Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)
### BASIC INFORMATION

#### A. Basic Project Data

<table>
<thead>
<tr>
<th>Country</th>
<th>Project ID</th>
<th>Project Name</th>
<th>Parent Project ID (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>P166071</td>
<td>Indonesia Geothermal Resource Risk Mitigation Project (GREM)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated Appraisal Date</th>
<th>Estimated Board Date</th>
<th>Practice Area (Lead)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Financing Instrument</th>
<th>Borrower(s)</th>
<th>Implementing Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment Project Financing</td>
<td>Government of Indonesia</td>
<td>PT Sarana Multi Infrastruktur (Persero)</td>
</tr>
</tbody>
</table>

#### Proposed Development Objective(s)

The project development objectives are to scale up investment in geothermal energy development and support the Borrower in its efforts to reduce greenhouse gas emissions in the country.

### Components

- Component 1 – Geothermal Resource Risk Mitigation
- Component 2 – Technical Assistance and Capacity Building

### PROJECT FINANCING DATA (US$, Millions)

#### SUMMARY

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Total Project Cost</td>
<td>465.00</td>
</tr>
<tr>
<td>Total Financing</td>
<td>465.00</td>
</tr>
<tr>
<td>of which IBRD/IDA</td>
<td>150.00</td>
</tr>
<tr>
<td>Financing Gap</td>
<td>0.00</td>
</tr>
</tbody>
</table>

#### DETAILS

**World Bank Group Financing**

| International Bank for Reconstruction and Development (IBRD) | 150.00 |

**Non-World Bank Group Financing**

<p>| | |</p>
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B. Introduction and Context

Country Context

1. Indonesia – a diverse archipelagic nation of more than 300 ethnic groups – has charted impressive economic growth since the Asian financial crisis of the late 1990s. Today, Indonesia is the world’s fourth most populous country with over 260 million people, the eighth largest economy globally and the largest economy in Southeast Asia with a gross domestic product (GDP) per capita in purchasing power parity of US$12,283. Indonesia has also made enormous gains in poverty reduction. Since 1999, poverty rate has more than halved to around 10 percent. Nevertheless, around 26 million Indonesians still live below the national poverty line.\(^1\) Approximately 40 percent of the entire population remains vulnerable of falling into poverty. The slow pace of job creation is another challenge to poverty reduction efforts, largely affecting the 1.7 million youth that enter the workforce each year.

2. Meanwhile, Indonesia continues to rely heavily on fossil-fired power generation. In 2018, the total installed capacity was 57 gigawatts (GW)\(^2\), of which 88% from fossil fuels\(^3\) and 12% renewable sources, to meet a peak demand of 40 GW.\(^4\) Important policy goals have been formulated by the National Energy Council to re-establish Indonesia’s energy

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\(^1\) Central Statistical Bureau data, March 2018.
\(^2\) MEMR presentation, January 2019
\(^3\) This consists of 58% coal, 23% gas, and 6% diesel.
\(^4\) Estimated data from PLN RUPTL 2018
independence through (i) re-directing energy resources from export to domestic market and (ii) rebalancing the energy mix towards indigenous energy supplies. The policy implies increasing the exploitation and consumption of coal and renewable energy (RE) sources, optimizing the production and consumption of gas, and transforming the energy mix by minimizing oil consumption and raising the share of RE in the country’s energy mix.5

3. The GoI has set the RE target of 23% by 2025.6 This Multiphase Programmatic Approach (MPA) is designed to support the government in reaching this RE target with a focus on geothermal energy. Indonesia currently has 1.95 GW of installed geothermal capacity despite an estimated 29 GW in potential resources. The planned addition of 4.6 GW of geothermal capacity would require investments of approximately US$25 billion. The MPA will implement an efficient risk sharing mechanism to achieve the scale needed to contribute to reaching the GoI’s RE target. To do so, it will pilot the use of an innovative financing instrument for geothermal exploration drilling and therefore leverage investments of up to US$4 billion enabling 1,000 MW of geothermal development by 2029 and accordingly avoiding around 187 million of MtCO2e, while matching the long lead time-horizon of geothermal development.

