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

Progress Report No. 6

March 2014

Pollution Control Department, MONRE
Department of Industrial Works, MOI
Industrial Estate Authority of Thailand, MOI
Japan International Cooperation Agency
## Abbreviation

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIT</td>
<td>Asian Institute of Technology</td>
</tr>
<tr>
<td>AQNMB</td>
<td>Air Quality and Noise Management Bureau (PCD)</td>
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<tr>
<td>CMR</td>
<td>Carcinogenicity, Mutagenicity, Reproductive Toxicity</td>
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<tr>
<td>CRJA</td>
<td>Chonburi Rayong Japanese Association</td>
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<tr>
<td>C/P</td>
<td>Counterpart Personnel</td>
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<tr>
<td>DG</td>
<td>Director-General</td>
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<tr>
<td>DDG</td>
<td>Deputy Director-General</td>
</tr>
<tr>
<td>DEQP</td>
<td>Department of Environmental Quality Promotion</td>
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<tr>
<td>DOA</td>
<td>Department of Agriculture</td>
</tr>
<tr>
<td>DIW</td>
<td>Department of Industrial Works</td>
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<tr>
<td>DLA</td>
<td>Department of Local Administration (Ministry of Interior)</td>
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<tr>
<td>EARTH</td>
<td>Ecological Alert and Remediation for Thailand (NGO)</td>
</tr>
<tr>
<td>ECNEQ</td>
<td>Enhancement and Conservation of National Environmental Quality Act</td>
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<tr>
<td>EF</td>
<td>Emission Factor</td>
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<tr>
<td>ERTC</td>
<td>Environmental Research and Training Center</td>
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<td>ESIE</td>
<td>Eastern Seaboard Industrial Estate (Rayong)</td>
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<td>EQLD</td>
<td>Environmental Quality and Laboratory Division (PCD)</td>
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<tr>
<td>FTI</td>
<td>Federation of Thai Industry</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
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<td>GSEI</td>
<td>Good Governance for Sustainable Environment Institute (NGO)</td>
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<tr>
<td>GPP</td>
<td>Green Partnership Program</td>
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<tr>
<td>HAPs</td>
<td>Hazardous Air Pollutants</td>
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<td>HSB</td>
<td>Hazardous Substances Bureau (DIW)</td>
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<tr>
<td>IET</td>
<td>Institute of Environmental Training</td>
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<td>IEAT</td>
<td>Industrial Estate Authority of Thailand</td>
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<td>IRIS</td>
<td>Integrated Risk Information System (US EPA)</td>
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<td>ITD</td>
<td>IT Division (PCD, DIW)</td>
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<tr>
<td>IWETB</td>
<td>Industrial Water and Environmental Technology Bureau (DIW)</td>
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<tr>
<td>JCC</td>
<td>Joint Coordination Committee</td>
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<td>JpCC</td>
<td>Japanese Chamber of Commerce</td>
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<td>JICA</td>
<td>Japan International Cooperation Agency</td>
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<tr>
<td>M/M</td>
<td>Man/Month</td>
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<tr>
<td>MONRE</td>
<td>Ministry of Natural Resources and Environment</td>
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<td>MOI</td>
<td>Ministry of Industry</td>
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<td>MOT</td>
<td>Ministry of Transport</td>
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<td>MOA</td>
<td>Ministry of Agriculture</td>
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<tr>
<td>MSDS</td>
<td>Material Safety Data Sheet</td>
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<td>NEB</td>
<td>National Environmental Board</td>
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<td>NESDB</td>
<td>National Economic and Social Development Board</td>
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<td>ONEP</td>
<td>Office of the Natural Resources and Environmental Policy and Planning</td>
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<td>OTP</td>
<td>Office of Traffic and Transport Policy and Planning</td>
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<tr>
<td>PCC</td>
<td>Pollution Control Committee</td>
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<td>PCD</td>
<td>Pollution Control Department</td>
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<tr>
<td>PDM</td>
<td>Project Design Matrix</td>
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<td>PRTR</td>
<td>Pollutant Release and Transfer Register</td>
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<td>PSB/MOPH</td>
<td>Policy and Strategy Bureau/Ministry of Public Health</td>
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<tr>
<td>R/D</td>
<td>Record of Discussion</td>
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<td>SAICM</td>
<td>Strategic Approach for International Chemical Management</td>
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<td>TEI</td>
<td>Thailand Environment Institute (NGO)</td>
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<td>TF</td>
<td>Task Force</td>
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<tr>
<td>TAIA</td>
<td>Thai Automotive Industry Association</td>
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<td>TAPMA</td>
<td>Thai Autoparts Manufacturers Association</td>
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<tr>
<td>TCPA</td>
<td>Thai Crop Protection Association</td>
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<td>TPMA</td>
<td>Thai Paint Manufacturer’s Association</td>
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<tr>
<td>UNEP</td>
<td>United Nations Environment Program</td>
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<td>US EPA</td>
<td>United States Environmental Protection Agency</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>VOCs</td>
<td>Volatile Organic Compounds</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<td>WHSMB</td>
<td>Waste and Hazardous Substances Management Bureau (PCD)</td>
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<tr>
<td>WQMB</td>
<td>Water Quality Management Bureau (PCD)</td>
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</table>
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1. List of CP and task forces
   • PRTR project CP list
   • Risk Communication Promotion Task Force

