

**Technical Cooperation on
The Development of Basic Schemes for
PRTR System in the Kingdom of Thailand**

Progress Report No.4

March 2013

Pollution Control Department, MONRE

Department of Industrial Works, MOI

Industrial Estate Authority of Thailand, MOI

Japan International Cooperation Agency

Abbreviation

AQNMB	Air Quality and Noise Management Bureau (PCD)
CMR	Carcinogenicity, Mutagenicity, Reproductive Toxicity
C/P	Counterpart Personnel
DG	Director-General
DDG	Deputy Director-General
DEQP	Department of Environmental Quality Promotion
DOA	Department of Agriculture
DIW	Department of Industrial Works
DLA	Department of Local Administration (Ministry of Interior)
EARTH	Ecological Alert and Remediation for Thailand (NGO)
ECNEQ	Enhancement and Conservation of National Environmental Quality Act
EF	Emission Factor
ERTC	Environmental Research and Training Center
EQLD	Environmental Quality and Laboratory Division (PCD)
FTI	Federation of Thai Industry
GDP	Gross Domestic Product
GSEI	Good Governance for Sustainable Environment Institute (NGO)
GPP	Green Partnership Program
HAPs	Hazardous Air Pollutants
HSB	Hazardous Substances Bureau (DIW)
IET	Institute of Environmental Training
IEAT	Industrial Estate Authority of Thailand
IRIS	Integrated Risk Information System (US EPA)
ITD	IT Division (PCD, DIW)
IWETB	Industrial Water and Environmental Technology Bureau (DIW)
JCC	Joint Coordination Committee
JpCC	Japanese Chamber of Commerce
JICA	Japan International Cooperation Agency
M/M	Man/Month
MONRE	Ministry of Natural Resources and Environment

Abbreviation (Continued)

MOI	Ministry of Industry
MOT	Ministry of Transport
MOA	Ministry of Agriculture
MSDS	Material Safety Data Sheet
NEB	National Environmental Board
NESDB	National Economic and Social Development Board
ONEP	Office of the Natural Resources and Environmental Policy and Planning
OTP	Office of Traffic and Transport Policy and Planning
PCC	Pollution Control Committee
PCD	Pollution Control Department
PDM	Project Design Matrix
PRTR	Pollutant Release and Transfer Register
PSB/MOPH	Policy and Strategy Bureau/Ministry of Public Health
R/D	Record of Discussion
SAICM	Strategic Approach for International Chemical Management
TEI	Thailand Environment Institute (NGO)
TF	Task Force
TAIA	Thai Automotive Industry Association
TCPA	Thai Crop Protection Association
TPMA	Thai Paint Manufacturer's Association
UNEP	United Nations Environment Program
US EPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
WHO	World Health Organization
WHSMB	Waste and Hazardous Substances Management Bureau (PCD)
WQMB	Water Quality Management Bureau (PCD)

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	- PRTR project CP list - Release estimation manual (Refinery) Task Force - Release estimation manual (Chemical/Petrochemical) Task Force	

- Release estimation manual (Automotive and Auto part) Task Force

2. Paper/Report prepared

- Revised PDM
- Point source definition (Final Draft)
- Release estimation manual for Refinery (Final Draft – Thai)
- Release estimation manual for Chemical/Petrochemical industry
(Final Draft – Thai)
- Release estimation manual for Automotive and Auto part industry
(Final Draft – Thai)
- Draft estimation method for non-point sources
- Pilot Implementation plan (2nd Draft) and 1st Progress report

3. Meeting/Visit/workshop memo

4. JICA PRTR website and newsletter

1. General

1.1 Project Outline

- **Title of the project**

The Development of Basic Schemes for PRTR System in Kingdom of Thailand

- **Overall Goal**

Model of PRTR system for Thailand is established

- **Project Purpose**

Capacity of PCD, DIW, and IEAT's staff for implementation of PRTR pilot project is strengthened

- **Project period**

4 years (March 2011 – February 2015)

- **Implementing agency**

Pollution Control Department, Ministry of Natural Resources and Environment

Department of Industrial Works, Ministry of Industry

Industrial Estate Authority of Thailand, Ministry of Industry

- **Outputs**

(Output of 6 noted below was revised during mid-term review in Dec. 2012 and subject to approval at Joint Coordination Committee meeting to be held on May, 2013.)

1. Basic design of PRTR system in Thailand is established
2. Emission reporting scheme of industry is developed

3. Capacity of estimation of emission and transfer for point source is strengthened.
4. Capacity of emission estimation for non point source is strengthened.
5. Importance of using of PRTR data including initial assessment is understood
6. Implementation structure of risk communication is developed in the pilot area.

● **Activities of the Project**

(Activity of the project noted below was revised during mid-term review in Dec. 2012 and subject to approval at Joint Coordination Committee meeting to be held on May, 2013.)

Activity for output 1

- 1-1. Formulation of basic strategy
- 1-2. Organizational set up inside government and with other stakeholders
- 1-3. Development of project work plan
- 1-4. Development of criteria for target substance selection
- 1-5. Draft target substance list and revision
- 1-6. Draft basic design of PRTR system
- 1-7. Development of PRTR database and Web site
- 1-8. Draft pilot implementation plan and set up organization
- 1-9. Organizing awareness raising and training workshop for pilot
- 1-10. Collection of data and disclosure for pilot
- 1-11. Organizing risk communication meeting for pilot

- 1-12. Obtaining feedback from stakeholders for pilot
- 1-13. Final design of PRTR system and prepare action plan
- 1-14. Preparation of final report of output 1

Activity for output 2

- 2-1. Collection of available data for preparing point source definition
- 2-2. Development of point source definition (reporting thresholds)
- 2-3. Development of reporting form
- 2-4. Identify reporting procedure from point sources
- 2-5. Listing of candidate point sources and sending reporting form to them
- 2-6. Collecting reports from point sources
- 2-7. Verification of point source data
- 2-8. Compilation of point source data
- 2-9. Revision of point source definition and reporting form
- 2-10. Preparation of final report of output 2

Activity for output 3

- 3-1. Establishment of task forces on development of release estimation manuals for specific industries
- 3-2. Development of draft release estimation manuals for specific industries
- 3-3. Conducting model studies for industries for which release estimation manuals are not prepared
- 3-4. Organizing workshop on point source release estimation for governmental officials and relevant agencies
- 3-5. Organizing workshop on point source release estimation for factories/facilities

