest about the sewage management)</p>

CONTENTS OF THE PROJECT DOCUMENT FOR THE SEWAGE WORKS TECHNOLOGY CENTER (3/5)

Chapter, Clause		Description
4	2) Project Strategy 3) Implementation Arrangement and Coordination Arrangement 4) Commitment by Government of Thailand	① Required framework and its selection reasons in the project which is to improve the problems of sewage treatment plants ② Selection and its procedure of model sewage treatment plants in this project ① Organizations and functions involved in the sewage management (NEB, PCC, PCD, OEPP, WMA, DEQP, BMA, PWB, DOLA, EFC, DLA, etc) ② Organizations and functions of the counterpart for the project implementation including JICA ③ Financial assistance in the project implementation in the counterpart ④ Office and place of key persons in the counterpart concerning the project during the project period ① Policy of strategy by government for improvement of the sewage management problems based on the expected result by this project
5	PROJECT DESIGN 1) Overall Goal 2) Project Objectives 3) Outputs and Activities 4) Inputs 5) Implementation Strategy of Activities 6) Risk Analysis 7) Prerequisites and Precondition	① Explain the master plan of the project in accordance with the project design matrix
6	PROJECT JUSTIFICATION 1) Expected Effects of Project	① Effective operation of sewage treatment plants will give effect to the policy for the sewage management by the government in Thailand from the view points of improvement water environment, decreasing of cost for environment prevention and sewage tariff ② Preparation of guideline for the operation and maintenance of

CONTENTS OF THE PROJECT DOCUMENT FOR THE SEWAGE WORKS TECHNOLOGY CENTER(4/5)

	Chapter, Clause	Description
6	1) Expected Effects of Project 2) Achievement of Project Goal 3) Efficiency of Project 4) Project Justification	<p>sewage treatment plants will give effect to the institutional framework from the view point of the management for sewage treatment plants</p> <p>③ Effective operation of sewage treatment plants will give effect to the people in the sewage collection area from the view point of living environment and the people concerning river water of the lower reaches at the discharge point of sewage treatment water</p> <p>④ Management and operation technologies for sewage treatment plant will be transferred to the persons in sewage treatment plant by on-job training and prepared guideline</p> <p>① The project is expected to achieve the goal from the view point of selection procedure of the goal by the workshop and experience of the sewage works technology center project by similar organization and procedure</p> <p>② The counterpart is operating many sewage treatment plants and operators for sewage treatment plants have an ability for joining to the project who trained at the center</p> <p>① Analysis of the expected performance about cost and effects from the point view of increasing working efficiency of the sewage treatment plants based on the expected result by this project</p> <p>① The project target and the overall target agree with the need by the concerning organization for the sewage management in Thailand</p> <p>② Framework of the project is made up by the workshop among related organization of both Thai and Japanese</p> <p>③ Monitoring and evaluation for implementation of the project shall be designed and implemented by both Thai and Japanese to carryout good and smooth implementation of the project</p>

CONTENTS OF THE PROJECT DOCCUMENT FOR THE SEWAGE WORKS TECHNOLOGY CENTER (5/5)

Chapter, Clause		Description
6	5) Independent Improvement 6) Conclusion Pre-appraisal	<ul style="list-style-type: none"> ① Plan and schedule of improvement for the sewage management in Thailand based on the results by this project after completion of the project ② Forecast of the sewage management and environmental condition in Thailand after 5 years to 10 years from completion of the project ① Implementation of the project shall be judged based on the above chapter and clause items
7	ANNEXES	

The list of data and information required for formulating the project document
Sewage Works Technology Center Project

1. Introduction

The Project Document is a report that contains essential facts regarding project formulation, including background, project strategy and justification of the Project.

Both the Thai and Japanese sides are responsible for preparing the Document before the start of the Project.

This document describes necessary data and information for preparing the Document.

2. Necessary Data and Information

The table shows necessary data and information including confirmation items, which were shown in the Final Report etc, for the Document preparation.

3. Abbreviation on Responsible Organization in the Sheets

BMA	Bangkok Metropolitan Administration
DIW	Department of Industrial Works
DEQP	Department of Environmental Quality Promotion
DOLA	Department of Local Administration
DTCP	Department of Town Country Planning
FPO	Fiscal Policy Office
MAC	Ministry of Agriculture and Cooperatives
MOPH	Ministry of Public Health
MOI	Ministry of Interior
MWA	Metropolitan Waterworks Authority
NSO	National Statistical Office
OEPP	Office of Environmental Policy and Planning
NESDB	National Economic and Social Development Board
PCD	Pollution Control Department
PWA	Provincial Waterworks Authority
PWD	Public Works Department
WMA	Wastewater Management Authority

List of data and information required for formulating the project document (1 / 4)

