JCM Sustainable Development and Safeguards Assessment Report

Project description	
Title	Introduction of High Efficiency Ion Exchange Membrane Electrolyzer in Caustic Soda Production Plant
Project participant (Thai)	AGC Vinythai Public Company Limited.
Project participant (Japanese)	AGC Inc.
Project location	202 Moo 1, Suksawasdi Road (Km. 17), Tambol Pak KlongBang Plakod Amphur Prasamutjedi
Latitude, longitude	13°36'45.8"N, 100°32'55.9"E
Project status	Operated since 25/01/2019

Report description		
Date of report completion	Friday, May 16, 2025	
Version	1.0	
Corresponding author	Name	Sirichai Termvanich
	Title	Senior Vice President -Plant PPD1&2
	Organization	AGC Vinythai Public Company Limited.
	Telephone	[redacted]
	E-mail	

Note:

- Related figures, documents, evidence related to the description may be attached as attachment.
- In the case where there is any other relevant issue that needs to be considered, it is be specified in the last row of each area of assessment.

Certification letter

16/5/2025

I, the undersigned, hereby certify that AGC Vinythai Public Company Limited. is the author of the "Sustainable Development and Safeguards Assessment Report" of the project titled Introduction of High Efficiency Ion Exchange Membrane Electrolyzer in Caustic Soda Production Plant developed by AGC Inc. and AGC Vinythai Public Company Limited. located at 202 Moo1,Suksawadi Road, Pakklongbangplakod, Phra Samutchedi District, Samuprakarn 10290 Thailand.

The report was prepared by the team members as follows:

No.	Name	Position	Signature
1	Toshio Semoto	Director Plant and Technical at AGC Vinythai	[redacted]
2	Sirichai Termvanich	Senior Vice President at AGC Vinythai	
3	Rattanaporn Rakpan	Deputy Production department at AGC Vinythai	

Signature [redacted]

(Toshio Semoto)

Position Director Plant and Technical

Seal (if any)

Part 1: General information of the project area before project implementation

Provide baseline information describing the conditions before project implementation. This data is essential for assessing the project's environmental, social, and economic impacts. Ensure the details are accurate and comprehensive to support a thorough evaluation.

Area of Assessment	Description
1. Environment and natural resources	
1.1 Air pollution	No air pollution was found in the area, except for occasional PM2.5 levels exceeding the standards during the winter season.
1.2 Water pollution	No water pollution was found in the area
1.3 Soil pollution	No soil pollution was found in the area
1.4 Noise pollution	No point sources of noise pollution were found in the area.
1.5 Odor pollution	No point sources of odor pollution were found in the area.
1.6 Water consumption	TAP water is used for producing Demineralized water. No surface or underground water is used in the area.
1.7 Solid waste/municipal solid waste	There is no leftover problem in the area.
1.8 Hazardous waste/infectious waste/electronic waste	No pollution from hazardous waste/infectious waste /Electronic waste was reported in the area
1.9 Energy (i.e. Wasted Energy, Renewable Energy)	Electricity from power grid
1.10 Land Use	Commercial buildings. Industrial building
1.11 Biodiversity	Biodiversity was not relevant in this area
1.12 Wild animal/ Aquatic ecosystem	No wild animal or aquatic ecosystem was found in the area.
1.13 Other (Please specify…)	-
2. Society	
2.1 Socio-cultural characteristics	Socio cultural characteristics were those of a typical Bangkok Metropolitan area network. The society comprises largely of the working class who engage in manufacturing work
2.2 Health and safety	There was no major concern in terms of health and safety in the area

Area of Assessment	Description
2.3 Traditions, cultures and/or valuable places worthy of conservation	The tradition and cultural values of the people in the area is commonly found in Bangkok Metropolitan area network. There were no distinctive places of high conservation values.
2.4 Race, religion, and ethnic group	Most of the population in the area were of Thai origin who practices Buddhism.
2.5 Transportation	Primary mode of transportation in the area was private vehicles (cars, trucks and motorbikes)
2.6 Other (Please specify…)	-
3. Economic	
3.1 Overall local economy (i.e. income, expenditure, etc.)	The local economy in the area is largely driven by the manufacturing sector, logistics and commercial. According to 2021 data on the province, the average monthly income is THB 32,914 while monthly expenditure is THB 27,485.
3.2 Employment/Career	Factory workers, clerical workers, service industry workers, local fishing
3.3 Major agricultural activity in the area	No major agricultural activity in the area is found
3.4 Major industry in the area	Chemical, Glass, Electrical cable
3.5 Major service sector in the area	Retail, Small restaurants, Hospital and Transportation
3.6 Basic infrastructure (i.e. road, school, etc.)	School, Hospital, Transportation (road network), utilities (electricity, water supply, waste management), as well as telecommunications.
3.7 Other (Please specify…)	-

