Project Information Document/
Integrated Safeguards Data Sheet (PID/ISDS)

Concept Stage | Date Prepared/Updated: 21-May-2018 | Report No: PIDISDSC23756
## BASIC INFORMATION

### A. Basic Project Data

<table>
<thead>
<tr>
<th>Country</th>
<th>Project ID</th>
<th>Parent Project ID (if any)</th>
<th>Project Name</th>
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<tbody>
<tr>
<td>Indonesia</td>
<td>P166071</td>
<td></td>
<td>Indonesia Geothermal Resource Risk Mitigation Project (GREM) (P166071)</td>
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<th>Region</th>
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<tr>
<td>EAST ASIA AND PACIFIC</td>
<td>Dec 21, 2018</td>
<td>Mar 15, 2019</td>
<td>Energy &amp; Extractives</td>
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<table>
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<tr>
<th>Financing Instrument</th>
<th>Borrower(s)</th>
<th>Implementing Agency</th>
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<td>Investment Project Financing</td>
<td>PT Sarana Multi Infrastruktur (Persero)</td>
<td>PT Sarana Multi Infrastruktur (Persero)</td>
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### Proposed Development Objective(s)

The objective of the proposed Project is to scale up investment in geothermal energy development and support Indonesia in its efforts to reduce greenhouse gas emissions.

## PROJECT FINANCING DATA (US$, Millions)

### SUMMARY

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount (US$ Millions)</th>
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<td>Total Project Cost</td>
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<td>Total Financing</td>
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<tr>
<td>of which IBRD/IDA</td>
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<td>Financing Gap</td>
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### DETAILS

#### World Bank Group Financing

- International Bank for Reconstruction and Development (IBRD) 325.00

#### Non-World Bank Group Financing

- Counterpart Funding 150.00
- Borrower 150.00
- Trust Funds 175.00
B. Introduction and Context

Country Context

1. Indonesia, a diverse archipelago nation of more than 300 ethnic groups, has charted impressive economic growth since overcoming the Asian financial crisis of the late 1990s. Today, Indonesia is the world’s fourth most populous nation with over 260 million people, the eight largest economy globally and the largest economy in Southeast Asia with a gross domestic product (GDP) per capita in terms of purchasing power parity of US$11,612, and a member of the G20. An emerging middle-income country, Indonesia has made enormous gains in poverty reduction, more than halving the poverty rate since 1999 to 10.9 percent in 2016. Nevertheless, more than 28 million Indonesians still live below the national poverty line. Approximately 40 percent of the entire population remains vulnerable of falling into poverty, with incomes hovering marginally above the national poverty line. The slow pace of job creation is another challenge to poverty reduction efforts, largely affecting the 1.7 million youth who enter the workforce each year.

2. Indonesia has maintained a real GDP growth of five percent over the past three years, which is estimated to tick up to 5.1 percent in 2017 and further strengthen to 5.3 percent in 2018. Economic growth has thus far been supported by higher commodity prices, stronger global growth, rebounding international trade, and relatively accommodative monetary and financial conditions. Greater investment has been bolstered by lower financing costs, improved business environment, and stronger public capital investment. While the Indonesian economy has seen some economic diversification in recent years, its economic performance is still substantially tied to commodities as a major exporter. Declines in commodity prices, such as that of coal,¹ could significantly lower government revenues, dragging on growth. On the other hand, an expected increase in oil revenues, while positive for government revenues, would create pressure on Pertamina’s² balance sheet, or on inflation and therefore consumption.

3. With its large yet dispersed population, maintaining modern and efficient infrastructure is vital for Indonesia to connect with markets at home and abroad in order to sustain robust growth. To this end, improving infrastructure is a top policy priority for the Government of Indonesia (GoI). In the 2016 budget, the GoI earmarked the highest amount ever allocated for infrastructure development – approximately US$22.9 billion – which will remain a priority at least for the next four years according to the 2015-2020 medium-term development plan. With over 24 state-owned enterprises (SOEs) across different sectors, many of the key infrastructure projects and programs have been

¹ Coal prices are expected to retreat from US$85/million ton (mt) in 2017 to US$70/mt in 2018 as demand slows, especially in China where an environmentally friendly initiative is underway to reduce coal consumption.
² Pertamina is the state-owned oil and gas company tasked with providing and distributing gasoline.
implemented by SOEs. The challenge lies in developing a risk-sharing model so that SOEs benefit from government-backed, lower borrowing costs without exposing the national budget to undue fiscal burden. Meanwhile, the GoI has made significant efforts in introducing many regulatory reforms to create a more conducive environment for private sector participation to close the infrastructure gap.

