



## ID-Geothermal Energy Upstream Development (P155047)

EAST ASIA AND PACIFIC | Indonesia | IBRD/IDA | Investment Project Financing (IPF) | FY 2017 | Seq No: 17 | Archived on 28-Jun-2024 | ISR01163

Implementing Agencies: PT Geo Dipa Energi, PT Sarana Multi Infrastruktur (Persero)

## 1. OBJECTIVE

### 1.1 Development Objective

Original Development Objective (Approved as part of Approval package on 18-Oct-2018)

The PDO is to facilitate investment in geothermal power generation and reduce greenhouse gas emissions.

Has the Development Objective been changed since Board Approval of the Project Objective?

No

## 2. COMPONENTS

Name

Risk Mitigation for Geothermal Exploration Drilling:(Cost 98,000,000.00)

Capacity Building on Geothermal Exploration and Environmental and Social Safeguards Management:(Cost 6,250,000.00)

## 3. OVERALL RATINGS

Name	Previous	Current
Progress towards achievement of PDO	● Moderately Unsatisfactory	● Moderately Satisfactory
Overall Implementation Progress (IP)	● Moderately Unsatisfactory	● Moderately Satisfactory
Overall Risk Rating	● Substantial	● Substantial

## 4. KEY ISSUES & STATUS

### 4.1 Implementation Status and Key Decisions



The Geothermal Energy Upstream Development Project (GEUDP) was approved in February 2017 and became effective in August 2017. Since Project approval, the Project underwent two restructurings in 2020 and 2021. The Project restructuring extended the Clean Technology Fund (CTF) and the Global Environment Facility (GEF) grants closing dates from December 31, 2022 to December 31, 2025. The other changes in the Project restructuring included to (i) introduce PT Geo Dipa Energi (PT GDE) as the second Implementing Agency, (ii) downscale the number of exploration drilling subproject from the five-six estimated at Project approval to a new target of four, (iii) update the targets and timelines of the Project Development Objectives (PDO) and intermediate indicators according to these changes, and (iv) reflect changes in the drilling strategy in the intermediate indicators. The third Project restructuring was completed in March 2024 to provide that: i) the subproject in the Waesano site will no longer be eligible for financing under the GEUDP, ii) the number of subprojects targeted under the Project will be scaled down to only one subproject, and iii) relevant changes to the Result Framework will be adopted. Currently, Jailolo (in Halmahera Island, North Maluku) is the prospect under the Technical Assistance (TA) Phase of the GEUDP. Only the prospect that is graduated from the TA Phase will continue to the Investment Drilling Phase. Progress has been made on the preparation of the Jailolo prospect signaling that the Project is on track to achieve the Project Development Objective.

## 5. SYSTEMATIC OPERATIONS RISK-RATING TOOL

Risk Category	Rating at Approval Approval Package - 19 Oct 2018	Last Approved Rating ISR Seq. 016 - 15 Apr 2024	Proposed Rating
Political and Governance	● Substantial	● Moderate	● Moderate
Macroeconomic	● Moderate	● Moderate	● Moderate
Sector Strategies and Policies	● Substantial	● Substantial	● Substantial
Technical Design of Project or Program	● Moderate	● Moderate	● Moderate
Institutional Capacity for Implementation and Sustainability	● Substantial	● Substantial	● Substantial
Fiduciary	● Substantial	● Moderate	● Moderate
Environment and Social	● Substantial	● High	● High
Stakeholders	● Substantial	● High	● High
Overall	● Substantial	● Substantial	● Substantial