2. Paper/Report prepared
   • Summary of pesticide survey
   • Summary of industrial database and online system development
   • Summary of non point industry source survey
   • Summary of hospital, school and household survey
   • Manual to Estimate Emissions from the Use of Paints at Non-Point Source (final draft)
   • Manual to Estimate Emissions from the Use of Marine Coatings at Factories (final draft)
   • Draft pilot implementation plan for risk communication
   • Pilot project Implementation 3rd Progress report
   • Point source consultation report

3. Report of the study tour to Japan

4. Meeting/Visit/workshop memo

5. 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 6th, 2011 – March 5th, 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 6 noted below was approved at Joint Coordination Committee meeting held on July 12, 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 use 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 approved at Joint Coordination Committee meeting held on July 12, 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 project implementation plan and set up organization
1-9. Organizing awareness raising and training workshop for pilot project
1-10. Collection of data and disclosure for pilot project
1-11. Organizing risk communication meeting for pilot project
1-12. Obtaining feedback from stakeholders for pilot project
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. Identifying 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 availability of activity 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 emission amounts from NPS at pilot project 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 for use of 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. Awareness raisings for risk communication importance for relevant agencies, relevant local governments and participating companies.  
6-4. Development of training curriculum for facilitator and pilot project 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.  
6-8. Development of the implementation plan, and pilot project organization of risk communication meeting with community people of Rayong  
6-9. 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 March 2014)

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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</thead>
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<tr>
<td>Major work</td>
<td>Capacity assessment</td>
<td>Capacity assessment</td>
<td>Capacity assessment</td>
<td>Capacity assessment</td>
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<tr>
<td>Output 1</td>
<td>Clarification on organizational matters, policy priority</td>
<td>PRTR design paper (draft) will be prepared.</td>
<td>Designing the element of basic PRTR system.</td>
<td>Compilation of the pilot project data</td>
</tr>
<tr>
<td></td>
<td>Designing the element of basic PRTR system</td>
<td>Preparation for pilot project action plan</td>
<td>Implementation of pilot project</td>
<td>Implement questionnaire survey</td>
</tr>
<tr>
<td></td>
<td>Basic survey and listing of target chemical substances</td>
<td></td>
<td></td>
<td>Design of PRTR system for nationwide application</td>
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<tr>
<td></td>
<td>Preparation for pilot project</td>
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<tr>
<td>Output 2</td>
<td>Selection of target business and size</td>
<td>Design of PRTR reporting system</td>
<td>Direct support to industry for PRTR reporting</td>
<td>Disclosure of PRTR data from pilot project</td>
</tr>
<tr>
<td></td>
<td>Review of existing reporting system</td>
<td></td>
<td>Verification, compilation of reported data</td>
<td>Design of reporting system and format for nationwide PRTR system</td>
</tr>
<tr>
<td></td>
<td>Design of PRTR reporting system.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Output 3</td>
<td>Preparation of industry specific emission estimation manual from point source</td>
<td>Preparation of industry specific emission estimation manual from point source. Draft manual will be prepared in English and then translated to Thai.</td>
<td>Continue Preparation of industry specific emission estimation manual from point source. Draft manual will be prepared in English and then translated to Thai.</td>
<td>Revision of manual for point source estimation</td>
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<tr>
<td>Output 4</td>
<td>Selection of target business and activity</td>
<td>Advice on emission factor experiment</td>
<td>Implement pilot project</td>
<td>Revision of manual for non point source estimation</td>
</tr>
<tr>
<td></td>
<td>Advice on emission factor experiment</td>
<td>Preparation of emission estimation method from non-point source. Draft method document will be</td>
<td>Estimate emission from non point source in pilot project area (including mobile source and</td>
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<tr>
<td></td>
<td>Preparation of emission estimation manual from non-point source</td>
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</table>
## Output 5
- Preparation of case study of PRTR data utilization
- Review of current situation and design of human resource development
- Planning and development of risk communication training course
- Preparation of emission estimation manual from non-point source
- Revise manual