Sectoral and Institutional Context

**Sector Context**

4. Increasing household access to electricity services is a key objective for GoI, yet critical challenges remain particularly for the last-mile customers. Indonesia increased the electrification rate from 80% in 2013 to 98.3% in 2018, with the goal to achieve 99.9% in 2019.7 The electrification rate also masks substantial regional disparities with provinces in Eastern Indonesia having much lower rates. For example, Papua has the lowest electrification rate at 44% followed by Nusa Tenggara Timur at 59%. Provinces such as Jakarta, Bangka Belitung and Banten have more than 90% electrification rate. Connecting the remaining 2% of households will be very costly, given that most are in remote areas. Most geothermal projects outside the main Java-Bali grid will be part of an electrification agenda aiming at equitable access to electricity.

5. Meanwhile, the state electricity company, PT Perusahaan Listrik Negara (PLN), consumed 3.45 million kiloliters of fuels (i.e., high-speed diesel, bio-marine fuel oil, olein) and produced 4,809 GWh from its own diesel generation plants to serve customers in the eastern regions and outside of the main Java-Bali power grid.8 Indonesia has also become a net crude oil and fuel importer due to reduced domestic oil production and inadequate refinery infrastructure. In 2016, the country imported 148.3 million barrels and 22.8 million kiloliters of oil fuels. To add another 56 GW of power generation capacity by 2028, PLN expects this will come from 26.9 GW of coal, 12.4 GW of gas, 9.5 GW of hydropower, 4.6 GW of geothermal and 2.5 GW of other renewable sources.9

6. As a clean and renewable energy source, geothermal can play a significant role in decarbonizing Indonesia’s power sector and furthering its climate change mitigation agenda in economical and sustainable ways. First, geothermal energy is a baseload technology that can displace coal in supplying power around the clock. Second, geothermal can be cost competitive with coal or natural gas, particularly when high-enthalpy resources can be accessed and developed with

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5 Infrastructure Sector Assessment Program, World Bank, June 2018
6 MEMR’s Roadmap for Accelerated Development of New and Renewable Energy 2015-2025
7 RUPTL PLN (Persero) 2019-2028 Executive Summary Presentation, February 2019
8 MEMR’s Oil and Gas Statistics 2016 and PLN’s Statistic 2017
9 PLN’s Electricity Supply Business Plan (Rencana Usaha Penyediaan Tenaga Listrik), or RUPTL 2019-2028.
relative ease. Third, it is an indigenous source for Indonesia, which means that the country can depend less on imported fuels and enhance its energy security. Finally, its abundance across the country can contribute to achieving universal access to electricity, and therefore economic growth, job creation and prosperity, especially on the eastern islands where electrification rates are much lower and poverty rates are higher than the national average.

7. Resource risk (also known as exploration drilling risk) and the large upfront risk capital required is the key barrier to geothermal development in Indonesia. Exploration drilling normally requires project owner’s equity or corporate finance, which may not be recovered if the drilling reveals that the resource is not sufficient or economically viable for exploitation. Even though the costs for exploration drilling are relatively modest compared to the total cost of developing all stages of a geothermal operation, it is the riskiest phase of the operation and finding this initial capital has proven to be challenging for developers in Indonesia.

8. Indonesia has the second largest installed capacity of geothermal energy in the world with 1,948 MW after the US with 3,639 MW.\textsuperscript{10} In the Indonesian geothermal market, there are three state-owned geothermal developers and several domestic and international private developers holding geothermal licenses.

9. However, the present two-step approach with issuing exploration-only (not full development) licenses and awarding a tariff only after early success in exploration in practice takes away key incentives for developers to put in upfront risk capital from equity or corporate finance. Furthermore, a rule that limits tariffs at the average regional electricity generation cost mainly presents attractive tariffs in the diesel-based systems of the small- and medium-sized islands in eastern Indonesia; however, it is more challenging for geothermal to compete in the coal-dominated main power markets of Java-Bali and Sumatra where the average generation cost is much lower.

\textbf{Institutional Context}

10. Resources to support the sector through dedicated programs such as the Infrastructure Financing for Geothermal Sector (Pembiayaan Infrastruktur Sektor Panas Bumi, or PISP), as well as providing fiscal (i.e., tax) incentives for developers. PISP funds can be used to support investments by SOEs in geothermal exploration and exploitation as provided in MoF Regulation PMK No. 62-08/2017.

11. PT Sarana Multi Infrastruktur (PT SMI), a state-owned non-banking financial institution (NBFI) owned by MoF, has been assigned to be the PISP Fund Manager. PISP will provide counterpart financing to the proposed MPA. PLN has a constitutional mandate to provide electricity to all Indonesians and is the sole power off-taker. Local governments where the geothermal projects are proposed and supported under this MPA will be consulted and will have the authority to issue locally relevant permits for the sub-projects.