- 3-6. Organizing consultation for factories/facilities to estimate releases by site visit
- 3-7. Responding to questions (via phone, e-mail) on release estimation from factories/facilities and preparing FAQs
- 3-8. Revision of release estimation manuals for specific industries
- 3-9. Preparation of final report of output 3

Activity for output 4

- 4-1. Establishment of basic idea for estimation of emissions from non-point sources (NPS)
- 4-2. Survey of available activating data and emission factors (EFs) necessary to estimate
- 4-3. Selection of target categories and target chemicals for NPS and responsible bodies to estimate
- 4-4. Validation of data used for estimation; activity data and EF
- 4-5. Establishment of estimation method in each target category
- 4-6. Preparation for drafts of estimation manuals
- 4-7. Collection such data used for estimation as activity data and EF
- 4-8. Estimation of amount emission from NPS at pilot area and Compilation of disclosed data
- 4-9. Collection of information, data necessary for revising estimation manuals and revision of estimation manuals
- 4-10. Implementation of workshop for estimation of emissions from non-point sources for government officials and relevant agencies
- 4-11. Preparation of final report of output 4

Activity for output 5

- 5-1. Introduction of domestic and overseas case studies on use of PRTR data including initial assessment of exposure risk to target substances
- 5-2. Utilization and possible development of model or tools for uses of PRTR data e.g. concentration estimating model
- 5-3. Implementation of case studies for use of PRTR data including initial assessment
- 5-4. Training of using PRTR data including initial assessment for both government and private sectors
- 5-5. Preparation of final report of output 5

Activity for output 6

- 6-1. Development of basic strategy for promoting risk communication
- 6-2. Organizational set up inside government and with other stakeholders for promoting risk communication
- 6-3. Raising awareness for risk communication importance for relevant agencies, relevant local governments and participating companies.
- 6-4. Development of training curriculum for facilitator and pilot implementation of training course
- 6-5. Review of facilitator training course and follow-up for trainee
- 6-6. Development of the Handbook for risk communication
- 6-7. Planning the registration system of chemical advisor for supporting risk communication.

6-9. Development of the implementation plan, and pilot organization of risk communication meeting with Rayong community.

6-10. Preparation of final report of output 6

- **Project area**

Major activities of the project will be at Bangkok and surrounding area where the office of the implementing agencies are located. In addition, activities will be at area selected for pilot project.

1.2 Project work plan for 4 years (Activities indicated by **bold underline** are on-going or completed as of February 15, 2013)

Year	2011	2012	2013	2014
Major work	• <u>Capacity assessment</u>	• <u>Capacity assessment</u>	• Capacity assessment	• Capacity assessment
Output 1	• <u>Clarification on organizational matters, policy priority</u> • <u>Designing the element of basic PRTR system</u> • <u>Basic survey and listing of target chemical substances</u> • <u>Preparation for pilot project</u>	• <u>PRTR design paper (draft) will be prepared.</u> • <u>Preparation for pilot project action plan</u>	• Designing the element of basic PRTR system. • Implementation of pilot project	• Compilation of the pilot project data • Implement questionnaire survey • Design of PRTR system for nationwide application
Output 2	• <u>Selection of target business and size</u> • <u>Review of existing reporting system</u> • <u>Design of PRTR reporting system.</u>	• <u>Design of PRTR reporting system</u>	• Direct support to industry for PRTR reporting • Verification, compilation of reported data	• Disclosure of PRTR data from pilot project • Design of reporting system and format for nationwide PRTR system
Output 3	• <u>Preparation of industry specific emission estimation manual from point source</u>	• <u>Preparation of industry specific emission estimation manual from point source. Draft manual will be prepared in English and then translated to Thai.</u>		• Revision of manual for point source estimation
Output 4	• <u>Selection of target business and activity</u> • <u>Advice on emission factor experiment</u> • <u>Preparation of emission estimation manual from non-point source</u>	• <u>Advice on emission factor experiment</u> • <u>Preparation of emission estimation method from non-point source. Draft method document will be prepared.</u>	• Implement pilot project • Estimate emission from non point source in pilot area. • Preparation of emission estimation manual from non-point source. Revised manual	• Revision of manual for non point source estimation

Output 5		• <u>Preparation of case study of PRTR data utilization</u>		• Preparation of case study of PRTR data utilization • Application of models and tools for PRTR data utilization
Output 6	• <u>Review of current situation and design of human resource development</u> • <u>Planning and development of risk communication training course</u>	• <u>Organization of training course for risk communication</u>	• Support for training of risk communication	• Support for training of risk communication
Training (study visit)		<u>Training in Japan (study visit)</u>	Training in Japan(study visit)	
Evaluation		<u>Mid-term review</u>		Final evaluation
Seminar/Workshop	• <u>JCC</u> • <u>1st PRTR seminar</u>	• <u>JCC</u> • <u>2nd PRTR seminar</u> • <u>Seminar for PRTR awareness raising to industry</u>	• JCC • 3rd PRTR seminar • Point source estimation workshop for government officer • Point source estimation workshop for industries	• JCC • 4th PRTR seminar • Point source estimation workshop for industries • Non point source estimation workshop • PRTR data utilization & risk communication workshop
Sub-contract	• <u>Basic survey for chemical substance</u> • <u>PRTR Web site development</u>	<u>Data availability survey for non point source</u>	Direct factory support for pilot project	Questionnaire survey

Plan of Operation

[illegible]

[illegible]

1.3 Input and Plan for 2012

Item	1st Qtr			2nd Qtr			3rd Qtr			4th Qtr		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1 Expert												
(1)Long-term Expert(0名)												
(2)Short-term Expert (5名)												
① Leader / PRTR System / Chemical Management /Non-point Source Estimation 3 (Mr. Fukuda)		5/9 5/26 6/13 7/4			8/14		10/13	11/14	12/28	1/9	(2/8)	(3/9)
② Sub-Leader / Point Source Reporting / Point Source Estimation /Non-point Source Estimation 2(Mr. Takahashi)		5/13	6/26		8/5	9/1	10/14	11/29				
③ Non-point Source Estimation 1(Mr. Shirane)							9/19	10/18	12/12	12/28	1/13	(2/9)
④ Social Consideration / Risk Communication (Mr. Tezuka)		6/3	6/30		8/5	9/1	9/30	10/18	17		28	
⑤ Social Consideration / Risk Communication 2 (Mr. Nakamura)												
2 Training(Japan)												
① study of PRTR policy and implementation in Japan												
3 Equipment												
Procurement in HQ												
Local Procurement												
4 Local Consultant												
Data availability survey for non point source												
5 Others												
JCC		▲										
PRTR Seminar							▲					
Mid-term Review									CP meeting			
Discussion of next year plan												▲

* Period covered by this progress report is indicated by the rectangular box in dotted line.