## Output 6
- Review of current situation and design of human resource development
- Planning and development of risk communication training course
- Organization of training course for risk communication
- Support for training of risk communication
- Support for training of risk communication

## Training (study visit)
- Training in Japan (study visit)
- Training in Japan (study visit)

## Evaluation
- Mid-term review
- Final evaluation

## Seminar/Workshop
- JCC
- 1st PRTR seminar
- JCC
- 2nd PRTR seminar
- Seminar for PRTR awareness raising to industry
- 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
- Basic survey for chemical substance
- PRTR Web site development
- Data availability survey for non point source
- Direct factory support for pilot project
- Traffic survey in Rayong
- Questionnaire survey
### Plan of Operation

#### 1. Basic design of PRTR system in Thailand is established

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

#### 2. Emission reporting scheme of industry is developed.

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. Identifying 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
3. Capacity of estimation of emission and transfer for point source is strengthened.

<table>
<thead>
<tr>
<th>Task</th>
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<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
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<tbody>
<tr>
<td>3-1. Establishment of task forces on development of release estimation manuals for specific industries</td>
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<tr>
<td>3-2. Development of draft release estimation manuals for specific industries</td>
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<td>3-3. Conducting model studies for industries for which release estimation manuals are not prepared</td>
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<tr>
<td>3-4. Organizing workshop on point source release estimation for governmental officials and relevant agencies</td>
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<td>3-5. Organizing workshop on point source release estimation for factories/facilities</td>
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<tr>
<td>3-6. Organizing consultation for factories/facilities to estimate releases by site visit</td>
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<td>3-7. Responding to questions (via phone, e-mail) on release estimation from factories/facilities and preparing FAQs</td>
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<td>3-8. Revision of release estimation manuals for specific industries</td>
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<tr>
<td>3-9. Preparation of final report of output 3</td>
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</table>

4. Capacity of emission estimation for non point source is strengthened.

<table>
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<th>2013</th>
<th>2014</th>
<th>2015</th>
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<td>4-1. Establishment of basic idea for estimation of emissions from non-point sources (NPS)</td>
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<td>4-2. Survey of availability of activity data and emission factors (EFs) necessary to estimate</td>
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<td>4-3. Selection of target categories and target chemicals for NPS and responsible bodies to estimate</td>
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<td>4-4. Validation of data used for estimation; activity data and EF</td>
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<tr>
<td>4-5. Establishment of estimation method in each target category</td>
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<tr>
<td>4-6. Preparation for drafts of estimation manuals</td>
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<td>4-7. Collection such data used for estimation as activity data and EF</td>
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<td>4-8. Estimation of emission amounts from NPS at pilot area and Compilation of disclosed data</td>
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<td>4-9. Collection of information, data necessary for revising estimation manuals and Revision of estimation manuals</td>
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<tr>
<td>4-10. Implementation of workshop for estimation of emissions from non-point sources for government officials and relevant agencies</td>
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<tr>
<td>4-11. Preparation of final report of output 4</td>
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</table>
5. Importance of use of PRTR data including initial assessment is understood.