\textbf{A Paradigm Shift}

12. To meet the GoI’s ambitious target of an additional installed capacity of 4.6 GW of geothermal energy, there needs to be: (i) clear and transparent procedures for awarding licenses and signing PPA, (ii) an optimized use of public funds and climate finance to bring down project development cost, and (iii) an efficient risk allocation strategy to incentivize private sector investments at scale.

13. The proposed MPA will facilitate the achievement of the Government’s goal to increase the share of renewable

\textsuperscript{10} These are followed by the Philippines (1,868 MW), Turkey (1,347 MW), New Zealand (1,005 MW), Mexico (951 MW), Italy (944 MW), Iceland (755 MW), Kenya (676 MW) and Japan (542 MW). ThinkGeoEnergy, January 2019.
energy, specifically from geothermal, in the national energy mix through supporting the implementation of a cost-efficient risk-sharing mechanism to mitigate geothermal resource risk bringing substantial leverage of developers’ equity, public funds from PISP as well as IBRD and climate finance, complemented by technical assistance to support improvements in licensing and PPA award procedures thereby mitigating regulatory risks in the medium and long-term. The MPA enables the World Bank to deepen its engagement in Indonesia’s geothermal sector in the upstream phase,\(^\text{11}\) and achieves results at scale. The MPA design targets the riskiest part of the development phases, and in doing so, it supports the Government’s vision of developing geothermal energy as a strategic indigenous energy source.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)
The project development objectives are to scale up investment in geothermal energy development and support the Borrower in its efforts to reduce greenhouse gas emissions in the country.

Key Results

14. Achievement of the PDO will be measured through the following indicators:
   - Generation capacity of geothermal sub-projects reaching financial close (Megawatt)
   - Estimated GHG emission reduction compared to a business-as-usual baseline (Metric ton)

D. Project Description

15. The MPA Program has two components, which are expected to be the same for the future phase(s). The following describes the components and investments under phase 1:
   - Component 1 to mitigate risks in geothermal resource drilling supported through the establishment of a new financing facility is financed with US$455 million, which consists of US$150 million from IBRD, US$97.5 million from the Green Climate Fund (GCF)\(^\text{12}\), US$72.5 million from the Clean Technology Fund (CTF), US$75 million from GoI’s PISP, and US$60 million private developers’ equity.
   - Component 2 for technical assistance and capacity building is financed with US$10 million, which consists of US$2.5 million from GCF, US$2.5 million from CTF, US$2.5 million from the Energy Sector Management Assistance Program (ESMAP) and US$2.5 million from the Global Infrastructure Facility (GIF).

16. Component 1 – Geothermal Resource Risk Mitigation (US$455 million). Under phase 1, Component 1 will support the establishment of a geothermal resource risk mitigation facility (Facility), which will provide financing to mitigate the risk of resource confirmation (including exploration and delineation drilling) of eligible public sector entities and eligible private sector developers (each a Developer, and typically, a special purpose vehicle (SPV) established by their owner

\(^{11}\) Previously, the WB has mainly focused on downstream investments, such as power plant construction, and assisted the Government in setting up a government-drilling program in geothermal exploration under the GEUDP.

\(^{12}\) GCF has approved a total amount of US$185 million in support of the MPA. However, due to capital constraints it has allocated only US$100 million as a first tranche (GCF T1), with the expectation that the remaining tranche of US$85 million would be allocated not earlier than two years from the initial GCF Board approval. The second tranche will need to be approved by the GCF Board following proof of satisfactory implementation progress. Only the financing from GCF T1 is included in the Project’s activities covered by this document and is referred to as the “Initial Project” in the financing table with GCF T2 referred to as “Additional Allocation”.

Mar 17, 2019
(Sponsor) for the development of a specific geothermal site).

17. Sub-component 1 will offer the following financing products for the public-sector entities (up to a maximum of $40 million total support for exploration and possibly a similar amount for delineation):

   a. **For exploration**: a Sub-Loan under terms and conditions reflective of the source of funding (tentatively assumed to be 50-75% from IBRD loan\(^{13}\), and 25-50% from GCF or CTF loan\(^{14}\)). At the discretion of MoF, the PISP can provide up to 50% grant to the developer in order to cover part of the loan pay-back obligations in case the exploration is unsuccessful.\(^{15}\)

   b. **For delineation**: a Sub-Loan under terms and conditions reflective of the source of funding (from IBRD, CTF and PISP with break-down to be finalized in the Project’s Operations Manual (OM)).

