

## JCM Sustainable Development and Safeguards Assessment Report

Project description	
Title	Energy Saving for Semiconductor Factory with High Efficiency Centrifugal Chiller and Compressor
Project participant (Thai)	Sony Device Technology (Thailand) Co., Ltd.
Project participant (Japanese)	Sony Semiconductor Manufacturing Corporation
Project location	140 Moo 5 Bangkadi Industrial Park Tiwanon road, Tambol Bangkadi Amphur Muang, Pathumthani 12000, Thailand
Latitude, longitude	13°58'47.6"N 100°33'23.0"E
Project status	Status on 31 January 2025 <input type="checkbox"/> not started yet <input type="checkbox"/> expected to complete in Month / Year <input checked="" type="checkbox"/> operated since 1 April 2017

Report description		
Date of report completion	4 February 2025	
Version	1.0	
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	Title	Manager
	Organization	Sony Semiconductor Manufacturing Corporation
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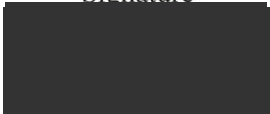
Note:

- 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**04/02/2025

I, the undersigned, hereby certify that Sony Semiconductor Manufacturing Corporation is the author of the “Sustainable Development and Safeguards Assessment Report” of the project titled Energy Saving for Semiconductor Factory with High Efficiency Centrifugal Chiller and Compressor developed by Sony Device Technology (Thailand) Co., Ltd. and Sony Semiconductor Manufacturing Corporation located at 140 Moo 5 Bangkadi Industrial Park Tiwanon road, Tambol Bangkadi Amphur Muang, Pathumthani 12000, Thailand.

The report was prepared by the team members as follows:

No.	Name	Position	Signature
1	<u>Toshihiro Yoshinaga</u>	<u>Project manager</u>	
2	<u>Takeshi Yamada</u>	<u>Manager</u>	
3	.....	.....	

Signature .....

(Toshihiro Yoshinaga)

Position Project manager.....

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
<b>1. Environment and natural resources</b>	
1.1 Air pollution	The project is located inside a semiconductor manufacturing factory in Bangkadi Industrial Estate, a suburb of Bangkok. No air pollution was found in the area.
1.2 Water pollution	No surface water and ground water pollution were 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 odor was found in the area.
1.6 Water consumption	Industrial water was consumed within the capacity of water supply at the industrial estate.
1.7 Solid waste/municipal solid waste	The industrial estate regularly collected industrial solid waste from the factories. So, 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 found in the area.
1.9 Energy (i.e. Wasted Energy, Renewable Energy)	The factory used electricity from power grid and solar power.
1.10 Land Use	The project is located inside a semiconductor manufacturing factory in the industrial estate.
1.11 Biodiversity	Biodiversity was not relevant in the industrial estate.
1.12 Wild animal/ Aquatic ecosystem	No wild animal or aquatic ecosystem is found in the area.
1.13 Other (Please specify...)	-
<b>2. Society</b>	
2.1 Socio-cultural characteristics	Socio-cultural characteristics are those of atypical Bangkok residential area. The society comprises largely of working-class who engage in manufacturing and official work.



Area of Assessment	Description
2.2 Health and safety	There was no major concern in terms of health and safety in the area.
2.3 Traditions, cultures and/or valuable places worthy of conservation	The tradition and cultural values of the people in the area are commonly found in the central region of Thailand. There were no distinctive places of high conservation values.
2.4 Race, religion, and ethnic group	Most of the population in the area are of Thai origin who practice Buddhism.
2.5 Transportation	Primary mode of transportation in the area was private vehicles (cars, trucks and motorbikes).
2.6 Other (Please specify...)	-
<b>3. Economic</b>	
3.1 Overall local economy (i.e. income, expenditure, etc.)	The local economy in the area is largely driven by the manufacturing sector.
3.2 Employment/Career	Factory workers, clerical workers.
3.3 Major agricultural activity in the area	No agricultural activity in the area is found.
3.4 Major industry in the area	There are some factories that include electric parts.
3.5 Major service sector in the area	Hospitality (particularly restaurants) and retail trade are the main service sector in the area.
3.6 Basic infrastructure (i.e. road, school, etc.)	The basic infrastructure in the area includes transportation (road network, public transportation), utilities (electricity, water supply, waste management), education (schools and vocational training), healthcare 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
<input type="checkbox"/> SDG 1: No Poverty		
<input type="checkbox"/> SDG 2: Zero Hunger		
<input type="checkbox"/> SDG 3: Good Health and Well-being		
<input type="checkbox"/> SDG 4: Quality Education		
<input type="checkbox"/> SDG 5: Gender Equality		
<input type="checkbox"/> SDG 6: Clean Water and Sanitation		
<input type="checkbox"/> SDG 7: Affordable and Clean Energy		
<input checked="" type="checkbox"/> SDG 8: Decent Work and Economic Growth	Amount of energy saved (Unit: MWh)	Energy saving reduces costs and contributes to economic outputs.
<input type="checkbox"/> SDG 9: Industry, Innovation and Infrastructure		
<input type="checkbox"/> SDG 10: Reduced Inequality		
<input type="checkbox"/> SDG 11: Sustainable Cities and Communities		
<input type="checkbox"/> SDG 12: Responsible Consumption and Production		
<input checked="" type="checkbox"/> SDG 13: Climate Action		
<input type="checkbox"/> SDG 14: Life Below Water		
<input type="checkbox"/> SDG 15: Life on Land		

