Project description	
Title	Low-carbon Operation for Power Grid Utilizing Online
	Voltage-var(Q) Optimal Control (OPENVQ) with ICT
Project participant (Thai)	Electricity Generating Authority of Thailand (EGAT)
Project participant (Japanese)	Hitachi, Ltd.
Project location	20 provinces that are covered by NEC (NorthEastern Control center) of EGAT (Electricity Generating Authority of Thailand), namely Amnat Charoen, Bueng Kan, Buriram, Chaiyaphum, Kalasin, Khon Kaen, Loei, Maha Sarakham, Mukdahan, Nakhon Phanom, Nakhon Ratchasima, Nong Bua Lamphu, Nong Khai, Roi Et, Sakon Nakhon, Si Sa Ket, Surin, Ubon Ratchathani, Udon Thani, and Yasothon Provinces.
Latitude, longitude	16.41224, 102.81791
Project status	operated since 21 February 2023

JCM Sustainable Development and Safeguards Assessment Report Form

Report description					
Date of report completion	15 October 2024				
Version	1.0				
Corresponding author	Name	Atsushi Honzawa			
1 0	Title	Senior Engineer			
	Organization	Hitachi, Ltd.			
	Telephone				
	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

11/08/2024

I, the undersigned, hereby certify that <u>Hitachi, Ltd.</u> is the author of the "Sustainable Development and Safeguards Assessment Report Form" of the project titled Low-carbon Operation for Power Grid Utilizing Online Voltage-var(Q) Optimal Control (OPENVQ) with ICT developed by <u>Hitachi, Ltd. and Electricity Generating Authority of Thailand (EGAT)</u> located at 20 provinces, Amnat Charoen, Bueng Kan, Buriram, Chaiyaphum, Kalasin, Khon Kaen, Loei, Maha Sarakham, Mukdahan, Nakhon Phanom, Nakhon Ratchasima, Nong Bua Lamphu, Nong Khai, Roi Et, Sakon Nakhon, Si Sa Ket, Surin, Ubon Ratchathani, Udon Thani, and Yasothon Provinces.

The report was prepared by the team members as follows:

No.	Name	Position	Signature
1	Atsushi Honzawa	Senior Engineer	
2			
3			
		_	
		Signature	
		(4	Atsushi Honzawa)
		Position <u>Senior</u>	Engineer
			Seal (if any)

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

[Outline of the project]

This project supports optimized voltage operation by installing newly developed OPENVQ software. As it is not necessary to add new equipment, it is not related to environmental and resource issues, society or the economy.

l	Area of Assessment	Description
1. E	nvironment and natural resour	rces
1.1	Air pollution	N/A
1.2	Water pollution	N/A
1.3	Soil pollution	N/A
1.4	Noise pollution	N/A
1.5	Odor pollution	N/A
1.6	Water consumption	N/A
1.7	Solid waste/municipal solid	N/A
	waste	
1.8	Hazardous waste/infectious	N/A
	waste/electronic waste	
1.9	Energy (i.e. Wasted Energy,	In prior to the implementation of OPENVQ system
	Renewable Energy)	under this project, operators controlled voltage based
		on the status of the power system. It is difficult to
		perform optimal control due to the uncertainty of
		renewable energy sources, therefore, it resulted in the
		increase of the transmission loss.
1.10	Land Use	N/A
1.11	Biodiversity	N/A
1.12	Wild animal/ Aquatic ecosystem	N/A
1.13	Other (Please specify)	
2. S	ociety	
2.1	Socio-cultural characteristics	N/A
2.2	Health and safety	N/A
2.3	Traditions, cultures and/or	N/A
	valuable places worthy of	
	conservation	
2.4	Race, religion, and ethnic	N/A
	group	

	Area of Assessment	Description
2.5	Transportation	N/A
2.6	Other (Please specify)	-
3. F	Conomic	
3.1	Overall local economy (i.e.	N/A
	income, expenditure, etc.)	
3.2	Employment/Career	N/A
3.3	Major agricultural activity in	N/A
	the area	
3.4	Major industry in the area	N/A
3.5	Major service sector in the area	N/A
3.6	Basic infrastructure (i.e. road,	N/A
	school, etc.)	
3.7	Other (Please specify)	

*Project Participant explains in detail of provenance and importance of issue consider about <u>before</u> 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 \checkmark in \Box to identify the contributions of the proposed project to specific SDG. The project is required to contribute to **at least two SDGs**, <u>in addition to</u> SDG13: Climate Action.