18. Sub-component 2 will offer the following financing products for the private sector developers (up to a maximum of $30 million\(^{16}\) total support for exploration and possibly a similar amount for delineation):

   a. **For exploration**: A Sub-financing under terms and conditions reflective of the source of funding, including:

      (i) 50% sub-loan sourced from IBRD and fully guaranteed by the Sponsor; and

      (ii) 50% in the form of a subscription to an innovative instrument (referred to as Financial Instrument) to be issued by the Developer, the value of which is linked to the value of the shares in the Developer, funded from either GCF Reimbursable Grant or CTF Convertible Recovery Grant.

   b. **For delineation**: a Sub-Loan under terms and conditions reflective of the source of funding (from IBRD, fully guaranteed by the Sponsor).

19. **Component 2 – Technical Assistance and Capacity Building (US$10 million)**. The component will support project implementation and management of the Facility by PT SMI. This includes supporting PT SMI’s incremental operating costs as well as procurement of specialized consulting services to support the rigorous evaluation of sub-financing proposals, validation of complex geoscientific data, and supervision of environmental and social safeguards compliance by the sub-borrowers. The component will also finance technical assistance and capacity strengthening of the key stakeholders, namely MEMR, Geo Dipa Energi, and PLN (see Table 4).

E. Implementation

**Institutional and Implementation Arrangements**

20. PT SMI will have the overall responsibility for implementation of the MPA in a financial intermediary (FI) role. In doing so, PT SMI will coordinate closely with a Joint Committee, which oversees the governance of the Facility. The Joint Committee will consist of representatives from MoF and MEMR.

21. The head of the project implementation unit (PMU) will be PT SMI’s Director for Project Development and Advisory. PT SMI will assign a project manager to oversee the day-to-day operation of the Facility. In implementing Component 1, PT SMI will set the eligibility criteria for developers and sub-projects, manage the vetting process for facility pipeline, and manage the portfolio of sub-loans and their associated safeguards and financial management compliance.

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\(^{15}\) PISP funds with loan forgiveness cannot be used for the private sector developers due to the risk of potential inequitable or non-transparent subsidies being delivered.

\(^{16}\) The amount of support for private developers is smaller than for public developers because the former are obliged to put in 25% equity.
It will use its internal departments and functions to manage the Facility, drawing from staff from those departments and hiring consultants and contractors to fill capacity gaps. PT SMI will engage several departments, namely sustainable financing, finance and investor relations, accounting and asset administration, general affairs and procurement, equity investment management and operation, financing and investment evaluation, environmental and social advisory evaluation, integrated risk management, special financing and investment management, legal and internal audit.

22. In implementing Component 2, PT SMI will coordinate closely with the relevant stakeholders on technical assistance needs, if financed from the CTF or GCF grants, and timeline for completion of planned activities to ensure alignment with the achievement of the MPA PrDO. PT SMI will prepare the Terms of References for those TA activities and specialized consulting services and ensure their successful completion. For TA activities financed from ESMAP and GIF the implementation arrangements will be decided when the financing agreements will be signed. It is possible that PLN and MEMR, respectively, will implement the TA activities for which they are themselves beneficiaries.

F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

The Project will target prospective geothermal work areas across the Indonesian archipelago. Although the project locations are not yet defined, screening of potential sites indicates that they are likely to be remote areas, potentially with agricultural land uses, forests, surface geothermal features and landscapes, and potentially other types of natural habitats within the project area of influence. There may also be physical cultural resources and tourism activities within the area. Infrastructure such as roads and wharfs may be basic and require upgrading to allow rigs to get to site. Indigenous people may be present in the project area of influence. Geothermal developments may not be well understood by the host communities, and there is the potential that host communities are not connected to an electricity grid or have other basic infrastructure. Locations and scope of the environmental and social impacts of projects seeking financing from PT SMI will be determined during the screening and appraisal of the proposals.