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 for use of PRTR data including initial assessment for both government and private sectors.

5-5. Preparation of final report of output 5.

6. Implementation structure of risk communication is developed in the pilot area.

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. Awareness raisings 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.


6-7. Planning the registration system of chemical advisor for supporting risk communication.

6-8. Development of the implementation plan, and pilot organization of risk communication meeting with community people of Rayong.

### 1.3. Input and Plan for 2013

<table>
<thead>
<tr>
<th>Item</th>
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<th>2nd Qtr</th>
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<tr>
<td><strong>1 Expert</strong></td>
<td></td>
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<tr>
<td>(1) Long-term Expert (0名)</td>
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<td>(2) Short-term Expert (5名)</td>
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<tr>
<td>① Leader / PRTR System / Chemical Management / Non-point Source Estimation</td>
<td>3 (Mr. Fukuda)</td>
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<tr>
<td>② Sub-Leader / Point Source Reporting / Point Source Estimation / Non-point Source Estimation 2 (Mr. Takahashi)</td>
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<td>③ Non-point Source Estimation 1 (Mr. Shirane)</td>
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<tr>
<td>④ Social Consideration / Risk Communication (Mr. Tezuka)</td>
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<tr>
<td>⑤ Social Consideration / Risk Communication 2 (Mr. Nakamura)</td>
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<tr>
<td>⑥ Arrangement for training in Japan (Mr. Fukuda)</td>
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<tr>
<td><strong>2 Training (Japan)</strong></td>
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<tr>
<td>① Study of PRTR implementation in Japan</td>
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<td><strong>3 Equipment</strong></td>
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<tr>
<td><strong>4 Local Consultant</strong></td>
<td>Traffic survey in Rayong</td>
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<td></td>
<td>Estimation support for industry</td>
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<td></td>
<td>Questionnaire feedback survey</td>
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<tr>
<td><strong>5 Others</strong></td>
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<td>JCC</td>
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<td>Seminar</td>
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<td>Review</td>
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<td>Discussion of next year plan</td>
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</tbody>
</table>

* 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 following table.

<table>
<thead>
<tr>
<th>Expert</th>
<th>Assignment period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Munehiro Fukuda</td>
<td>10/1 – 10/17/013</td>
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<tr>
<td></td>
<td>11/7/2013 – 1/15/2014</td>
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<td></td>
<td>2/19 – 3/31/2014</td>
</tr>
<tr>
<td>Yoshiharu Shirane</td>
<td>10/9 – 12/5/2013</td>
</tr>
<tr>
<td></td>
<td>1/28 – 2/12/2014</td>
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<tr>
<td></td>
<td>2/23 – 3/31/2014</td>
</tr>
<tr>
<td>Kazuhiko Tezuka</td>
<td>10/1 – 10/19/2013</td>
</tr>
</tbody>
</table>

- Organization of number of seminar/workshops
- Implement study tour to Japan (as attached report)
- Sub-contract for traffic survey in Rayong
- Sub-contract for direct consultants support to point sources.

- Plan for next six months
  - Continue the expert assignment. Approx. 9M/M is expected in (April -September).
  - Support point source for estimation and reporting
  - Receive, validate and compile point source data
  - Estimate and compile non point source data
  - Preparation of risk communication hand book and follow up training
  - JICA final evaluation
## 2. Summary of progress (overall)