**Sectoral and Institutional Context**

4. The primary energy mix in Indonesia is currently made up of 34.6 percent coal, 33.8 percent oil, 23.9 percent gas, and 7.7 percent renewable sources. Total installed power generation capacity is estimated at 54.60 gigawattts (GW) at the end of 2017, excluding captive generation. The country is expected to become increasingly dependent on energy imports of up to about 25 percent of total demand by 2019. The state-owned power company and sole off-taker, PT Perusahaan Listrik Negara (PLN), plans to achieve 99.7 percent national electrification rate by 2025 from a current rate of 93 percent. Meanwhile, constant pressure to keep cost low favors more coal in the generation mix, where new coal plants are expected to lock in several million tons of greenhouse gas (GHG) emissions during their useful life. Meanwhile, Indonesia has committed to a nationally determined contribution of 29 percent GHG emission reduction target. It also has a renewable energy target of 23 percent by 2026, of which seven percentage points is expected to come from geothermal energy.

5. Geothermal power is a baseload generation technology not subject to the intermittency and variability associated with most renewable energy sources. Under the right conditions, it can be cost-competitive with coal or natural gas, which means that countries with such indigenous resources can depend less on imported fuels and increase their energy security. As a cleaner source of electricity, geothermal energy can play a major role in decarbonizing the power sector and furthering the country’s climate change agenda. It can also contribute to expanding access to electricity, economic growth, job creation, and boosting prosperity, particularly on the eastern islands where electrification rates are much lower and poverty rates higher than the national average.

6. Indonesia’s geothermal power potential is estimated at around 29 GW, roughly 40 percent of the world’s known reserves. Geothermal resources in Indonesia can be found on islands with large populations, such as Sumatra and Java-Bali, where electricity demand is high and growing, as well as in more remote regions such as Eastern Indonesia, offering an opportunity for poverty alleviation through rural electrification and substitution of expensive diesel-based generation. Despite this tremendous potential, only 1.8 GW, or about six percent, of geothermal resources in Indonesia has been developed to produce power due to the high resource risk coupled with high drilling costs.

7. Geothermal energy is developed through a multi-stage approach that begins with surface investigations followed by exploration drilling to confirm the availability of the geothermal resource, and by delineation drilling to confirm the extent of the resource. The key parameters of geothermal development – temperature, permeability, and resource size – can be estimated from geoscientific surveys, but can only be confirmed through an exploration drilling program, which in Indonesia is estimated around US$30 million for a minimum of three wells in a greenfield project. Exploration drilling requires owner’s equity or balance sheet finance, which is put at risk without a chance of recovery if the resource is not adequate. Therefore, even though initial costs for exploration drilling are modest compared to the

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3 PT PLN’s RUPTL (Business Plan) for 2017–2026.
4 Indonesia’s position in the Pacific’s Ring of Fire exposes it to many earthquakes, volcanic eruptions, and other natural disasters every year that can be major, medium, or micro in scale and impact. A Climate Change and Disaster Risk Screening has been conducted and to the extent appropriate, key findings will inform the preparation of the Environmental and Social Management Framework to be prepared and implemented by PT SMI as the Project Implementing Agency.
5 Exploration drilling cost can vary significantly depending on the site-specific conditions. Costs could range between US$10 to US$40 million.
total cost of developing all stages of a geothermal operation, finding this initial capital can be challenging for developers.

8. The GoI has set an ambitious target to add 6.3 GW of geothermal capacity by 2026, which would translate to a total investment need of about US$27 billion over the next seven years. There are three main sources of funds: public funding, private sector funding, and international support. Public funding and involvement of SOEs will remain strategically important, particularly as part of a drive to increase electrification in Eastern Indonesia, and will need support from international financial institutions (IFIs) and bilateral donors. However, the bulk of the investments will need to come from the private sector. More broadly, achieving the GoI’s ambitious target for scaling-up geothermal-powered generation would require: (i) judicious use of public funds while mobilizing private sector capital at a large scale; (ii) implementation of an effective upstream risk mitigation mechanism; and (iii) ensuring a conducive doing-business environment with transparent and competitive licensing and power purchase agreement (PPA) award procedures and effective cost-competition for drilling services, as well as management of bottlenecks related to drilling in forest areas. Effective facilitation of the necessary sector investments will also require close coordination among key stakeholders, namely the Ministry of Energy and Mineral Resources (MEMR), Ministry of Finance (MoF), Geological Agency (Badan Geologi, or BG), Ministry of Environment and Forestry (MoEF), and local governments.