Project Contributions to	Indicator	Description of Indicator
SDGs	(Please specify)	
□ 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	Reduction of power	Optimally controlling voltages
Clean Energy	transmission line loss	and reactive power online while
	(MWh)	securing voltage stability, it will
		make power system operation
		more sophisticated and efficient,
		leading to the reduction of
		power loss, in turn, contributing
		to an increase in the amount of
		affordable energy.
□ SDG 8: Decent Work	-	-
and Economic Growth		
☑ SDG 9: Industry,	Technology innovation with	OPENVQ is a low-carbon
Innovation and Infrastructure	human resource	technology developed in Japan
	development (Number of	and introduced for the first time
	employees trained)	in Thailand through this project.
		This will contribute to
		technological innovation in
		Thailand and will improve
		human resource development.

Project Contributions to	Indicator	Description of Indicator
SDGs	(Please specify)	
		45 employees are trained in total
		through the project.
□ SDG 10: Reduced	-	-
Inequality		
□ SDG 11: Sustainable	-	-
Cities and Communities		
□ SDG 12: Responsible	-	-
Consumption and		
Production		
■ SDG 13: Climate Action	CO2 emissions	CO2 emissions reduction
□ SDG 14: Life Below	-	-
Water		
□ SDG 15: Life on Land	-	-
□ SDG 16: Peace and	-	-
Justice Strong		
Institutions		
□ SDG 17: Partnerships to		
achieve the Goal		

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

Part 3 Do no net harm

3.1 'Do no net harm' Risk Assessment and Safeguards

Potential Impact		Level of In	pact Severity		Description of Impact	Action Plan to mitigate harmful impacts
of Project Activity	None	Low	Moderate	High		
1. Impacts on Environment and	Natural Re	sources				
1.1 Physical resources						
Water pollution	\checkmark					
Soil pollution	\checkmark					
Air pollution	\checkmark					
Noise pollution	~					
Odor pollution	~					
Soil erosion, coastal/river erosion	~					
Vulnerability to natural disaster	~					
Other	~					
1.2 Waste management	•					
Increase in solid waste/municipal						
solid waste	, v					

Potential Impact	Level of Impact Severity				Description of Impact	Action Plan to mitigate harmful impacts
of Project Activity	None	Low	Moderate	High		
Increase in hazardous waste such						
as waste contaminated with oil,	\checkmark					
chemicals and used oil etc.						
Increase in infectious waste	~					
Increase in electronic waste	~					
Other	~					
1.3 Biological resources			·			
Impacts on forest areas and land-						
use change	, v					
Loss of land and wildlife						
ecosystem	v					
Loss of water resources and						
aquatic ecosystem	v					
Foraging	\checkmark					
Food	\checkmark					
Other	\checkmark					
1.4 Human livelihood	•	•		•	•	

Potential Impact	Level of Impact Severity				Description of Impact	Action Plan to mitigate harmful impacts
of Project Activity	None	Low	Moderate	High		
Water drainage or waterway						
diversion	v					
Change in water consumption	\checkmark					
Change in land ownership	\checkmark					
Other	\checkmark					
2. Social impacts						
Public security such as increase in						
crime risks	v					
Health impacts	\checkmark					
Relocation or						
temporary/permanent loss of land	v					
Loss of housing	\checkmark					
Impact on public utilities such as	/					
electricity, telephone service etc.	v					
Impact on traffic	\checkmark					
Community conflict	\checkmark					
Employment and labor	\checkmark					

Potential Impact	Level of Impact Severity				Description of Impact	Action Plan to mitigate harmful impacts
of Project Activity	None	Low	Moderate	High		
Impact on people of certain race,	1					
religion and ethnic groups	v					
Damage to areas of high						
conservation value, such as						
religious sites, historic sites,	\checkmark					
monuments, important places of						
the community etc.						
Impact on human rights such as						
education, freedom of thought,	\checkmark					
religion etc.						
Gender inequality such as in						
employment opportunities, salary,						
promotion, benefits, termination	~					
of contract etc.						
Other	\checkmark					
3. Economic impacts						
Increase unemployment /loss of						
income of people in local	\checkmark					
communities						

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

*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).