### 2.1. Summary sheet

<table>
<thead>
<tr>
<th>Summary</th>
<th>Various works to prepare for the estimation in pilot PRTR were carried out. Sub-contracted work for Pesticide/Agriculture survey under PCD, for non-point industry survey and database development under DIW, and hospital/school/household survey under IEAT were completed. Industrial survey for 5 categories (wood/furniture, metal, electrical machinery, plastic, rubber) under IEAT, Rayong traffic survey under JICA team are still on-going. Official request letter and report form were sent out to all the concerned facilities in Rayong Province with support letter of Rayong Governor. Several workshops for point sources were organized to provide detail of estimation and reporting. Then individual consultation or on-site coach for point source was provided. Japanese study tour was implemented with 31 participants including private sector.</th>
</tr>
</thead>
</table>
| Major Activity | ● Study tour to Japan in October 22\(^{nd}\) – Nov. 2\(^{nd}\), 2013  
● PRTR seminar by Japanese Chamber of Commerce was held on Oct. 12\(^{th}\), 2013.  
● Series of consultation meeting was held with relevant FTI clubs requesting collaboration on pilot.  
● Sub-contracted work by PCD for pesticide/agriculture survey completed.  
● Sub-contracted work by DIW for industrial database and online report system as well as survey for non-point industrial source completed.  
● Sub-contracted work by IEAT for hospital/school/household completed.  
● Sub-contracted work by IEAT for model survey in 5 category industry (wood/furniture, metal, electrical machinery, plastic, rubber) was started and on-going.  
● Sun-contracted work by JICA team for direct consulting support for 5 category industry was started and on-going.  
● Sub-contracted work by JICA team for Rayong traffic data survey was started and on-going.  
● On-site coaching visit to point source was provided by JICA expert and C/P. |
| Major Paper/report prepared | ● Draft pilot implementation plan for risk communication  
● Consultation report for point source  
● Updated pilot project progress report No.3.  
● Progress Report No.6 |
| Plan | ● Continue point source support, receive and validate the report.  
● Start estimation of non point source data.  
● Start compiling the data.  
● Prepare for data disclosure and risk communication |
2.2. Organization structure

Diagrams in next pages show organization structure of the project and the relationship with various stakeholders as of March 2014. There was no major change in the structure during last 6 months.

Separate diagrams were prepared to show the structure and current situation of point source activity as well as non point source activity. There is no major change in the implementation structures.

2.3. Major Issues and problem

- Compilation of point source data may delay depending on the response of each facility. To have more report, the period of reporting may need to be extended.
- Time for data compilation, preparation of risk communication is fairly limited at the last six months of the project.
- Feedback survey and final system design as well as preparation of action plan may need to start before the completion of risk communication due to time constrain.
- Sustainability of project outcome and direction towards system establishment is yet to be clarified and agreed.
Current situation for point source/ non point source estimation work


Model survey for 5 categories under sub-contract by IEAT To be completed soon

Crop based application survey under sub-contract by PCD completed

PCD Laboratory experiment for emission factor + Traffic model study on-going and expected to complete in April

Model survey under sub-contract by DIW completed

Waste Treatment facility & Bulk gasoline terminal under preparation by PCD/JICA team

Cooperation with TPMA agreed for Top-down Approach

Model survey under sub-contract by IEAT completed

Small factory Below threshold

7 categories

Point source

Non factory

Hospital & University

Non listed business

Agriculture

Non listed factory

Paint/ Construction

House hold

Mobile
Organization structure of the project and relation with stakeholders

PRTR project CounterParts team

Pilot implementation (refer to separate figures for detail)

IEAT sector

Local government sector

Industrial Park/Land/Zone sector

Non-Point Estimation Method Development

Point Source Estimation Method Development

Refer to separate figures.
Implementation structure of Industrial Zone/Park/Cluster sector

Target of awareness raising workshop step 1

PRTR team DIW

DIW / Rayong Provincial Industry Office

Rayong Provincial Industry Office / DIW

Industrial Zone

Siam Eastern Industrial Park (SEP)
(30 Factories)

IRPC Public Company Limited
(28 Factories)

Nakarin Industrial Park
(3 Factories)
(under investigation)

SSP Industrial Park
(3 Factories)
(under investigation)

Rayong Industrial Park
(13 Factories)
(under investigation)

CPPC Public Company Limited
(9 Factories)
(under investigation)

Industrial Park

G.K. Land
(4 Factories)

The Siam Cement Group Rayong
(12 Factories)

Tunex
(1 Factory)
(under investigation)

IPP
(6 Factories)
(under investigation)

Industrial Cluster

Rojana Rayong
(20 Factories)

Target of awareness raising workshop step 2 & Risk communication meeting

Factory / point source

Factory / point source

Factory / point source

Factory / point source

Factory / point source

Factory / point source

Factory / point source


Note: The number of factories from 7 categories of factory)
Implementation structure of Industrial Estate (IEAT) sector