G. Environmental and Social Safeguards Specialists on the Team

Ninin Kania Dewi, Social Specialist
Penelope Ruth Ferguson, Environmental Specialist
Agustina Parwitosari, Environmental Specialist
<table>
<thead>
<tr>
<th>Safeguard Policies</th>
<th>Triggered?</th>
<th>Explanation (Optional)</th>
</tr>
</thead>
</table>
| Environmental Assessment OP/BP 4.01 | Yes | The project is Category FI because it involves investment of Bank funds through a financial intermediary, in establishing a resource risk mitigation facility. The developer’s proposals for financing will consist of the activities for geothermal upstream resource development (exploration and delineation drilling). These activities will result in adverse environmental and social impacts and each proposal could fall as Category A or B. The potential environmental and social impacts might be significant, diverse and irreversible.  
Exploration and delineation drilling involves construction of access roads, mobilization and operation of large, heavy drilling rigs, construction of work camps. Potential impacts include: (i) impacts on soils, vegetation, biodiversity and the surface water network due to the construction of access roads, pipelines and drilling platforms during the well drilling; (ii) potential damage to, or conversion of natural habitats, including inducing development from new roads, since a significant percentage of geothermal resources is located in or near terrain on which forest cover is to be maintained for watershed protection; (iii) temporary and permanent land acquisition, or damage to, or loss of assets or livelihoods; (iv) damage or disturbances to physical cultural resources; (v) damage or disturbances to geothermal features, water supplies, community infrastructure, tourism activities; (vi) water and soil quality risks from the production, handling, storage and disposal of drilling mud and fluids during testing; and (vii) emissions of steam and contaminants to air, and emissions of noise, during testing. The facility will not fund geothermal exploitation, but the potential downstream impacts of exploitation will be screened by PT SMI during the application process.  
The ESMF provides a screening process for PT SMI, as the FI, to assess the safeguards instruments prepared by the developers and submitted to PT SMI as part of the funding application process. |
Developers will be informed of the WB and Indonesian regulatory requirements, including the requirements of the GREM ESMF, LARPF and IPPF. This will include desk review of the proposal and safeguards instruments and due diligence field visits. The process will include screening for downstream risks if the exploration phase led to exploitation (regardless of the future funding source).

PT SMI will be responsible for supervision of the Developers implementation of the Project-specific safeguards instruments for the duration of the loan agreement.

The World Bank will review and approve the TORs for TA activities. The Interim Guidelines on the Application of Safeguard Policies to Technical Assistance (TA) Activities in Bank-Financed Projects and Trust Funds Administered by the Bank dated January 2014 will serve as the reference. The ESMF provides guidelines for assessing environmental and social consequences of proposed reforms, to be applied by the entities conducting the TA, and the team will review the results of such assessments prior to implementation of the reforms. The WBG EHS Guidelines will apply to the Project, both the general guidelines and those for geothermal power generation.

Draft ESMF (including LARPF and IPPF) was publicly disclosed and consulted on April 12, 2018. Input from public consultation was incorporated in the Final Draft of ESMF and the document is available in the following link: https://www.ptsmi.co.id/wp-content/uploads/2018/05/FINAL-Draft-ESMF-Geothermal-Resource-Risk-Mitigation-Project.pdf

Along with the implementation of safeguard for environmental and social issues, careful attentions and considerations will be made for gender aspects in the design and implementation of the Project. Developers will be required to carry out gender assessments to identify and resolve gender issues associated with the exploration activities such as engagement in consultation activities, female employment, etc. This practice will follow the
<table>
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<tr>
<th>Performance Standards for Private Sector Activities OP/BP 4.03</th>
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<tbody>
<tr>
<td><strong>gender-related recommendations to be made in the Operations Manual.</strong></td>
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<tr>
<td>OP/BP 4.03 is not triggered following a review of PT SMI’s capacity as a financial intermediary and the capacity of potential private sector developers. The project will be implemented under the safeguards policies and associated safeguard instruments to strengthen the capacity of PT SMI to manage environmental and social risks as a financial intermediary. Using the safeguards policies across the project will also avoid the complexity of implementing two separate systems (Safeguards Policies for the public window vs Performance Standards for the private window).</td>
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<tr>
<td><strong>Natural Habitats OP/BP 4.04</strong></td>
<td>Yes</td>
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<td>In Indonesia, some of the geothermal resources are found in terrain that is designated as protection forest/hutan lindung (HL), to remain in forest cover for watershed protection. While human activities have modified some of the HL, much of it remains as natural habitat. Exploration involves construction of access roads, well pads, and accommodations; transport and operation of heavy drilling rigs; and management of drilling fluids. Indirect impacts can include induced development or opening up forests to encroachment and greater hunting and poaching pressures.</td>
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<tr>
<td>The impacts of exploration will be assessed in the developer’s ESIA as described under OP 4.01 above. The ESIA will be required to also consider the key potential impacts of development (exploitation). Degradation of critical natural habitat will be avoided under the facility by two key methods – rejection of applications, or requirements to modify Projects to avoid impacts. This policy is also triggered for the technical assistance component as explained under OP 4.01 above.</td>
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<tr>
<td><strong>Forests OP/BP 4.36</strong></td>
<td>Yes</td>
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<tr>
<td>Forests may be directly affected through the clearance of vegetation for drilling pads and supporting infrastructure, and indirectly through induced development. Mitigation measures for induced development may change the way forests are managed or accessed in the location.</td>
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<tr>
<td>OP/BP</td>
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<td>Pest Management OP 4.09</td>
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<td>Physical Cultural Resources OP/BP 4.11</td>
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<td>Indigenous Peoples OP/BP 4.10</td>
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### Involuntary Resettlement OP/BP 4.12