Input of the JICA side is as follows.

- For the period of this progress report
 - Expert assignment was shown in table below.

Expert	Assignment period
Munehiro Fukuda	8/14- 10/13, 2012 11/14 – 12/28, 2012 1/9 – 3/9, 2013
Makoto Takahashi	10/14 – 11/29, 2012
Yoshiharu Shirane	9/19 – 10/18, 2012 12/12- 12/28, 2012 1/13 – 2/9, 2013
Kazuhiko Tezuka	9/30 – 10/18, 2012

- Organization of number of seminar/workshops including “2nd PRTR seminar” at Century Park Hotel, Bangkok
- Plan for next six months
 - Continuing of expert assignment. Approx. 8M/M is expected in (May -September).
 - Organizing training workshops series of estimation and reporting report
 - Preparation of non-point source pilot implementation plan.
 - Preparation of estimation manuals for non point sources.
 - Preparation of risk communication pilot implementation plan.
 - Preparation of risk communication hand book
 - Prepare for sub-contract for Rayong traffic volume study
 - Prepare for sub-contract for direct consulting service to point sources

2. Summary of progress (overall)

2.1 Summary sheet

Summary	Preparation for pilot implementation boosted the awareness raising activity. Based on implementation plan, series of awareness raising events were organized. Total of 15 event were held with participation of over 800 stakeholders, by over 600 is from private industrial sector. This included 2nd PRTR seminar held in Oct. 5th, 2012 at Bangkok. For point sources, estimation manuals for refinery, and chemical/petrochemical industry, automobile and related industry were prepared and translated to Thai for distribution. For non point source, estimation method was drafted and clarifying coverage also estimation approach on various non point sources. Various sub-contract surveys were arranged and under implementation as of February 2013. JICA mid-term review completed in Dec. 2012.
Major Activity	● 2nd PRTR seminar was held on Oct. 5th, 2012. ● JICA mid-term mission reviewed the progress of the project in Dec. 2012 ● 5th CP meeting organized on Dec. 25th, 2012. ● Series of events for Pilot implementation; Phase I Awareness raisings were organized. ● Estimation manuals for three industrial sectors were finalized and be ready for distribution. ● Estimation method for non point source was drafted. ● 3rd NGO meeting and 4th meeting were held in Sept. 26th, 2012 and Feb. 8th, 2013.
Major Paper/report prepared	● Estimation manual for refinery, and chemical/petrochemical industry, automobile and related industry. ● Draft estimation method for non point sources. ● Revised pilot implementation plan and pilot progress report. ● Progress Report No.4

Plan	● Organize series of training (estimation and reporting) workshops as Phase II of pilot implementation. ● Monitor progress of various subcontracted surveys/studies. ● Prepare pilot implementation plan of non point source estimation. ● Prepare pilot implementation plan of risk communication
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2.2 Organization structure

Diagram in next pages shows organization structure of the project and the relationship with various stakeholders as of February 2013. Separated diagrams were prepared to show the structure of point source activity as well as non point source activity.

Major development in this period was enhanced linkage with various organizations in non point source estimation activity. Those organizations include followings.

- Policy and Strategy Bureau/ Ministry of Public Health
- Office of Traffic and Transport Policy and Planning
- Thai Crop Protection Association
- Thai Paint Manufacture's Association

2.3 JICA mid-term review and revision of PDM (project design matrix)

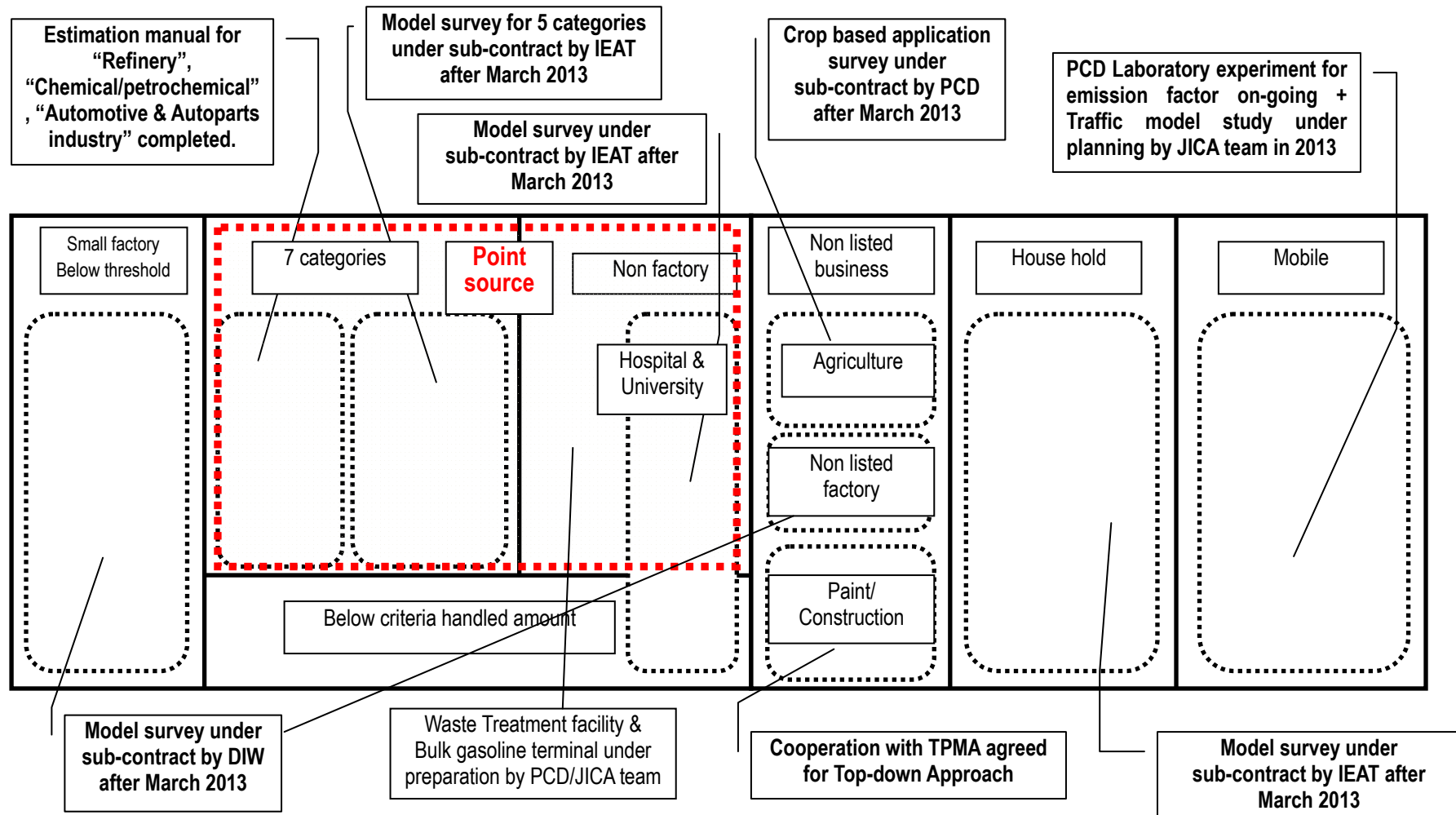
Mid-term review of the project was implemented in December 2012. At the occasion, the PDM was reviewed thoroughly and revised to adjust the output, activity and verification indicator more practical to the current situation of the project. Revised PDM is attached in ANNEX and subject to formal approval at Joint Coordination Committee meeting to be held in May 2013.