Target of awareness raising workshop step 1
PRTR team
IEAT

Map Ta Phut Industrial Estate (54 Factories)
Hemaraj Eastern Industrial Estate (Map Ta Phut) (41 Factories)
Padaeng Industrial Estate (4 Factories)
Eastern Seaboard Industrial Estate (Rayong) (207 Factories)
Amata City Industrial Estate (144 Factories)
Hemaraj Eastern Seaboard Industrial Estate (66 Factories)
Asia Industrial Estate (12 Factories)
RIL Industrial Estate (7 Factories)
Map Ta Phut Terminal (6 Factories)

Target of awareness raising workshop step 2 & Risk communication meeting

Factory / point source
Factory / point source
Factory / point source
Factory / point source
Factory / point source
Factory / point source
Factory / point source

Note: The number of factories from 7 categories of factory
PRTR project
Implementation structure of Point Source Estimation Work

Factory

Chemical
- Refinery
- Chemical/Petrochemical

Automotive
- Fabricated Metal
- Wood/Furniture
- Electrical machinery
- Plastic
- Rubber

Non Factory

Hospital

University/School

Bulk Gasoline Terminal

Waste Management facility

Model survey projects under IEAT sub-contract
Mahidol University

Model survey projects under IEAT sub-contract
(UAE Co., Ltd.)

JICA Expert and Project Counterparts

Task force for manual preparation under DIW appointment

Task force for manual preparation under DIW appointment

Task force for manual preparation under DIW appointment

Estimation Manual

Estimation Manual

Estimation Manual

Estimation Manuals

Estimation Manual

Estimation guideline

OUTPUT

OUTPUT

OUTPUT

OUTPUT

Completed.

To be completed soon.
Organization Chart of Non Point Source

PRTR Project (Non Point Source) Estimation Method Development

PCD
- Mobile Source
  - Agriculture
  - Office of Transport and Traffic Policy and Planning (Ministry of Transport)
    - Laboratory (PCD)
  - Automotive Emission Laboratory (PCD)
  - Thai Automotive Industry Association
  - ToUDaCoLtd for data survey (ongoing)

IEAT
- Non-Target Business
  - Construction/ Paint
  - Gas station
  - Department of Energy Business (Ministry of Energy)
    - Thai Paint Manufacturers Association
  - National Statistical Office (Ministry of Information, Communication and Technology)

DIW
- Non-Factory Point Source below threshold
  - University/ Research Institute
  - Subcontract to Mahidol University (Completed)
- Household
  - Hospital
  - Nopparat Rajathanee Hospital
  - Bureau of Policy and Strategy (Ministry of Public Health)
  - Mahidol University for Model Survey (Completed)

- Factory other than Point Source
  - Department of Business Development (Ministry of Commerce)
  - Subcontract to SECOT Co., Ltd for Model Survey (Completed)

- National Statistical Office (Ministry of Information, Communication and Technology)
## 3. Progress of each output

### 3.1 Output 1  Design of PRTR system

#### Summary

Workshops and seminars were organized to help industry and other point source to be ready for PRTR reporting.

Study tour to Japan was implemented during Oct. 22\textsuperscript{nd} – Nov 2\textsuperscript{nd} with total of 31 participants.

Meeting with various industry clubs of FTI were held to discuss pilot PRTR and collaboration.

PRTR data management task and data flow among the relevant offices were discussed and agreed. Measure to secure sustainability of pilot PRTR was discussed and considered.

*(Overall indicator of the progress)*

Out of 14 activities listed under OUTPUT 1 in the plan, 9 activities completed, 1 on-going, 4 yet to be done.

#### Activity

- Meeting with following industry club of FTI held:
  - Aluminum industry club
  - Iron and steel industry club
  - Rubber- based industry club
  - Machinery cluster club
  - Agriculture machinery club
  - Electrical, electronics and allied industry club
  - Furniture club
- Study tour to Japan was implemented during Oct. 22\textsuperscript{nd} – Nov 2\textsuperscript{nd} with total of 31 participants.
- Japanese Chamber of Commerce organized 3\textsuperscript{rd} PRTR seminar on Oct. 12, 2013.
- 6\textsuperscript{th} Counterpart meeting was held on Dec 24\textsuperscript{th}, 2013. Responsibility of data management work was discussed and agreed by PCD/DIW/IEAT.