	Required Data and Information	Concerning Chapter and Clause in PD	Previous Document	Responsible Organization	Collection date
1	Economic performance and growth for the last 5 years in Thailand	2 - 1)		NESDB	
2	Population and its growth for the last 5 years in Thailand	2 - 1)		NSO	
3	Water consumption and growth for urban and industries for the last 5 years	2 - 1)		MWA, PWA, DTCP	
4	Yearly investment for pollution prevention for the last 5 years	2 - 1)		MOI, BMA, WMA, MAC	
5	Yearly investment for sewerage and sewage treatment for the last	2 - 1)		PWD, OEPP	
6	Recorded numbers of accidents and problems about water environment for the last 5 years as reported in newspapers.	2 - 1)		PCD, MOPH	
7	How to prevent the water environment by implementation of the sewerage management	2 - 2)			DELETED
8	The present condition of the sewerage in Thailand	2 - 2)		PCD	
9	The present condition of the sewage treatment plants in Thailand	2 - 2)	Final Report Table 2.5	PWD, OEPP, LOCAL AUTHORITY	
10	The major problems for the sewage management in Thailand including operating performance and condition of the existing sewage plants	2 - 2)		MOI, OEPP	
11	Policy for the sewage management by the government in Thailand	2 - 3)	Final Report Chapter 3	OEPP	
12	Legal framework for environmental protection including the sewage management in Thailand	2 - 3)	Final Report Chapter 3	MOSTE, OEPP	
13	Water standards of surface water, non-industrial effluent and industrial effluent	2 - 3)	Final Report App. 3.2 - 3.4	PCD	
14	The current status of the handbook for design of sewerage and treatment facilities which is prepared by the Thai Engineers' Association engaged by PCD.	2 - 3)		PCD	

List of data and information required for formulating the project document (2 / 4)

	Required Data and Information	Concerning Chapter and Clause in PD	Previous Document	Responsible Organization	Collection date
15	Institutional arrangements for the sewage management in Thailand	2 - 3)	Final Report Chapter 3	DOLA	
16	World Bank, Asian Development Bank, Japan Bank of International Cooperation, Japan International Cooperation Agency, etc	2 - 4)	Final Report Chap. 4-1-4		
17	Sewage tariff and its implementation, current condition and problems	3 - 1) and 3 - 2)	Final Report Chap. 4-2	PCD	
18	The management system for the operation of sewage treatment plants (based on the provided questionnaire)	3 - 1)	Questionnaire	BMA, LOCAL AUTHORITY	
19	Daily operation data during the last 1 year about the selected plants (Operation or non-operation, Treatment capacity and Inlet and outlet water quality) (These data will be use to analyze for stable operation of the plant from a fluctuation of the data)	3 - 1)		BMA, LOCAL AUTHORITY	
20	Daily monitoring data during the last 1 year at the both upper and lower reaches of the river which are received the effluent from the selected plants (Dissolved Oxygen and BOD) (These data will be use to analyze for stable operation of the plant from a fluctuation of the data)	3 - 1)		PCD, MOPH	
21	The existing standards of design and operation for the sewage treatment plant in Thailand	3 - 1)			
22	Framework and its application of the environmental fund in Thailand	3 - 1)	Final Report Chap. 4-1-3	OEPP	
23	Current working engineer for design and operation of sewage treatment plant in Thailand (section, category, skill, number)	3 - 1)		PWD	
24	Production and training of the sewage engineer	3 - 1)	Final Report Chap. 3-3-7, 3-3-8, 3-3-9	PWD	

List of data and information required for formulating the project document (3 / 4)

	Required Data and Information	Concerning Chapter and Clause in PD	Previous Document	Responsible Organization	Collection date
25	Problems about management for operation and maintenance of sewerage and sewage treatment plants (Problem category, number of sewerage and plants)	3 - 2)		MOI	
26	Municipal financial status for those municipalities already have sewage treatment plants.	3 - 2)		OEPP	
27	Problems about arrangement of sewage engineers	3 - 2)		MOI, DOLA	
28	The current condition and problems about training of the operators for sewage treatment plants	3 - 2)		PWD	
29	The current condition and problems about public awareness on the sewerage management and environmental protection including sewage tariff (This information will be collected by the questionnaire on conducting area for this project)	3 - 2)		DEQP	
30	The current situation of private sectors about design, construction, operation, maintenance, etc for sewage treatment plant in Thailand	3 - 3)		FPO	
31	The current situation of machinery industry about sewage treatment plant in Thailand	3 - 3)		DIW	
32	The reasons and justification of the first priority which is the improvement of problems about management and operation for sewage treatment plant, regarding to be improve the sewage management problems	4 - 1)	From result of project design matrix (PDM)		

List of data and information required for formulating the project document (4 / 4)

	Required Data and Information	Concerning Chapter and Clause in PD	Previous Document	Responsible Organization	Collection date
33	The definition and its explanation of appraisal indexes about improved problems for management and operation performance of sewage treatment plants regarding selected plants on this project (actual sewage treatment capacity, water quality at monitoring points, treated water quality, non stop operation of treatment plant, operation and maintenance expense of treatment plant, public interest about the sewage management)	4 - 1)			
34	Required framework and its selection reasons in the project which is to improve the problems of sewage treatment plants	4 - 2)	From result of PDM		
35	Selection and its procedure of model sewage treatment plants in this project	4 - 2)	From result of PDM		
36	Organizations and functions involved in the sewage management including chart of key organization (NEB, PCC, PCD, OEPP, WMA, DEQP, BMA, PWB, DOLA, EFC, DLA, etc)	4 - 3)	Final Report App. 3.1		
37	Organizations and functions of the counterpart for the project implementation including JICA	4 - 3)	From result of PDM		
38	Financial assistance in the project implementation in the counterpart	4 - 3)	From result of PDM		
39	Office and place of key persons in the counterparts concerning the project during the project period.	4 - 3)		PWD	
40	Policy of strategy for improvement of the sewerage management problems based on the expected results by this project.	4 - 4)			