2.4 Major Issues and problem

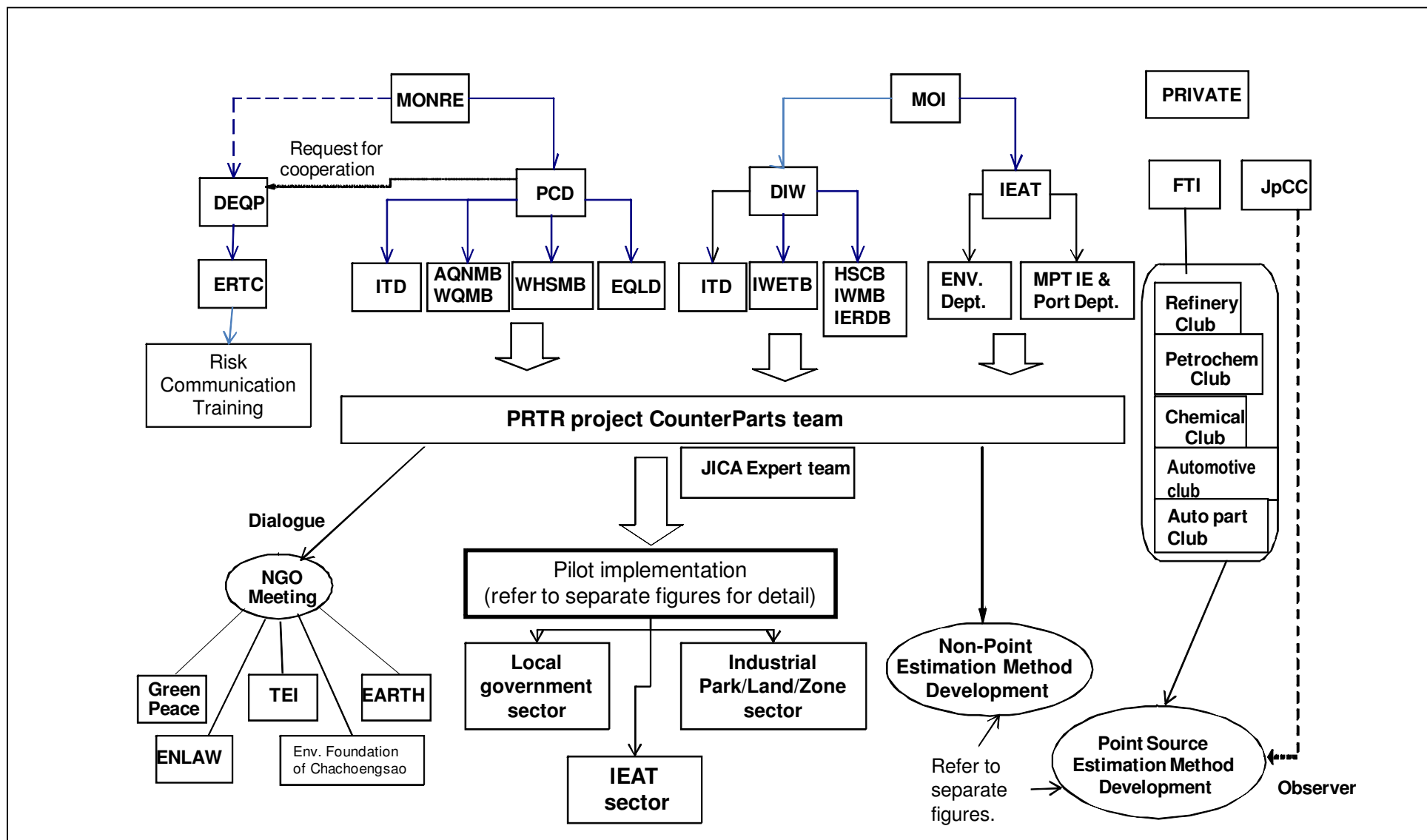
- Large scale training activity shall be carried out at Rayong while resource is limited. Involvement of local officers, especially from Sub-district and municipal level seems difficult due to shortage of manpower.
- PRTR database and web site development shall be continued under PCD/DIW cooperation.
- Option of data management work shall be further considered in view of limited manpower in the government offices.

- Human resource development on risk communication to be continued at DEQP/ERTC-IET and registration system of such human resources shall be established. Policy matter for risk communication shall be clarified.