9. The development of geothermal energy in Indonesia has a long history. The first geothermal power plant in Indonesia was developed in 1983. To encourage the development of other geothermal fields, the GoI allowed private companies to participate by issuing Presidential Decree No. 45/1991, and during the 1990s PLN offered high geothermal tariffs of around USc 7-10/kWh. Unfortunately, the 1997-1998 Asian financial crisis caused the Indonesian rupiah to fall dramatically with respect to the US dollar and compromised PLN’s financial position. The GoI was subsequently forced to decrease the geothermal tariff to less than USc 5/kWh. Consequently, most geothermal projects became unfeasible and many private geothermal companies withdrew from Indonesia. Since then, several attempts have been made by the GoI to find an optimal geothermal tariff system.

10. Many projects have been explored and developed under Joint Operation Contracts (JOCs). The JOC arrangement was introduced under the 1990s mining regulations, when Pertamina was the only public entity with the mandate to develop geothermal projects in Indonesia. Under JOCs, Pertamina holds the license and manages the geothermal area, while the contractor operates the area for steam production and electricity generation. In 2006, Pertamina created a subsidiary – Pertamina Geothermal Energy (PGE) – which is dedicated to its geothermal business and which has inherited Pertamina’s geothermal licenses. JOCs have been operated under a Build-Own-Operate (BOO) or Build-Own-Transfer (BOT) arrangement. The private partners and contractors involved in the JOCs included Chevron, Unocal, Amoseas, Magma Nusatara, Bali Energy, Karaha Badas, and Star Energy. These JOCs have facilitated the exploitation of some of the biggest geothermal fields: Darajat, West Java (270 MW); Kathe raha & Talaga Badas, West Java (30 MW); Salak, West Java (377 MW); Kamojang, West Java 235 MW); Sarulla, North Sumatra (220 MW10); and Wayang


7 Land use, particularly in conservation forest areas, is still a significant bottleneck for geothermal development. More than 90 geothermal sites, with an estimated 10-15 GW capacity potential, are located in conservation and protected forest areas (“Geothermal Handbook for Indonesia, BAPENAS 2014). While recent regulatory changes have been made to accommodate geothermal development in certain parts of conservation forest areas as per Geothermal Law 2014 and Ministry of Environment and Forestry Regulation No. 46/2016, steps will need to be taken to translate the new regulation into clear implementation guidelines agreed by MEMR and MoEF.


9 All but Star Energy have now exited the Indonesian market.

10 A 110 MW extension is being planned, which will bring the total capacity up to 330 MW
Windu, West Java (227 MW). However, the 2003 Geothermal Law, which allowed both public and private sector entities to hold a geothermal development license, stipulates that a license cannot be passed on to a new owner. This means that, in a JOC arrangement, the public partner is still holding the license and not the jointly managed project company. The upshot is that a JOC arrangement will prevent the private partner from using the jointly managed project company as a basis for project finance and this has made JOCs unattractive in the eyes of private developers who are no longer willing to finance the entire geothermal project development from equity and balance sheet finance.

11. Recent regulatory changes related to tariff setting in PPAs reflect the GoI's efforts to keep electricity prices low. MEMR Regulation No. 12/2017 and its revision through MEMR Regulation No. 50/2017 allow reasonable investment returns so long as the tariff is lower than the average electricity supply costs (biaya penyediaan pokok, or BPP), which are defined as PLN's avoided costs in the local power systems. There is, however, a possibility of business-to-business (B2B) negotiation with PLN for a higher-than-avoided cost tariff. The policy was designed to reduce the overall electricity subsidies and keep the electricity end-user costs affordable to consumers. Nevertheless, the geothermal industry has had mixed reactions to these rules due to the lack of transparency and predictability in the B2B price-setting process and because the system fails to offer sufficient compensation for the considerable resource risk that geothermal developers are expected to absorb.