## 6. RESULTS

### 6.1 PDO Indicators by PDO Outcomes

To facilitate investment in geothermal power generation								
Indicator Name	Baseline		Actual (Previous)		Actual (Current)		Closing Period	
	Value	Month/Year	Value	Date	Value	Date	Value	Month/Year
Electric power generation capacity enabled through the issuance of geothermal development licenses (Megawatt)	0.00	May/2017	0.00	28-Jun-2024	0.00	28-Jun-2024	10.00	Dec/2025
	Comments on achieving targets		<p>This indicator reflects the new generation capacity enabled under the Project. After restructuring, the number of subproject numbers is scaled down from four to one, with an assumption that the site will have successful exploration drilling to prove the existence of at least 10 MW geothermal resource for power development.</p> <p>At this ISR, no exploration has been completed to claim the progress of this indicator.</p>					
Commercial capital mobilized for investment in geothermal power generation (million) (Amount(USD))	0.00	May/2017	0.00	31-Mar-2024			40.00	Dec/2025
	Comments on achieving targets		<p>This indicator looks at the expected commercial capital mobilized as a result of the project interventions. After restructuring, the target of generation capacity enabled by the Project is scaled down from 65 MW to 10 MW, with an assumption of US\$4 million per MW (reflecting an increase of geothermal development cost) will be required to develop a full geothermal subproject. The previous assumption at the Project design was US\$3 million per MW.</p> <p>At this ISR, no exploration has been completed to enable new geothermal generation capacity with the expected commercial capital mobilized.</p>					
To reduce greenhouse gas emissions								



Indicator Name	Baseline		Actual (Previous)		Actual (Current)		Closing Period	
	Value	Month/Year	Value	Date	Value	Date	Value	Month/Year
Estimated GHG emission reduction compared to a business-as-usual baseline (Metric ton)	0.00	May/2017	0.00	31-Mar-2024			50,770.00	Dec/2025
	Comments on achieving targets		<p>This indicator reflects the outcome of the GHG accounting exercise based on 10 MW of new generation capacity enabled under the Project. The calculation indicates that 1 MW of capacity will reduce GHG emissions by 5,077 metric tons of CO2 equivalent per year.</p> <p>At this ISR, no exploration has been completed to enable a new generation capacity and expect avoided GHG emissions.</p>					

## 6.2 Intermediate Results Indicators by Components

Risk Mitigation for Geothermal Exploration Drilling								
Indicator Name	Baseline		Actual (Previous)		Actual (Current)		Closing Period	
	Value	Month/Year	Value	Date	Value	Date	Value	Month/Year
Total generating capacity-equivalent of steam yield from all wells drilled when converted to equivalent standard diameter well production (Megawatt)	0.00	May/2017	0.00	31-Mar-2024			3.00	Dec/2025
	Comments on achieving targets		<p>This indicators tracks the total generating capacity-equivalent of steam yields expected. The assumption is that two wells will be drilled for the subproject. It is assumed that GEUDP will get 1 successful well with steam yield of 3 MW/well.</p> <p>At this ISR, no exploration well has been drilled to be measured under this indicator.</p>					
	0.00	May/2017	0.00	28-Jun-2024	0.00	28-Jun-2024	3.00	Dec/2025



Average generating capacity-equivalent of steam yield per well drilled when converted to equivalent standard diameter well production (Megawatt)	Comments on achieving targets		<p>This indicators tracks the average generating capacity-equivalent of steam yields expected. It is assumed that steam yields from productive wells will range from 3 to 10 MW with a (conservative) average of 3 MW.</p> <p>At this ISR, no exploration well has bee drilled to be measured under this indicator.</p>					
Issuance of geothermal development licenses (Number)	0.00	May/2017	0.00	31-Mar-2024			0.00	Dec/2025
	Comments on achieving targets		This indicator tracks the number of geothermal development licenses issued.					
Estimated increase in the number of connected households for the associated local electricity networks (Number)	0.00	May/2017	0.00	31-Mar-2024			17,900.00	Dec/2025
	Comments on achieving targets		<p>This indicator measures the planned increase in access enabled through the Project. The underlying assumptions are: 1 MW plant capacity, with 92% capacity factor, produces 8,059 MWh/year, 20% of which serving electrification needs, with an average consumption level of 900 kWh/y/residential consumer (intended as household). The actual planned increase in number of consumer connections will be deduced from PLN’s distribution planning for the local electricity networks.</p> <p>At this ISR, no exploration site has been completed to enable the geothermal power plant development and to provide estimate increased of new household connection.</p>					
Estimated direct project beneficiaries (Number)	0.00	May/2017	0.00	31-Mar-2024			71,600.00	Dec/2025
	Comments on achieving targets		The subproject which is able to complete the exploration drilling successfully will enable additional electricity generation capacity. The additional generation capacity will be connected to households with assumption of 4 family members per household who will be direct beneficiaries of this project.					