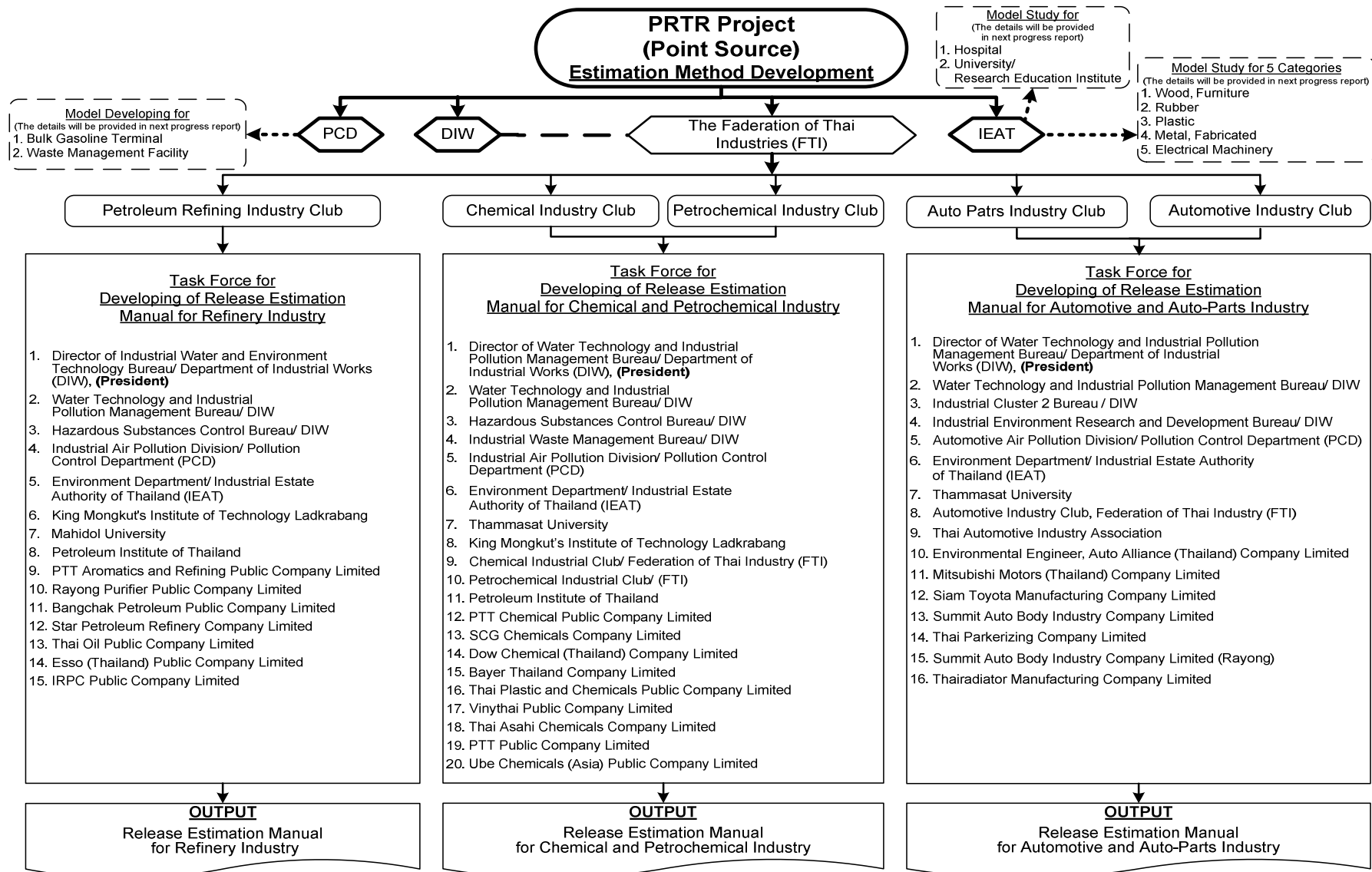
Current situation for point source/ non point source estimation work



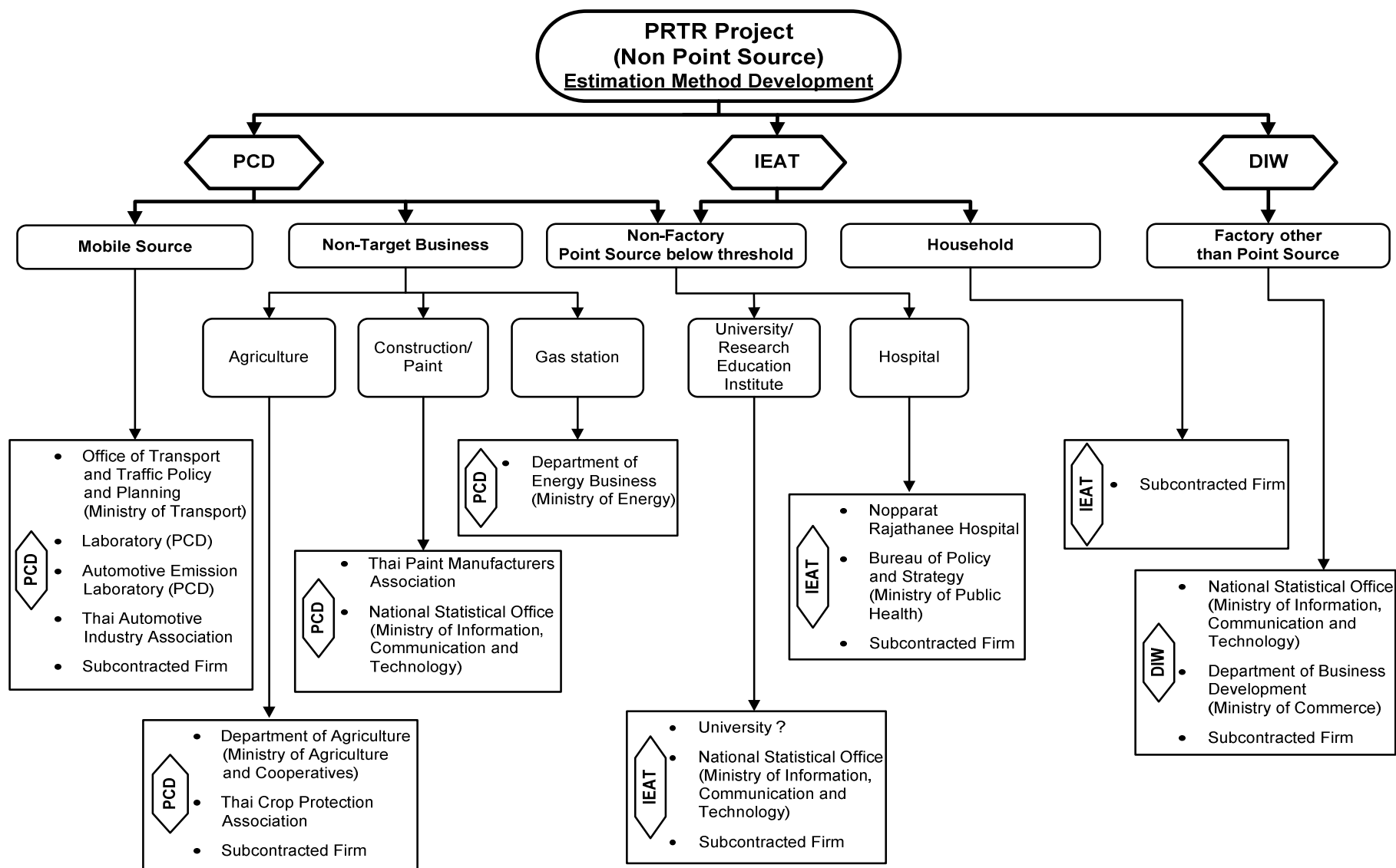
Organization structure of the project and relation with stakeholders