#### Paper/report prepared

- Pilot project progress report No.3
- Report of study tour 2013

#### Issues

- Measure to secure sustainability of pilot PRTR need to be clarified.
- Operation plan for last six months is tight and needs measures.

#### Plan

- 6\textsuperscript{th} NGO meeting shall be held in late March or early April.
- Methodology of feedback survey shall be discussed and designed.

### 3.2 Output 2  Reporting system from Industry

#### Summary

Preparation of report reception from Industry has been on-going at DIW and at IEAT. Online report system was developed and data validation protocol was drafted and initial training was provided.

Official request letters and report form was sent to all facilities with the letter from Rayong provincial governor.

*(Overall indicator of the progress)*

Out of 10 activity list under OUTPUT 2 in the plan, 5 activities completed, 2
<table>
<thead>
<tr>
<th>Activity</th>
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<tbody>
<tr>
<td>● On line reporting data system was developed in DIW.</td>
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<tr>
<td>● On line reporting data system was developed in IEAT.</td>
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<tr>
<td>● Official request letters and report form were sent to all facilities with the letter from Rayong provincial governor.</td>
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<tr>
<td>● Training workshop for hospitals, bulk gasoline terminal, school and waste management facility was organized on Jan. 24&lt;sup&gt;th&lt;/sup&gt;, 2014</td>
<td></td>
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<tr>
<td>● Seminar for 5 industrial categories (wood/furniture, plastic, metal, electrical machinery and rubber) was organized on Jan. 28&lt;sup&gt;th&lt;/sup&gt;, 2014.</td>
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<tr>
<td>● PRTR knowledge management workshop was organized for IEAT staff on Feb. 21, 2014</td>
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<tr>
<td>● Report data validation training workshop was organized for PIO staff on Feb. 27, 2014</td>
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<tr>
<td>● PRTR reporting workshop for factories in Map Ta Phut complex was organized on March 7, 2014</td>
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<tr>
<td>Paper/report prepared</td>
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<tr>
<td>● Project report under subcontract by DIW for industrial PRTR data base</td>
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<tr>
<td>Issues</td>
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<tr>
<td>● Extent of industry cooperation in pilot PRTR reporting is not clear.</td>
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<tr>
<td>Plan</td>
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<tr>
<td>● Receive the report, validate and compile the data.</td>
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<tr>
<td>● Revise the estimation manuals.</td>
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</table>

3.3 Output 3 Estimation from Point Source

Summary

On-site coaching for estimation and reporting was provided to over 20 factories by JICA expert and counterpart team in chemical and automotive sectors. Supports for other industrial sector are being prepared through sub-contract to local consultants. Training to non industrial sector was implemented.

Estimation manual for 5 industrial sectors are being prepared.

(Overall indicator of the progress)

Out of 9 activity list under OUTPUT 3 in the plan, 4 activities completed, 3 on-going, 2 yet to be done.

<table>
<thead>
<tr>
<th>Activity</th>
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<tbody>
<tr>
<td>● Model survey for 5 industrial sectors (furniture/wood, metal, electrical machinery, plastic, rubber) under subcontract by IEAT is almost completed.</td>
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<tr>
<td>● Model survey for hospital/university under subcontract by IEAT was completed.</td>
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<tr>
<td>● On-site coaching factory visits were implemented by JICA expert and C/P team (24 factories)</td>
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<tr>
<td>● Subcontract was provided to local consulting firm to assist 50 factories under 5 industrial categories.</td>
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<tr>
<td>● Report validation protocol was developed.</td>
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<tr>
<td>Paper/report prepared</td>
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<tr>
<td>● Project report under subcontract by IEAT for hospital/school/household study</td>
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<tr>
<td>● Consultation report from on-site coaching visit to factories.</td>
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<tr>
<td>● Report validation protocol.</td>
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</tbody>
</table>
| Issues | • Estimation manual for 5 industrial sectors needs to be improved.  
• Factories in 5 industrial sectors shall be encouraged to participate in the pilot PRTR more. |
|---|---|
| Plan | • Receive the report, validate and compile the data.  
• Revise the estimation manuals. |