12. In support of the sector, the MoF is offering fiscal incentives to support geothermal investments, including tax holidays and allowances and an income tax facility for the geothermal sector, as well as value-added tax (VAT) and import duty exemption for capital goods. More importantly, the MoF has reallocated about IDR 3.1 trillion, or US$225 million, from what was previously known as the Geothermal Fund Facility (GFF) to the newly established Infrastructure Fund for Geothermal Sector (also known as Pembiayaan Infrastruktur Sektor Panas Bumi, PISP). PISP is managed by PT Sarana Multi Infrastruktur (Persero) (“PT SMI”) for mitigation of geothermal exploration drilling risks, particularly in areas where development prospects are not attractive for pure private sector investment. The original design of the GFF was based on collateral-backed loans and failed to adequately address the high exploration risk issues since the GFF loans were to be paid back in full even in the case of unsuccessful drilling. The design of the PISP, which is expected to support exploration drilling (among others), hinges on a more balanced approach to risk allocation in the overall geothermal development process. MoF has issued the regulation (PMK No. 62-08/2017) to provide the legal basis and guide the use of funds to be undertaken by PT SMI.

13. MEMR has designated 71 geothermal work areas (WKPs) for development over the next seven years. However, the GoI is cognizant that the existing tariff regime and incentive structure may not be sufficient to mobilize private investment in geothermal power development, which is likely to impact investments and lead to a slower-than-desired geothermal development. Both the geothermal industry and MEMR assess that it is unrealistic that the pipeline of designated WKPs will move without an effective resource risk mitigation mechanism. As a first step to address this issue, the World Bank's Geothermal Energy Upstream Development Project (GEUDP, P155047) is supporting government-sponsored exploration drilling in unassigned WKPs. GEUDP is implemented by PT SMI and is financed by US$49 million from the GoI (PISP) matched by US$49 million contingent grant funds from the Clean Technology Fund (CTF), as well as a technical assistance grant of US$6.25 million from the Global Environment Facility (GEF).

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11 The remaining fields in operation include: Waypanas Ulubelu, Lampung (220 MW); Lahendong, Noth Sulawesi (120 MW); Dieng, Central Java (60 MW); Patuha, West Java (55 MW); Sibayak, North Sumatra (12 MW); Ulumbu, East Nusa Tenggara (10 MW); and Mataloko, East Nusa Tenggara (2.5 MW).

12 Project finance implies that a Special Purpose Vehicle (SPV) is created, which must hold the geothermal license so that it can be used to securitize the financing arrangement.
14. However, the GoI has realized that even though GEUDP can make an important contribution, the capacity of PT SMI to carry out drilling on its own remains limited (at no more than two projects per year) and this modus operandi will not be sufficient to facilitate the planned scale-up of geothermal development. The GoI therefore wishes to expand the risk mitigation to exploration drilling that can be implemented by SOEs and private developers. The proposed Project aims to address this issue and its preliminary scope, as well as the Facility it supports, is discussed in the Project Context Section below.

15. Support from development partners (DPs) and donors has focused on strengthening the regulatory environment and further developing implementing regulations under the Geothermal Law, in addition to providing financing for downstream investments. The World Bank’s Technical Assistance for Sustainable Geothermal Power Development in Forest Areas provides recommendations related to environmental and social assessment and requirements for sustainable management of geothermal projects in conservation forest areas in Indonesia. Previously, there has been support to the GoI on the development of a production bonus regulation to guide the benefit-sharing mechanisms with the local communities where the project is located. Other DPs have continued to work with the GoI on issues related to PPAs, off-take guarantee, and classification and recording of geothermal resource data according to international standards, among others.

16. The proposed Project is being prepared in close coordination with other DPs to ensure maximum impact. The Asian Development Bank (ADB), the Japan International Cooperation Agency (JICA), Agence Francaise de Developpement (AfD), Kreditanstalt fur Wiederaufbau (KfW), and the Government of New Zealand all have ongoing technical assistance and/or are looking to increase downstream investments in geothermal energy. It is envisaged that the proposed facility will be designed on a multi-donor platform that will make it possible to integrate into the business model and expand the investment funds with financing from other sources. Discussions are underway regarding how to integrate ongoing and planned investments by KfW, AfD, and the International Finance Corporation (IFC) to finance post-exploration drilling.

17. The proposed Project will seek to maximize financing for development through collaboration across the World Bank Group and among key development partners by optimizing the use of public funds while creating a conducive environment for private sector participation. Under the Project, the upstream phase where there is the highest level of risk will be supported mainly by public funds along with climate funds and some developer’s equity. Public investments in this phase are imperative to facilitating downstream investments by the private sector, but are not sufficient on their own. To this end, climate funds will help buy down the financing cost and developer equity helps demonstrate its commitment. During the next phase of delineation drilling, where there is still some risk, there would be a greater range of financing structures for pooling funds and equitably allocating risks. In this phase, there would be a greater share of short-term financing close to commercial terms, which could potentially be refinanced as long-term loans during financial closure. This Project aims to devise sustainable public, private, and public-private partnership (PPP) delivery methods to not only pool an impactful amount of funds, but also to optimize the use of each source of funds in mitigating risks for geothermal development.