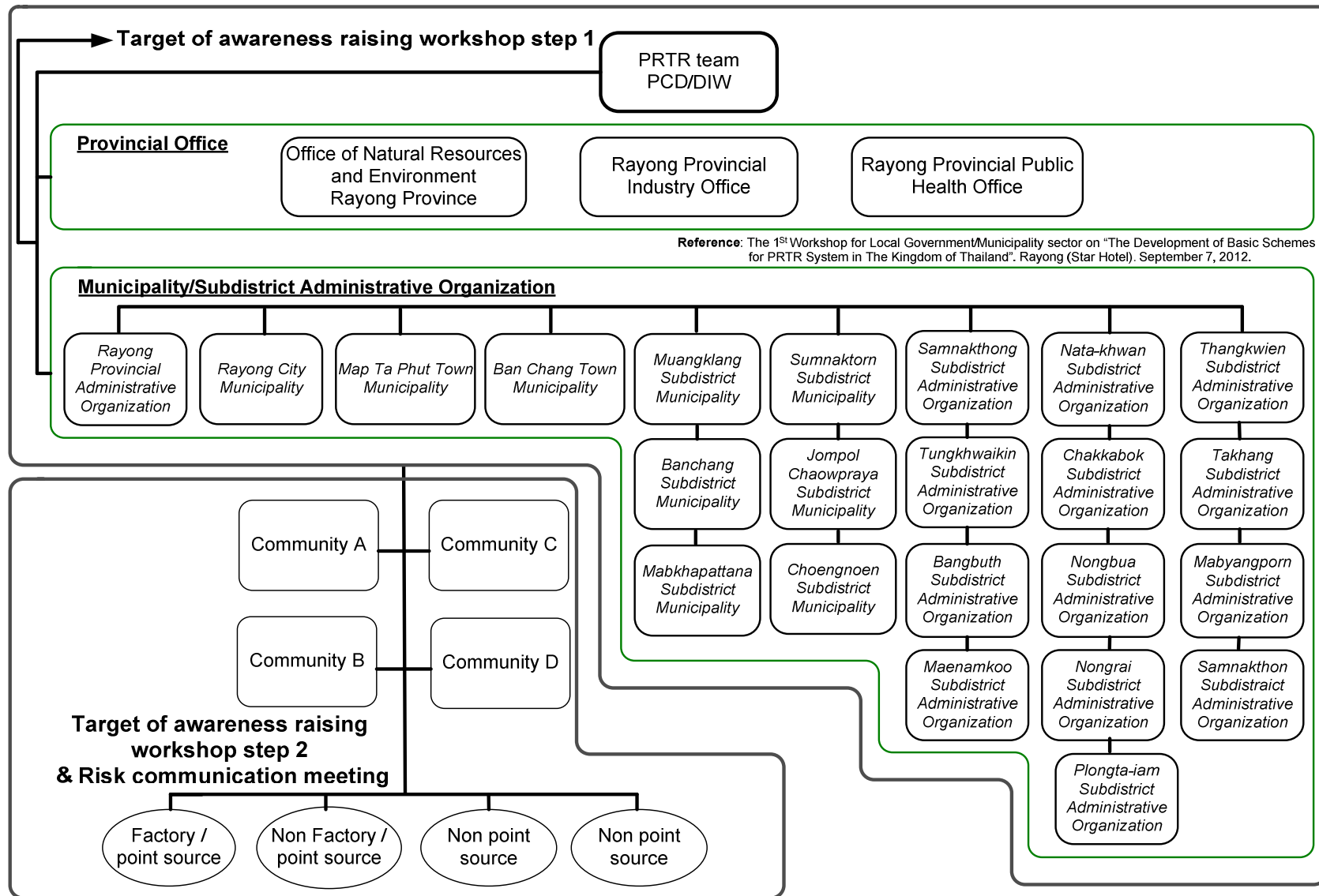
Organization Chart of Point Source



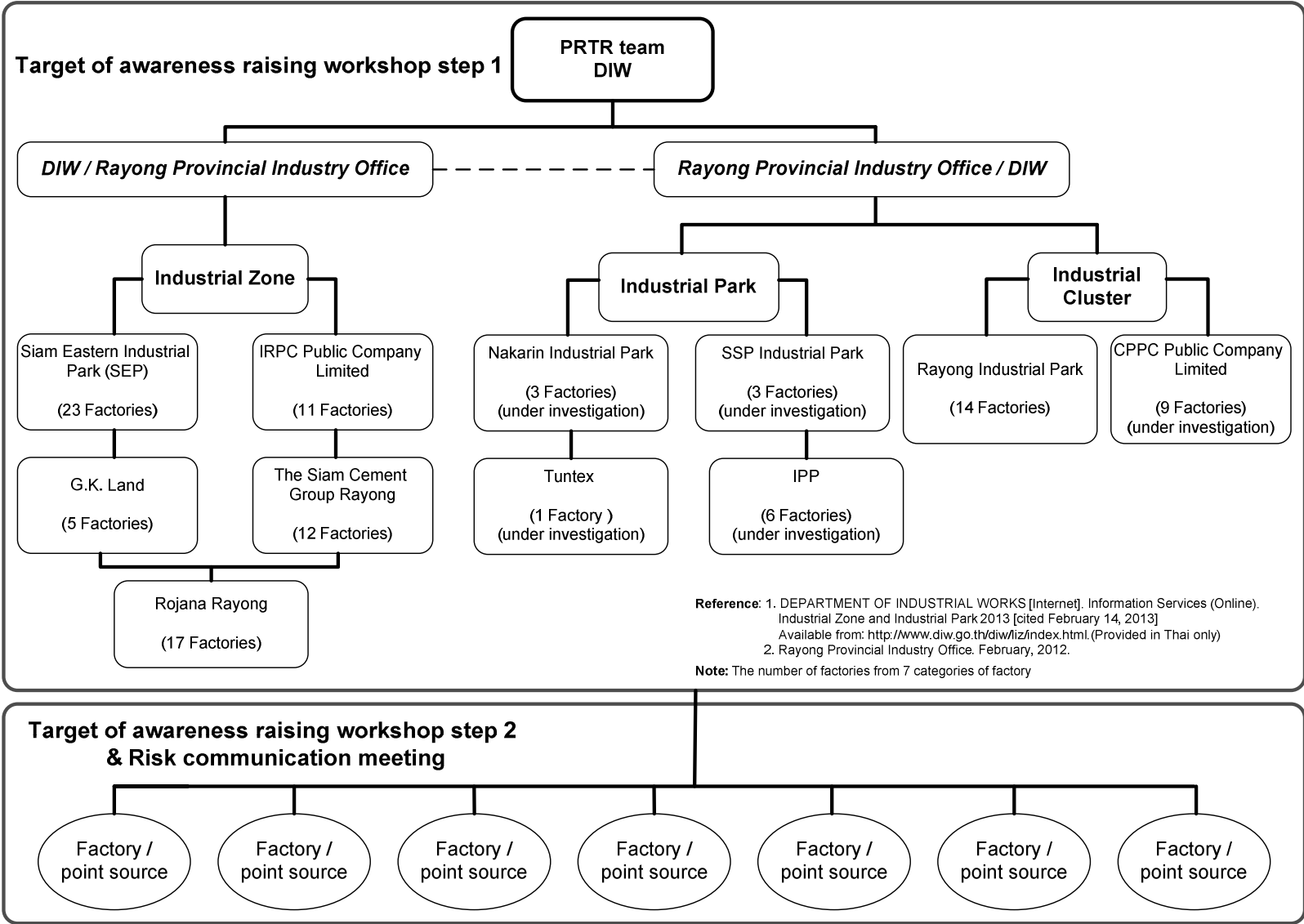