| Project activities, such as exploration drilling and access roads etc. will require land. Under the programmatic approach, a Land Acquisition and Resettlement Policy Framework (LARPF) was prepared prior to appraisal in line with the relevant government laws, policies and World Bank OP 4.12 on Involuntary Resettlement. Land acquisition and resettlement action plans (LARAP) will be prepared in line with the LARPF by Developers for subprojects during the implementation stage. There is no subproject identified during project preparation so that no LARAP is prepared prior to project appraisal. The LARPF will guide the planning for land acquisition and resettlement at subproject level where necessary during project implementation. The LARPF lays out the objectives and principles, planning requirements and procedures of resettlement planning, implementation and monitoring arrangement as well as SMI internal review and clearance process of the subproject LARAPs. The LARPF has been incorporated in the ESMF. |

### Safety of Dams OP/BP 4.37

| The policy is triggered to ensure that storage and settling ponds for drilling fluids and brine storage ponds are designed by qualified professionals and properly inspected and maintained in accordance with the policy’s principles for small dams. | Yes |
Projects on International Waterways OP/BP 7.50
Exploration will not affect the quality or quantity of international waterways or groundwater.

Projects in Disputed Areas OP/BP 7.60
The project will not operate in disputed areas.

**KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT**

**A. Summary of Key Safeguard Issues**

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The developer’s proposals for financing will consist of the activities for geothermal upstream resource development (exploration and delineation drilling). These activities will result in adverse environmental and social impacts and each proposal could fall as Category A or B. The potential environmental and social impacts might be significant, diverse and irreversible.

Exploration and delineation drilling involves construction of access roads, mobilization and operation of large, heavy drilling rigs, construction of work camps. Potential impacts include: (i) impacts on soils, vegetation, biodiversity and the surface water network due to the construction of access roads and drilling platforms during the exploration phase, and production drillings, steam pipelines, powerhouses, road networks, and transmission lines during the operational phase; (ii) potential damage to, or conversion of natural habitats, as a significant percentage of geothermal resources is located in or near terrain on which forest cover is to be maintained for watershed protection; (iii) temporary and permanent land acquisition, or damage to, or loss of assets or livelihoods; (iv) damage or disturbances to physical cultural resources; (v) damage or disturbances to geothermal features, water supplies, community infrastructure, tourism activities; (vi) production, handling, storage and disposal of drilling mud and fluids during testing; (vii) discharges to air of steam and contaminants from wells during testing; and (viii) social impacts on the lives and livelihoods of Indigenous People. Most impacts will be temporary, with the sites being rehabilitated at the end of the exploration period. Longer term impacts may come from induced impacts on forested areas via the new access roads.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

Environmental and social assessment at exploration stage needs to take into account potential impacts related to exploitation activities on a given site. Significant benefits and risks related to geothermal development are related to downstream activities, such as larger footprint required for exploitation drilling and construction of transmission lines to evacuate power. Greater infrastructure development may also be required during the exploitation phase, leading to a wider range and larger scale of potential impacts such as: emissions to air from generation facilities, increased encroachment into remote areas for makeup wells, land requirements for roads, well pads and pipelines and the management of waste steam and waste water. Induced development risks will be more significant in the long term due to the expanded well-field and increased development of remote areas. The risks to remote and vulnerable communities, potentially including Indigenous Peoples, could include encroachment onto forest and customary land, changes to social and cultural circumstances and competition for natural resources. Mitigation on a landscape scale is likely to be required.