**Project Participant explains in detail of provenance and importance of issue consider about before project implement and specify if the project is rightful/environmental law, social, and economy. To have Negative impact assessment (Do-no-net-harm) with supporting documents.*

Part 2 Sustainable Development Goals

2.1 Sustainable Development Contributions Assessment

Please mark ✓ in ☐ to identify the contributions of the proposed project to specific SDG. The project is required to contribute to ***at least two SDGs, in addition to*** *SDG13: Climate Action.*

Project Contributions to SDGs	Indicator (Please specify)	Description of Indicator
☐ SDG 1: No Poverty		
☐ SDG 2: Zero Hunger		
☐ SDG 3: Good Health and Well-being		
☐ SDG 4: Quality Education		
☐ SDG 5: Gender Equality		
☐ SDG 6: Clean Water and Sanitation		
☐ SDG 7: Affordable and Clean Energy		
☒ SDG 8: Decent Work and Economic Growth	Amount of energy saved (Unit: MWh)	Energy saving reduces costs and contributes to economic outputs.
☐ SDG 9: Industry, Innovation and Infrastructure		
☐ SDG 10: Reduced Inequality		
☐ SDG 11: Sustainable Cities and Communities		
☐ SDG 12: Responsible Consumption and Production		
■ SDG 13: Climate Action		
☐ SDG 14: Life Below Water		
☐ SDG 15: Life on Land		

Project Contributions to SDGs	Indicator (Please specify)	Description of Indicator
☐ SDG 16: Peace and Justice Strong Institutions		
☒ SDG 17: Partnerships to achieve the Goal	Last progress report submission date	Operational continuity of the JCM project, which mobilizes additional financial resources, disseminates low-carbon technologies, and reduces GHG emissions in Thailand

**Project Participant provides the description for each indicator of the selected SDGs and presents currently available datasets along with supporting documents.*

2.2 Details on Monitoring Parameters for Demonstrating SDG Contributions

Provide details on how to monitor the indicators identified in Section 2.1.
(Tables can be added based on the number of selected SDGs.)

SDG Number	8
SDG Target	Decent Work and Economic Growth
Variable or Indicator	Amount of energy saved (Unit: MWh)
Duration/Frequency	Monthly
Method/Tool	Power meter
Responsible person	Staff of AGC Vinythai

SDG Number	17
SDG Target	Partnerships to achieve the goal
Variable or Indicator	Last progress report submission date
Duration/Frequency	Yearly
Method/Tool	-
Responsible person	Staff of AGC Vinythai

Part 3 Do no net harm

3.1 'Do no net harm' Risk Assessment and Safeguards

Specify impacts and mitigation plans to mitigate negative impacts.

Potential Impact of Project Activity	Severity Level of Impact				Description of Impact	Action Plan to mitigate harmful impacts
	None	Low	Moderate	High		
1. Impacts on Environment and Natural Resources						
1.1 Physical resources						
Water pollution		✓			Brine discharge contributes to elevated Total Dissolved Solids (TDS) levels, potentially exceeding the standard limits for effluent in wastewater.	The brine is treated in the waste water unit (Electrodialysis), so the quality of the discharged water will not exceed the standard.
Soil pollution	✓					
Air pollution		✓			Electrolysis produce Chlorine and Hydrogen together with Caustic soda. Chlorine is toxic gas which is not allowed to release to atmosphere.	Hydrogen and chlorine generated by electrolysis are sent to produce the downcomer product. In case of an emergency, chlorine gas will be sent to the alkaline scrubber to prevent air pollution.
Noise pollution	✓					