Organization Chart of Non Point Source



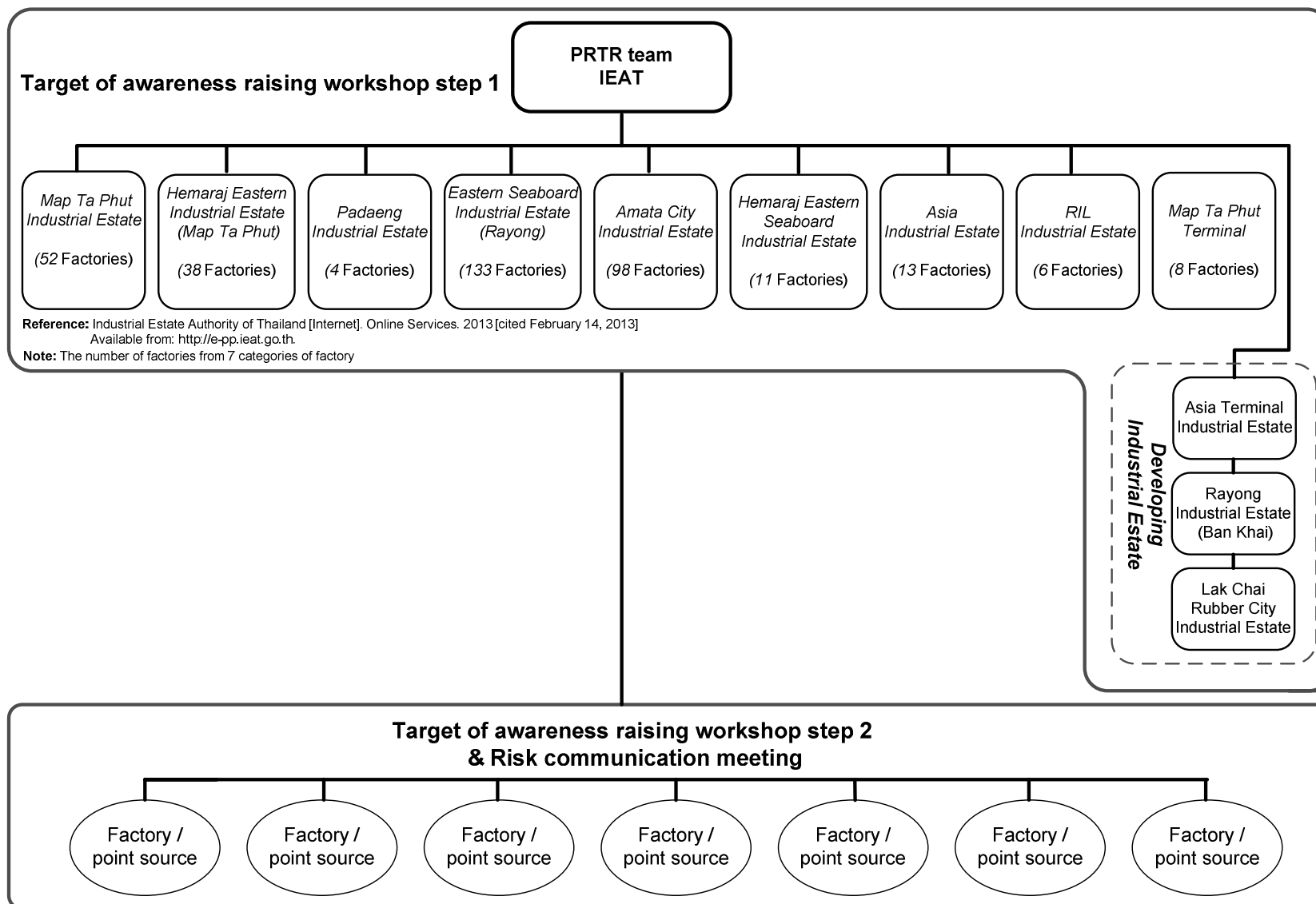
Implementation structure of Local government sector