The socio-economic impacts of renewable, reliable, and increased energy supply will be beneficial to local households, communities of Indigenous People, businesses and government agencies.
3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

Developers will be required to assess alternatives within their ESIA. PT SMI may recommend alternatives when they conduct their due diligence and appraise the ESIA as part of the funding application process.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

Early assessment on environmental and social safeguards management capacity finds that PT SMI has the system in place to manage a large-scale lending facility. PT SMI has extensive experience in managing World Bank's and other donors' safeguards policies under the Indonesia Investment Guarantee Fund (IIGF), Indonesia Infrastructure Facility Fund (IIFF) and the Regional Infrastructure Development Fund (RIDF). PT SMI has developed a specific Operations Manual and Environmental and Social Management System (ESMS) for use on its programs supporting local government investments through various infrastructure funds. The ESMS has processes to screen proposed subprojects, determine environmental and social risk level, and carry out due diligence assessment, all of which will determine the gaps of meeting the requirements specified in the ESMS. Along with national E&S regulation, ESMS is the basis of GREM ESMF – with necessary supplemental provisions in compliance with relevant World Bank Safeguard Policies. Sub borrowers seeking financing via a PT SMI-administered fund is required to prepare and implement a corrective action plan (CAP) to address the gaps identified in the due diligence assessment and meet the requirements specified in the ESMF. PT SMI has a safeguards team in the Environmental Social and Advisory Evaluation Division under the Risk Management Directorate, with qualified and experienced staff members. This team will be responsible for overseeing the implementation of the ESMF. A Capacity Building Plan in the ESMF identifies the need for additional staff in the Division who will be directly responsible for GREM safeguards, and further training and resources developed for geothermal project investment lending.

On geothermal sector, PT. SMI has been engaging with the World Bank with the on-going Geothermal Energy Upstream Development Project (GEUDP), the first window of Risk Mitigation Facility, for which the Environmental and Social Management Framework (ESMF) was developed during project preparation. This document details the environmental and social safeguard policies, principles, procedures, institutional arrangements, and workflows of PT. SMI to guide the avoidance, minimization, or mitigation of any adverse environmental or social impacts of infrastructure projects supported by the Geothermal Energy Upstream Development Project (GEUDP). While GEUDP has supported PT SMI in building its capacity for managing complex drilling operations, this GREM Project will strengthen PT SMI’s system and capability for managing a large revolving fund for renewable energy investments. It will further expand PT SMI’s risk appetite and improve its capacity in managing those risks, as stated as one of the objectives of Component 2.

The Project would also strengthen PT. SMI capacity in providing screening developers’ proposals, including validation of complex geoscientific data, evaluating quality of environmental and social safeguards due diligence and prior public consultations, and developers’ financial capability through hiring technical consultants that are experts in the geothermal field and training of key staff.

In terms of safeguard staffing, PT SMI has recently hired one Environmental Specialist and one Social Specialist under the PMU of Geothermal Upstream Development (GEUDP) that should also be capable to support GREM. There is also pool of on-call consultants including environmental and social experts under the Project Advisory Division. However, based on the November 2018 PT SMI GREM Safeguards Capacity Building Plan, at least 2 new staff (1 for environmental and 1 for social) will be required in the ESS&BCM Division to focus on GREM applications and further build capacity for geothermal projects within the institution. Additional support under the Capacity Building Plan includes the use of consultants to review technical documents, undertake due diligence of applications and to help
build the safeguards capacity of the private and public developers. In accordance with OP4.01 Paragraph 11 sub-project safeguards instruments will be subject to prior review and approval by the Bank. The capacity building plan in the ESMF will be the basis for a more in depth assessment at the beginning of project implementation. While PT SMI may have performed adequately on other projects such as IIGF, based on ongoing safeguards review of IIF portfolio - which is a large FI project with several category A sub-loans - its safeguards technical and institutional capacity needs to be substantially strengthened in order to fulfill its "oversight responsibilities". The in depth capacity assessment will also cover wider group stakeholders listed in the ESMF for more institutional strengthening.