			At this ISR, no exploration site has been completed to enable additional electricity generation capacity and connect the households.					
Estimated female beneficiaries (Percentage)	0.00		0.00		0.00		50.00	
	Comments on achieving targets		The subproject which is able to complete the exploration drilling successfully will enable additional electricity generation capacity. The additional generation capacity will be connected to households with assumption of 4 family members per household who will be direct beneficiaries of this project. It is assumed that female beneficiaries is at 50% ratio.					
Delivery of Inferred Resource Capacity Reports by Exploration Management Team (Number)	0.00	May/2017	0.00	31-Mar-2024			1.00	Dec/2025
	Comments on achieving targets		This indicator tracks the number of reports delivered by the Implementing Agency, based on the identified 1 sub-project under this Project.  At this ISR, no exploration has been completed and no resource report has been produced.					
Villages located next to exploration sites with at least one public consultation held (Percentage)	0.00	May/2017	100.00	31-Mar-2024			100.00	Dec/2025
	Comments on achieving targets		This indicator supports tracking of Citizen Engagement by measuring percentage of sub-project affected villages which have received public consultation from the Implementing Agency.  At this ISR, the indicator was measured based on the public consultation activities completed by the Implementing Agency to all affected villages in Jailolo site.					
Share of public consultations segregated by gender (Percentage)	0.00	May/2017	12.00	31-Mar-2024			50.00	Dec/2025
	Comments on achieving targets		This indicator supports tracking of gender action which is measured from attendance list of public consultation events.					

