

PROJECT IMPLEMENTATION REPORT

Project ID:	9219
Project Name:	Applications of Industry-urban Symbiosis and Green Chemistry for Low Emission and Persistent Organic Pollutants (POPs)-Free Industrial Development in Thailand
Countr(ies):	Thailand
Implementing Agency:	UNIDO

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I. Overview

A. Description

Project name

Applications of Industry-urban Symbiosis and Green Chemistry for Low Emission and Persistent Organic Pollutants (POPs)-Free Industrial Development in Thailand

Country

Thailand

GEF ID

9219

Implementing Agency

UNIDO

Executing Entity

- Department of Industrial Works under the Ministry of Industry;
- Pollution Control Department under the Ministry of Natural Resources and Environment;
- The Federation of Thai Industries; and,
- Chemical Engineering Department, Kasetsart University.

Trust Fund

GET

Project Type

FSP

PIR Submission

9/5/2025

Fiscal Year , PIR Number

FY 2025 , 6th PIR

Objective

To reduce greenhouse gas emissions, as well as releases of persistent organic pollutants and other harmful chemicals from industries and urban centers through the application of industry-urban symbiosis and green chemistry technology

B. Ratings and Disbursements

Implementation Progress

Moderately Satisfactory

Development Objective

Moderately Satisfactory

Overall risk

Moderate Risk

Project Financing

9,817,770.00

Cumulative Disbursement

5,727,928.94

C. Key Dates

CEO Endorsement/Approval 4/3/2019	Agency Approval 7/16/2019
Implementation Start 7/24/2019	First Disbursement 1/29/2020
Expected MTR 12/12/2022	Actual MTR 2/2/2023
Expected Completion 6/30/2026	Actual Completion

II. PROGRESS STATUS AND ISSUES

A. Progress: Information on progress and outcomes of project implementation activities

Outcome A: GHG emissions and releases of POPs reduced through industry-urban symbiosis by transferring low carbon and green chemistry technologies, improving capacity, enhancing infrastructure, promoting innovative business models and raising awareness

-Reduction of Greenhouse Gas Emissions: The aim is to decrease emissions by 1,305,761 tons of CO₂ equivalent over a decade. To date, there has been a yearly reduction of 216,096 tons of CO₂ equivalent, achieved through the collaboration of KU, PPT, FTI, and SPI.

- Elimination of Persistent Organic Pollutants (POPs): The target is set at 620 tons. Current initiatives have effectively pinpointed sources of POPs, with collection activities being coordinated by MTEC.

- Capacity Building for Industrial Sector Participants: The objective is to engage 3,600 participants. So far, 3,684 individuals have taken part in the programme organized by FTI and MTEC.

- Resource Efficiency and Clean Production Assessments for Factories: The goal is to assess 200 factories. Currently, FTI has conducted evaluations for 200 factories.

- Demonstration Projects for RECP: The target is set at 50 projects, of which 30 have been successfully executed by FTI to date.

- Demonstration Projects for Industry Symbiosis: Aiming for 3 projects focused on the end of industrial waste, which have been completed:

A business model competition on the use of industrial by-products as raw materials for products in local communities, organized by NIDA.

Conversion of plaster molds into gypsum walls by Chulalongkorn University.

Production of bio-sodium silicate and bio-potassium silicate from rice husk ash by MTEC

B. Challenges: Information on challenges of project implementation activities

Difficult to find the demonstration sites to implement the BAT/BEP to manage the usage of decaBDE and/or textile and/or WEEE containing decaBDE.

Due to delays in receiving samples, MTEC, national consultant, was unable to complete the analysis of rice husk ash within the originally designated timeframe. The third round of sampling is scheduled for October to November 2024 to coincide with the rice cultivation season. Additionally, the evaluation of bio sodium silicate utilization requires a greater quantity of solutions, and an extended processing period compared to initial estimates. As a result, project outcomes have been delayed by approximately six months.

Additional time was required for the development of the Green Industry Online Platform beyond the timeframe specified in the Terms of Reference. This extension was attributable to ongoing revisions of Thai Green Industry criteria, the necessity for integration with external systems, and the specific processing requirements set forth by the Department of Industrial Works. As a result, programming and system development progressed at a slower pace than initially anticipated.