Implementation structure of Industrial Zone/Park/Cluster sector



Implementation structure of Industrial Estate (IEAT) sector



3. Progress of each output

3.1 Output 1 Design of PRTR system	
Summary	Point source definition was revised to include non-factory point sources. Awareness raising activities of pilot implementation carried out with over 800 participants. Out sourcing of data management work under PRTR pilot was discussed among CPs. Preliminary discussions were held with two organizations from Chulalongkorn University.
Activity	● Point source definition was revised to include non-factory sources. ● 2nd PRTR seminar organized on Oct.5th, 2012. ● 5th CP meeting organized on Dec 25th, 2012. ● Meeting with Rayong Industry sector organized on Oct.1st, 2012. ● 6 Workshops for factories in Industrial Estate in Rayong organized in Nov.- Dec. 2012. ● 2 Workshops for factories in Industrial park/land/zone organized in Jan. 2013. ● Workshop for factories outside of Industrial complex organized in Jan. 2013. ● Seminar for Japanese Chamber of Commerce held on Dec. 5th, 2012. ● 3rd and 4th NGO meeting organized in Sept. 2012 and February 2013. ● Visited Center of Excellence for Hazardous substance management at Chulalongkorn University on Nov. 16, 2012. ● Visited Environmental Research Institute of Chulalongkorn University, on Jan. 17, 2013. ● Workshop by FTI organized on Feb. 21, 2013.
Paper/report prepared	● Revised point source definition. ● Pilot implementation plan and pilot progress report.
Issues	● Large scale training activity to be carried out at Rayong while resource is limited. ● Approach to data management works shall be clarified. ● Future plan to regularization shall be considered.
Plan	● Organize series of training (estimation and reporting) workshops as Phase II of pilot implementation. ● Monitor progress of various subcontracted surveys/studies. ● Continue explore the collaborating partner for data management work.

3.2 Output 2 Reporting system from Industry	
Summary	Point source definition was revised. Reporting mechanism is discussed and DIW started development of web based online system.
Activity	● Point source definition was revised to include non-factory point sources. ● Web-based online reporting system being considered/designed by DIW.
Paper/report prepared	● Revised point source definition.
Issues	● Report requirement for the amount below threshold to be clarified.
Plan	● Large scale training activity to be carried out.

3.3 Output 3 Estimation from Point Source	
Summary	Estimation manuals for three industry sectors were completed as draft final version. TORs of sub-contracted model surveys were developed and be ready for implementation.
Activity	● The 3rd Task Force Meeting on Developing of Release Estimation Manual for the Chemical/Petrochemical Industry on Nov. 21, 2012. ● The 3rd Task Force Meeting on Developing of Release Estimation Manual for Automotive and Auto Part Industry on Nov. 21, 2012. ● The 4th Task Force Meeting on Developing of Release Estimation Manual for Refinery Industry on Nov. 23, 2012. ● TOR of model survey for 5 industrial categories was developed and sub-contract procedure started at IEAT. ● TOR of model survey for factories outside of point source definition, factories below threshold was developed and sub-contract procedure started at DIW. ● TOR of model survey for hospital/university was developed and sub-contract procedure started at IEAT.
Paper/report prepared	● Draft Final estimation manual for “Refinery” (in Thai). ● Draft Final estimation manual for “Chemical/petrochemical industry” (in Thai). ● Draft Final estimation manual for “Automotive and Auto Part Industry” (in Thai).
Issues	● Progress of sub-contracted survey to be monitored.
Plan	● Sub-contracted survey by DIW and IEAT to continue.

3.4 Output 4 Estimation from Non Point Source	
Summary	Based on the result of data availability survey, estimation method for non point sources was clarified and summarized. Relationship with various related organization in field of non point source estimation was developed.
Activity	● Coverage and estimation approach for non point source was clarified and developed. ● TOR for pesticide survey was developed in cooperation with TCPA and be ready for sub-contract by PCD. ● TOR for SMEs model survey was developed and be ready for sub-contract by DIW. ● TOR for traffic survey was considered in cooperation with OTP. ● Relationship with TPMA was developed to enable top-down approach for paint filed. ● TOR for hospital/university/household model survey was developed and be ready for sub-contract by IEAT. ● Proposal was submitted and approved at PRTR-sub-committee for set up of non point source estimation task force.
Paper/report prepared	● Draft estimation method of non point source.
Issues	● Emission factor from mobile source to be experimented and studied. ● Progress of sub-contracted survey shall be monitored.
Plan	● Sub-contracted survey by PCD, DIW and IEAT to be implemented. ● Emission factor experiment to be continued. ● TOR for traffic survey to be finalized.

3.5 Output 5 Utilization of PRTR data	
Summary	Japanese guide book of PRTR data and risk assessment for business operator prepared by METI was translated as reference document for the Output.
Activity	● Examined the content of Japanese guidebook by METI and translated to English.
Paper/report prepared	● Japanese guidebook of PRTR data and risk assessment for business operator (translated to English).
Issues	● Image of output 5 shall be clarified and shared by CP members.
Plan	● Continue discussion on output 5 work among CP members.

3.6 Output 6 Risk Communication	
Summary	Proposal to set up Task Force including various members from Rayong was drafted and approved at the PRTR sub-committee. Preliminary contact with proposed member was established.
Activity	● Prepared TOR of Task Force for promotion of risk communication. ● TOR submitted and approved at PRTR subcommittee.
Paper/report prepared	None.
Issues	● Training for risk communication facilitator to be continued at DEQP/ERTC-IET. ● Registration system for chemical adviser shall be considered.
Plan	● Task force activity to start.

ANNEX

1. List of CP and task forces

- PRTR project CP list
- Release estimation manual (Refinery) Task Force
- Release estimation manual (Chemical/Petrochemical) Task Force
- Release estimation manual (Automotive and Auto part) Task Force

2. Paper/Report prepared

- Revised PDM
- Point source definition (Final Draft)
- Release estimation manual for Refinery (Final Draft – Thai)
- Release estimation manual for Chemical/Petrochemical industry (Final Draft – Thai)
- Release estimation manual for Automotive and Auto part industry (Final Draft – Thai)
- Draft estimation method for non-point sources
- Pilot Implementation plan (2nd Draft) and 1st Progress report

3. Meeting/Visit/workshop memo

4. JICA PRTR website and newsletter