### 3.4 Output 4 Estimation from Non Point Source

| Summary | Various subcontracted surveys have been reported. Traffic data survey was started by a subcontractor. Estimation manuals are being drafted  
(Overall indicator of the progress)  
Out of 11 activity list under OUTPUT 4 in the plan, 6 activities completed, 2 on-going, 3 yet to be done. |
|---|---|
| Activity | • Pesticide survey conducted under the subcontract by PCD was completed.  
• Survey for non-point industrial source (SMEs model survey) conducted under the subcontract by DIW was completed.  
• Hospital/university/household model survey conducted under subcontract by IEAT was completed.  
• TOR for traffic data survey was finalized.  
• Traffic data survey was contracted and the work started.  
• Nationwide emissions from the use of paint with TPMA were estimated and the collection of information for allocation to local areas is continued.  
• Estimation manual for agriculture was drafted.  
• Estimation manuals for mobile sources, gas station, households, hospital and institute/university are under drafting.  
• Experiments to establish emission factors for mobile sources is continued. |
| Paper/report prepared | • Manual to Estimate Emissions from the Use of Paints at Non-Point Sources (final draft)  
• Manual to Estimate Emissions from the Use of Marine Coatings at Factories (final draft) |
| Issues | • Emission factor for mobile source to be experimented  
• Emission factor for gas station to be collected  
• Progress of sub-contracted survey to be monitored. |
| Plan | • Sub-contracted survey for traffic data survey to be finalized.  
• Emission factor experiment for mobile source to be finalized.  
• Estimation manuals to be finalized  
• Establishment of how to validate the estimated results  
• Compilation of emission data |

### 3.5 Output 5 Utilization of PRTR data

| Summary | Basic rule of PRTR data utilization was discussed among C/P.  
(Overall indicator of the progress)  
Out of 5 activity list under OUTPUT 5 in the plan, 1 activity completed, 4 yet |
|---|---|
| Activity | ● Sample data book was prepared and discussed among C/P.  
|          | ● Basic rule of PRTR data utilization was discussed among C/P. |
| Paper/report prepared | None |
| Issues | ● Image of output 5 shall be clarified and shared by C/P. |
| Plan | ● Continue discussion on output 5 work among C/P |

| Summary | Task Force meeting on Risk Communication Promotion was held. |
|         | (Overall indicator of the progress) |
|         | Out of 9 activity list under OUTPUT 6 in the plan, 4 activities completed, 2 on-going, 3 yet to be done. |

| Activity | ● 3rd Task Force meeting on risk communication promotion was held on Oct. 16th, 2013  
|          | ● Pilot implementation plan for risk communication was approved, in principle, at the task force meeting.  
|          | ● DEQP approved the facilitator training on routine basis. |
| Paper/report prepared | ● Draft pilot implementation plan for risk communication |
| Issues | ● Registration system for chemical adviser shall be considered |
| Plan | ● Once the PRTR data is complied, training material of facilitator will be updated and follow up training will be provided.  
|      | ● Risk communication handbook to be completed.  
|      | ● Risk communication material will be prepared. |
ANNEX

1. **List of CP and task forces**
   - PRTR project CP list
   - Risk Communication Promotion Task Force

2. **Paper/Report prepared**
   - Summary of pesticide survey
   - Summary of industrial database and online system development
   - Summary of non point industry source survey
   - Summary of hospital, school and household survey
   - Manual to Estimate Emissions from the Use of Paints at Non-Point Source (final draft)
   - Manual to Estimate Emissions from the Use of Marine Coatings at Factories (final draft)
   - Draft pilot implementation plan for risk communication
   - Pilot project Implementation 3rd Progress report
   - Point source consultation report

3. **Report of the study tour to Japan**

4. **Meeting/Visit/workshop memo**

5. **JICA PRTR website and newsletter**