The public entities involved have extensive experience with geothermal development, including: (i) MEMR, with whom rests the overall coordination of the GoI geothermal development program; and (ii) MOF, who has a long-standing engagement with the country's geothermal sector, as well as making available dedicated geothermal development funds within PT SMI.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

The key stakeholders are the SOEs and private sectors as the developers, the local government (such as district and regency offices, Energy & Mineral Resource office, Planning Agency Office, Environmental and Forestry Office, Public Works, Tourism Office, and Investment/Permit Agency) and central government as necessary, non-government organizations and the host communities within the area of influence of the exploration activities. This includes any specific sensitive receptors such as households along access routes or adjacent to facilities, schools, hospitals etc. Stakeholder Engagement Plans will be prepared by each geothermal sub-project and will be integrated into project planning. Consultation will start during feasibility and continue during the ESIA and LARAP processes and throughout the exploration project implementation. In the review and approval process undertaken by PT SMI and the Bank, the efficacy and depth of consultation and disclosure will be assessed and the sub-borrower will be instructed to fill any gaps in consultation and disclosure.

The draft ESMF (including RPF and IPPF) was publicly disclosed and consulted on April 12, 2018. Input from public consultation and internal key stakeholders was incorporated in the final instruments. The final ESMF document was disclosed by PT SMI in its website on May 24, 2019 (https://www.ptsmi.co.id/wp-content/uploads/2019/05/ESMF-Geothermal-Resource-Risk-Mitigation-Project-GREM.pdf) and by the Bank in ImageBank in June 2019.

Sub-project ESIA, ESMP, LARAP and IPP will be consulted and publicly disclosed prior to review and approval by the World Bank and PT SMI. The sub-borrower, PT SMI and the World Bank will disclose all sub-project safeguards instruments on their websites. The ESMP will cover all generic risks relating to geothermal exploration and identified risks and potential impacts and mitigation measures from the range of layout and operational options identified. The ESMP will set up the sub-plan framework and highlight the details to be completed within sub-plans once the final project footprint and site-specific details are known during project implementation. This will set up an adaptive management regime where sub-plans will be prepared, reviewed and cleared during project implementation. For Category A projects, the GCF will also disclose the sub-project safeguards instruments on their websites.
### B. Disclosure Requirements

#### Environmental Assessment/Audit/Management Plan/Other

<table>
<thead>
<tr>
<th>Date of receipt by the Bank</th>
<th>Date of submission for disclosure</th>
<th>For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors</th>
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<td>23-Feb-2018</td>
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"In country" Disclosure

Indonesia

26-Feb-2018

Comments

Since no sub-project has been determined, the safeguard instrument is Environmental and Social Management Framework (ESMF), incorporating RAPF and IPPF.


#### Resettlement Action Plan/Framework/Policy Process

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"In country" Disclosure

Indonesia

26-Feb-2018

Comments

RAPF is part of ESMF.

#### Indigenous Peoples Development Plan/Framework

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"In country" Disclosure

Indonesia

26-Feb-2018
Comments
IPPF is part of ESMF.

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report?
Yes

If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?
Yes

Are the cost and the accountabilities for the EMP incorporated in the credit/loan?
Yes

OP/BP 4.04 - Natural Habitats

Would the project result in any significant conversion or degradation of critical natural habitats?
No

If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?
Yes

OP/BP 4.11 - Physical Cultural Resources

Does the EA include adequate measures related to cultural property?
Yes

Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?
Yes

OP/BP 4.10 - Indigenous Peoples

Has a separate Indigenous Peoples Plan/Planning Framework (as appropriate) been prepared in consultation with affected Indigenous Peoples?
Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?
Yes

If the whole project is designed to benefit IP, has the design been reviewed and approved by the Regional Social Development Unit or Practice Manager?
Yes

OP/BP 4.12 - Involuntary Resettlement
Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?
Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?
Yes

**OP/BP 4.36 - Forests**

Has the sector-wide analysis of policy and institutional issues and constraints been carried out?
Yes

Does the project design include satisfactory measures to overcome these constraints?
Yes

Does the project finance commercial harvesting, and if so, does it include provisions for certification system?
No

**OP/BP 4.37 - Safety of Dams**

Have dam safety plans been prepared?
No

Have the TORs as well as composition for the independent Panel of Experts (POE) been reviewed and approved by the Bank?
No

Has an Emergency Preparedness Plan (EPP) been prepared and arrangements been made for public awareness and training?
No

**The World Bank Policy on Disclosure of Information**

Have relevant safeguard policies documents been sent to the World Bank for disclosure?
Yes

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?
Yes
All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?
Yes

Have costs related to safeguard policy measures been included in the project cost?
Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?
Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?
Yes

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