Potential Impact of Project Activity	Severity Level of Impact				Description of Impact	Action Plan to mitigate harmful impacts
	None	Low	Moderate	High		
Odor pollution	✓					
Soil erosion, coastal/river erosion	✓					
Vulnerability to natural disaster	✓					
Other	✓					
1.2 Waste management						
Increase in solid waste/municipal solid waste	✓					
Increase in hazardous waste such as waste contaminated with oil, chemicals and used oil etc.		✓			Electrolysis process use membranes and use oil in ancillary equipment. These become industrial waste at end of its life cycle.	Used oil is sent to authorized buyers for recycling or reuse. Used membranes are sent to an authorized vendor for disposal
Increase in infectious waste	✓					
Increase in electronic waste	✓					
Other	✓					
1.3 Biological resources						
Impacts on forest areas and land-use change	✓					

Potential Impact of Project Activity	Severity Level of Impact				Description of Impact	Action Plan to mitigate harmful impacts
	None	Low	Moderate	High		
Loss of land and wildlife ecosystem	✓					
Loss of water resources and aquatic ecosystem	✓					
Foraging	✓					
Food	✓					
Other	✓					
1.4 Human livelihood						
Water drainage or waterway diversion						
Change in water consumption						
Change in land ownership						
Other						
2. Social impacts						
Public security such as increase in crime risks						
Health impacts						

Potential Impact of Project Activity	Severity Level of Impact				Description of Impact	Action Plan to mitigate harmful impacts
	None	Low	Moderate	High		
Relocation or temporary/permanent loss of land						
Loss of housing						
Impact on public utilities such as electricity, telephone service etc.						
Impact on traffic						
Community conflict						
Employment and labor						
Impact on people of certain race, religion and ethnic groups						
Damage to areas of high conservation value, such as religious sites, historic sites, monuments, important places of the community etc.						
Impact on human rights such as education, freedom of thought, religion etc.						

Potential Impact of Project Activity	Severity Level of Impact				Description of Impact	Action Plan to mitigate harmful impacts
	None	Low	Moderate	High		
Gender inequality such as in employment opportunities, salary, promotion, benefits, termination of contract etc.						
Other						
3. Economic impacts						
Increase unemployment /loss of income of people in local communities						
Other						

**Criteria for assessing the level of impact severity*

1. None: The proposed activity has no direct/indirect impacts on the environment, society and economy.

2. Low: The proposed activity causes some changes to the existing conditions but has no implication on the quality of the environment, society and economy. The impact is short-lived and temporary, and the extent of the affected area is not large (1km perimeter).

3. Moderate: The proposed activity causes some changes to the existing conditions and has implications on values or qualities of the environment, society and economy. The impact is short-lived and temporary. The extent of the affected area is large but confined to the related area (2km perimeter).

4. High: The proposed activity causes some changes to the existing conditions and has implications on value or quality of the environment, society, economy, and potentially the ecosystem. The impact is permanent and the extent of the affected area id extensive (3km perimeter).

3.2 Details on Monitoring Parameters for Ensuring No Negative Impacts

Provide details on how to monitor the impacts identified in Section 3.1.

(Tables can be added based on the number of negative impacts identified)

Category of negative impact	Impacts on Environment and Natural Resources
Subcategory of negative impact	Water Pollution
Vulnerable group	People in nearby communities
Possible negative impact	Harm to Aquatic Life
Parameter/indicator	pH 5.5 -9 TDS: TDS ≤3,000 mg/L in case TDS of receiving water source less than 3,000 mg/L: TDS ≤ TDS of the receiving water source + 5,000 mg/L in case TDS of receiving water source more than 3,000 mg/L Free chlorine: ≤ 1 mg/l as Cl2 BOD ≤ 60 mg/l COD ≤ 120 mg/l
Reference	Announcement from The Department of Industrial Works (DIW) on the Specification of Wastewater Characteristics
Duration/frequency	Weekly
Method/Tools	-
Responsible person	Sampling of wastewater is conducted by an external contractor
Expected outcome	The effluent does not exceed the air quality standards.

Category of negative impact	
Subcategory of negative impact	
Vulnerable group	
Possible negative impact	
Parameter/indicator	
Reference	
Duration/frequency	
Method/Tools	

Responsible person	
Expected outcome	