C. Stakeholder Engagement

Summary of Stakeholder Engagement Activities

- The Technical Working Group (POPs Management) convened on 6 February 2025 to review ongoing activities, provide structured feedback to Sub-Working Groups overseeing national consultants, and formulate recommendations for Project Steering Committee (PSC) approval.
- Technical Working Group (End-of-Waste) meetings were held on 25 September 2024 and 10 February 2025, ensuring continued oversight and cross-agency coordination.
- The Technical Working Group (Eco-Industrial Development) met on 11 February 2025 to address progress on eco-industry initiatives and integrate stakeholder perspectives.
- An additional Technical Working Group (End-of-Waste) session was conducted on 6 May 2025 to address emerging challenges and align strategies.
- The Project Steering Committee meeting on 13 March 2025 facilitated comprehensive progress reporting, deliberation on project implementation extension, and review of forthcoming work plans.

Key Outcomes and Impact

- Regular TWG and SWG meetings provided effective mechanisms for monitoring consultant deliverables, enabling timely guidance and agile adaptation of work plans and activities in response to challenges.
- Stakeholder feedback, particularly regarding legislative issues, was systematically integrated into the planning of subsequent phases of POPs management and communicated to project partners. Notably, requests for government support and clarification on phasing out firefighting foam

containing PFAS were incorporated into project activities, supporting responsible agencies in developing guidelines for safe phase-out and disposal.

D. Gender Equality

Based on the Project Result Framework, the average of 30% female participants is recommended for all awareness seminar, workshop, and trainings. In FY25, the performance of the gender indicator is shown below.

Awareness seminar: three awareness raising seminars were organized with 684 female participants and 481 male participants. In average, there is 59% of female participants.

Stakeholder meeting: thirty-one meetings were organized with 570 female participants and 415 male participants. In average, there is 58% of female participants.

Technical Consultation: five consultations were organized with 45 female participants and 28 male participants. In average, there is 62% of female participants.

2-day Training: eleven trainings were organized with 362 female participants, 543 males. In average, there is 40% of female participants.

3-day Training: two trainings were organized with 31 female participants and 24 male participants. In average, there is 56% of female participants.

E. Knowledge Management

Below is the list the relevant knowledge management and communication mechanisms/tools and any documents that will be submitted in addition to the report.:

9219_Brochure_End-of-waste and usage of rice husk ash to bio-potassium silicate and bio-sodium silicate

9219_Meeting minutes of PSC meeting, 05-01.2025

9219_Meeting minutes of TWG meeting, EOW 04-03.2024

9219_Meeting minutes of TWG meeting, EOW 05-01.2025

9219_Meeting minutes of TWG meeting, EOW 06-02.2025

9219_Meeting minutes of TWG meeting, POPs 05-01.2025

9219_Video clip decaBDE <https://youtu.be/rndt1pK3aOI>

9219_Video clip_SCCPs:

https://1drv.ms/v/c/cfa85969ee59cd30/ET_zlbCmfqRIsY3oemEJRYsBuYRT-kPTeMkVizRH0yYxsQ?e=vTFFPi

9219_Meeting minutes of TWG meeting, RECP 05-01.2025

Project's website: <https://industry-urban-symbiosis-project.com>

Project's online learning platform: <https://learning.industry-urban-symbiosis-project.com>

III: Minor Amendments

CONTEXT	
Result Framework	
Components and Cost	
Institutional And Implementation Arrangements	
Financial Management	
Implementation Schedule	An extension will be requested to 31 August 2027.
Executing Entity	
Executing Entity Category	
Minor Project Objective Change	
Safeguards	
Risk Analysis	
Increase of GEF Financing up to 5%	
Co-Financing	
Location of Project Activity	Additional province to be selected from Saraburi, Phra Nakhon Si Ayutthaya, or Surat Thani in Thailand
others	

IV: Geographic Coordinates of Project Activities

Location Name	Latitude	Longitude	GeoName ID
Rayong province	12.83	101.43	1,607,017

Location Description:

Activity Description:

Awareness workshops, Technical Consultations, Stakeholder meetings, and training

RECP assessment in 68 factories

Feasibility study for RECP measures in 17 factories/ 38 projects

Implementation of RECP measures in 4 factories/ 12 projects

Location Name	Latitude	Longitude	GeoName ID
Samut Prakan province	13.60	100.71	1,606,589

Location Description:

Activity Description:

Awareness workshops and trainings

RECP assessment in 57 factories

Feasibility study for RECP measures in 16 factories/ 35 projects

Implementation of RECP measures in 6 factories/ 10 projects

Solar farm and solar rooftop with Saha-Pathana Inter holding

Location Name	Latitude	Longitude	GeoName ID
Chonburi province	13.3	101.3	1,611,110

Location Description:

Activity Description:

Awareness workshops and trainings

RECP assessment in 57 factories

Feasibility study for RECP measures in 16 factories/ 35 projects

Implementation of RECP measures in 6 factories/ 10 projects

Solar farm and solar rooftop with Saha-Pathana Inter holding

Location Name	Latitude	Longitude	GeoName ID
Bangkok	13.88	100.72	1,609,350

Location Description:

Activity Description:

Awareness workshops, Technical Consultations, Stakeholder meetings, and trainings

RECP assessment in 1 factory

Location Name	Latitude	Longitude	GeoName ID
Phra Nakhon Si Ayutthaya Province	14.35167	100.57739	1,607,532

Location Description:

Activity Description:

Awareness workshops and trainings

RECP assessment in 3 factories

Sodium Silicate Pilot plant

Location Name	Latitude	Longitude	GeoName ID
Samut Sakhon Province	13.5475	100.273611	1,606,588

Location Description:

Activity Description:

RECP assessment in 9 factories

Trainings

Location Name	Latitude	Longitude	GeoName ID
Prachuap Khiri Khan Province	11.075278	99.441389	1,157,660

Location Description:

Activity Description:

RECP assessment in 1 factory

Location Name	Latitude	Longitude	GeoName ID
Phatthalung Province	7.617778	100.077778	1,607,779

Location Description:

Activity Description:

Awareness workshop

Location Name	Latitude	Longitude	GeoName ID
Chiang Mai Province	18.790278	98.984444	1,153,671

Location Description:

Activity Description:

Training

Location Name	Latitude	Longitude	GeoName ID
Saraburi Province	14.608333	100.968056	1,606,417

Location Description:

Activity Description:

RECP assessment in 5 factories

Training

Location Name	Latitude	Longitude	GeoName ID
Nakhon Ratchasima Province	14.970556	102.101944	1,608,529

Location Description:

Activity Description:

Training

Location Name	Latitude	Longitude	GeoName ID
Phuket Province	7.890556	98.398056	1,151,254

Location Description:

Activity Description:

Training

Location Name	Latitude	Longitude	GeoName ID
Prachin Buri Province	14.049722	101.368611	1,607,280

Location Description:

Activity Description:

Training

Location Name	Latitude	Longitude	GeoName ID
Chanthaburi Province	12.60961	102.10447	1,611,269

Location Description:

Activity Description:

RECP assessment in 1 factory

Location Name	Latitude	Longitude	GeoName ID
Chachoengsao Province	13.6882	101.07156	1,611,439

Location Description:

Activity Description:

RECP assessment in 1 factory

Location Name	Latitude	Longitude	GeoName ID
Pathum Thani Province	14.01346	100.53049	1,607,983

Location Description:

Activity Description:

RECP assessment in 4 factories

Location Name	Latitude	Longitude	GeoName ID
Ratchaburi Province	13.53671	99.81712	1,150,954

Location Description:

Activity Description:

RECP assessment in 2 factories

Location Name	Latitude	Longitude	GeoName ID
Surat Thani Province	9.14011	99.33311	1,150,515

Location Description:

Activity Description:

RECP assessment in 1 factory

V. ANNEX

Uploaded Document

Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 1_Grant Delivery Report
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 2_Workplan 2025-2027
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 3_Project results framework
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 4_Brochure
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 5_MoM PSC 05
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 6_MoM TWG 05
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 7_MoM TWG POPs 05
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 8_MoM TWG RECP 05-01
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 9_MoM TWG 06
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand_Annex 10_MoM TWG 04
Document Category M and E Document	Title 9219_2025_PIR_UNIDO_Thailand