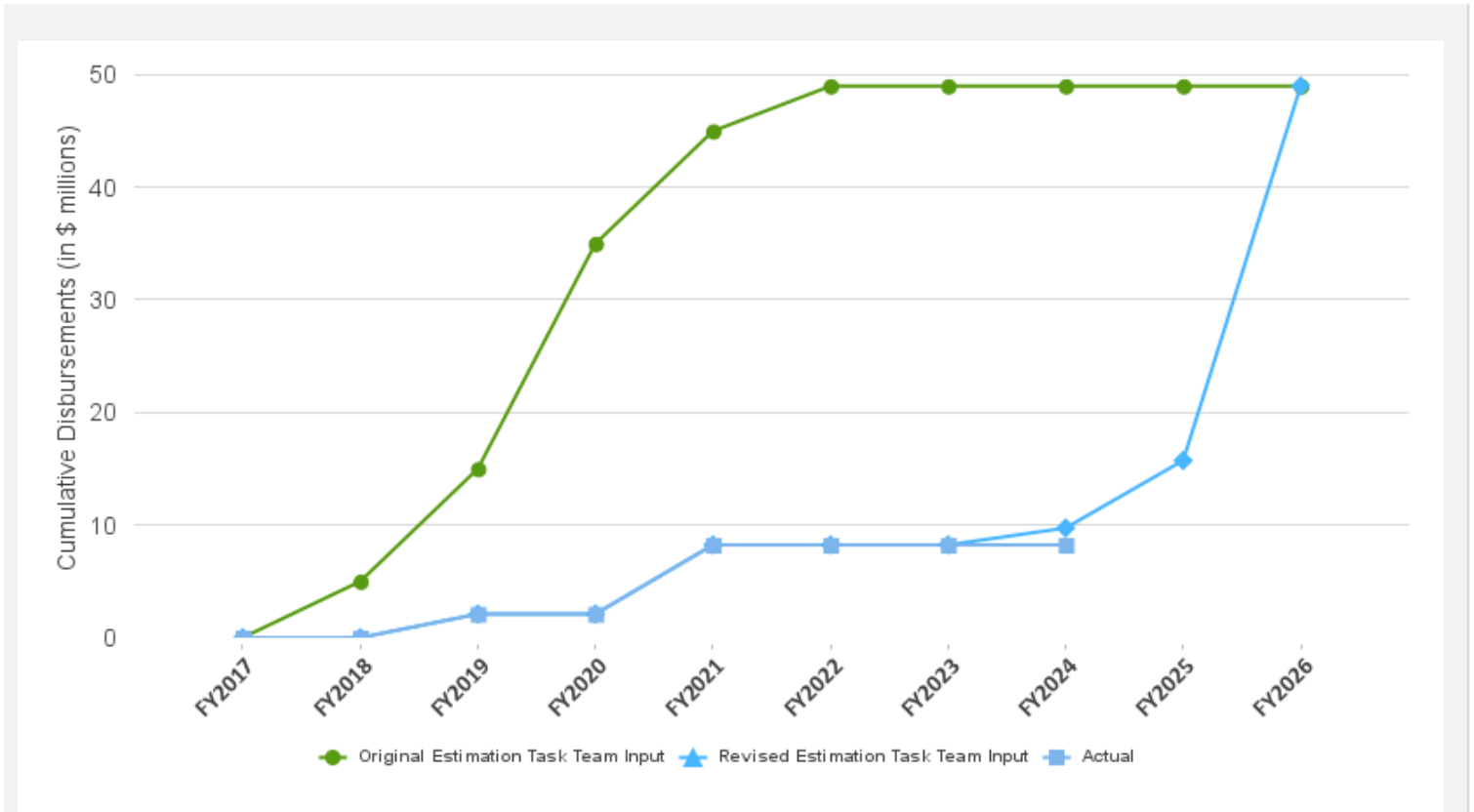


		At this ISR, the indicator was measured from the public consultation carried out in the Jailolo site.						
<b>Capacity Building on Geothermal Exploration and Environmental and Social Safeguards Management</b>								
Indicator Name	Baseline		Actual (Previous)		Actual (Current)		Closing Period	
	Value	Month/Year	Value	Date	Value	Date	Value	Month/Year
Practice guides for safeguards implementation (Number)	0.00	May/2017	1.00	28-Jun-2024	1.00	28-Jun-2024	2.00	Dec/2025
	Comments on achieving targets		<p>This indicator tracks the number of practice guides that will inform safeguards implementation under the Project. Two guides have been identified and being prepared: 1) Stakeholder Engagement and FPIC Guideline and 2) Safety Protocol for the H2S Risk during the Exploration Drilling and Well Testing.</p> <p>Technical Guideline on “Implementing FPIC Stakeholder Engagement in Geothermal Projects” has been completed in May 2024.</p>					



## 7. DATA ON FINANCIAL PERFORMANCE

### 7.1 Cumulative Disbursements



### 7.2 Disbursements (by loan)

Loan/Credit/TF	Status	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
TF-A4089	Effective	49.00	49.00	0.00	8.24	40.76	16.82%

### 7.3 Key Dates (by loan)

Loan/Credit/TF	Status	Approval	Signing	Effectiveness	Orig. Closing	Rev. Closing
TF-A4089	Effective	09-Feb-2017	07-Mar-2017	04-Aug-2017	31-Dec-2022	31-Dec-2025

## 8. KEY DATES



Key Events	Planned	Actual
Approval	09-Feb-2017	09-Feb-2017
Effectiveness	01-May-2017	04-Aug-2017
Mid-Term Review No. 01	31-Jan-2020	14-Jan-2020
Mid-Term Review No. 01	31-Jan-2020	14-Jan-2020
Mid-Term Review No. 01	31-Jan-2020	
Mid-Term Review No. 01	31-Jan-2020	
Mid-Term Review No. 01		
Mid-Term Review No. 01		
Mid-Term Review No. 01	31-Jan-2020	
Mid-Term Review No. 01	31-Jan-2020	
Mid-Term Review No. 01	31-Jan-2020	
Operation Closing/Cancellation	31-Dec-2025	

## 9. RESTRUCTURING HISTORY

Restructuring Level 2 Approved on 18-May-2021

Restructuring Level 2 Approved on 07-Dec-2020

Restructuring Level 2 Approved on 28-Mar-2024

## 10. ASSOCIATED OPERATION(S)

There are no associated operations