Project Contributions to SDGs	Indicator (Please specify)	Description of Indicator
<input type="checkbox"/> SDG 16: Peace and Justice Strong Institutions		
<input checked="" type="checkbox"/> 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	Daily
Method/Tool	Power meter
Responsible person	Staff of Sony Device Technology (Thailand) Co., Ltd.

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 Sony Semiconductor Manufacturing Corporation

### 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	✓					
Soil pollution	✓					
Air pollution	✓					
Noise pollution		✓			Some noise will be caused by the operation of the chillers and compressors.	The chillers and compressors will be operated at the sound pressure level below Thai regulation.
Odor pollution	✓					
Soil erosion, coastal/river erosion	✓					
Vulnerability to natural disaster	✓					
Other	✓					
1.2 Waste management						



Potential Impact of Project Activity	Severity Level of Impact				Description of Impact	Action Plan to mitigate harmful impacts
	None	Low	Moderate	High		
Increase in solid waste/municipal solid waste	✓					
Increase in hazardous waste such as waste contaminated with oil, chemicals and used oil etc.		✓			The installation of the chillers and compressors may lead to an increase in hazardous waste.	Implement proper maintenance and waste management. Additionally, ensure compliance with environmental regulations.
Increase in infectious waste	✓					
Increase in electronic waste	✓					
Other	✓					
<b>1.3 Biological resources</b>						
Impacts on forest areas and land-use change	✓					
Loss of land and wildlife ecosystem	✓					
Loss of water resources and aquatic ecosystem	✓					
Foraging	✓					
Food	✓					
Other	✓					

Potential Impact of Project Activity	Severity Level of Impact				Description of Impact	Action Plan to mitigate harmful impacts
	None	Low	Moderate	High		
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	✓					
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	✓					

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



Potential Impact of Project Activity	Severity Level of Impact				Description of Impact	Action Plan to mitigate harmful impacts
	None	Low	Moderate	High		
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 is 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)*

<b>Category of negative impact</b>	Impacts on Environment and Natural Resources
<b>Subcategory of negative impact</b>	Noise pollution
<b>Vulnerable group</b>	People in nearby communities, Employee
<b>Possible negative impact</b>	Noise from the chillers and compressors
<b>Parameter/indicator</b>	<p>[Outdoor (Property lines)] *A, *B Average: 70dB, Peak: 115 dB</p> <p>[Indoor (Workplace)] *C Average: 85dB (8hours working), Peak: 140dB</p>
<b>Reference</b>	<p>*A Ministry of Industry Announcement Determination of noise level and noise level resulting from factory operations (2012)</p> <p>*B BIP Rules and Regulations for use of property (Comply with noise regulations *A)</p> <p>*C Announcement from the Department of Labor protection and Welfare (2016)</p>
<b>Duration/frequency</b>	Yearly
<b>Method/Tools</b>	<p>[Outdoor noise level control]</p> <ul style="list-style-type: none"> <li>Installing loud equipment indoors, Minimize openings</li> <li>Maintaining distance from property lines</li> <li>Regular noise level measurements in accordance with the law</li> </ul> <p>[Indoor noise level control]</p> <ul style="list-style-type: none"> <li>Wearing earmuffs and noise-reducing plugs (Generally, they don't stay for long.)</li> <li>Regular noise level measurements in accordance with the law</li> </ul>
<b>Responsible person</b>	Staff of Sony Device Technology (Thailand) Co., Ltd.
<b>Expected outcome</b>	The emissions do not exceed the level stated in the announcements.

<b>Category of negative impact</b>	Waste management
<b>Subcategory of negative impact</b>	Increase in hazardous waste such as waste contaminated with oil, chemicals and used oil etc.
<b>Vulnerable group</b>	People in nearby community
<b>Possible negative impact</b>	The installation of the chillers and compressors may lead to an increase in hazardous waste.
<b>Parameter/indicator</b>	Check for refrigerant leaks, inspect lubricant condition, clean or replace filters, and inspect piping, etc.
<b>Reference</b>	Verify and adhere to the latest regulatory information and prepare and maintain necessary documentation.
<b>Duration/frequency</b>	Monthly/Yearly
<b>Method/Tools</b>	All waste generated during the equipment maintenance process is returned to the equipment manufacturer It is then incinerated as part of processes such as the concrete powder drying process at a concrete plant.
<b>Responsible person</b>	Staff of Sony Device Technology (Thailand) Co., Ltd.
<b>Expected outcome</b>	Reduction of environmental impact through proper waste disposal.