Relationship to CPF

18. The proposed Project would contribute to the achievement of priority areas as identified in the World Bank Group Country Partnership Framework (CPF) 2016-202013 by directly supporting the Sustainable Energy and Universal Access Engagement Area, and specifically the renewable energy (RE) and low-carbon development (LED) focus area – accelerating geothermal and other renewables. In moving the power sector towards a more secure and sustainable
development path, the proposed operation is part of a broader menu of support to the GoI in helping to mitigate the risk of over-relying on the use of coal-fired power generation to meet fast-growing demand for electricity while meeting the GoI’s goal for universal electricity access by 2030. The Project shall also achieve the following expected outcomes under the RE & LED focus area of the CPF: (i) number of households receiving improved access to reliable energy; and (ii) incremental geothermal power installed capacity (MW) enabled.

C. Proposed Development Objective(s)

19. The proposed development objective is to scale up investment in geothermal energy development and reduce greenhouse gas emissions in Indonesia.

Key Results (From PCN)

20. In terms of longer term impact, the proposed Project will support access to reliable electricity from a clean and renewable domestic energy resource. It is expected that from an investment of US$660 million, the Project will leverage about US$4 billion of commercial project finance by 2026 – adding around one GW of geothermal capacity before 2030. As a climate co-benefit, the Project is expected to avoid five MtCO2e annually, or 150 MtCO2e over the 30-year lifetime.

21. The proposed Project will also bring employment for skilled and unskilled workers engaged in drilling, civil works, infrastructure construction, and auxiliary services in up to 20 locations throughout Indonesia, mostly in the Eastern Islands. Through technical assistance to a range of stakeholders, the proposed operation will enhance capacity of key state actors in the sector, thereby facilitating sector development in the long run.

22. The Project will seek to incorporate gender-responsive design through improving corporate human resource standards for female participation in decision-making and hiring of female engineers and workers. This would entail careful analysis of various aspects of gender gaps and consideration of targeted interventions, and recommended actions in the Project Operations Manual for perusal by the developers and supervision by PT SMI.

23. Achievement of the PDO will be measured through several indicators, namely:

- Additional electric power generation capacity enabled (megawatt)
- Private capital mobilized for investment in geothermal power generation (US$ million)
- Estimated GHG emission reduction compared to a business-as-usual baseline (metric tons)

D. Concept Description

1. Under the proposed Project, the Geothermal Resource Risk Mitigation Facility will be established. The proposed Project will be a Financial Intermediary (FI) operation implemented by PT SMI. As the GoI’s designated Fund Manager for the PISP, PT SMI will manage the Facility established with support from this Project. The MoF and MEMR, under a Joint Committee, will provide guidance to PT SMI on the strategic-level governance of the Facility.\(^{14}\) The Project will have two components: Component 1, US$650 million, for geothermal resource risk mitigation; and Component 2, US$10 million, for technical assistance and capacity building.

\(^{14}\) MEMR is responsible for the overall coordination of geothermal development in Indonesia, including setting and implementing policies related to allocating geothermal concessions, setting tariff and overseeing supporting regulations such as production bonus sharing with local communities from geothermal benefits. MoF is responsible for allocating funds to support sector development through dedicated program (such as PISP), ministerial budgetary allocations, or fiscal incentives.
2. **Component 1: Geothermal Resource Risk Mitigation (US$650 million).** This Component will provide financing for exploration and delineation drilling for resource confirmation. Public and private sector developers will apply for financing from PT SMI, which will screen proposals and, under the guidance of the Joint Committee, determine the size of the approved financing package. Based on the potential project pipeline as indicated by MEMR and the state-owned and private developers, the Facility is expected to enable drilling of up to 20 projects. Among the private developers that have expressed interest in the financing support that could be made available from the Facility, there are established developers such as Medco Power, Supreme Energy, and Energy Development Corporation (EDC), but a considerable number of emerging players exist and those sounded out by the Project team have expressed interest to step in if risk mitigation facilities are in place. Of the public sector developers, Geo Dipa Energi, a geothermal developer mostly owned by MoF, which holds three licenses for undeveloped WKPs, has expressed strong interest, and PLN has indicated that they would be interested in support that could help attracting private funding and expertise to implement their large portfolio of recently granted licenses (seven licenses granted in 2017 with another seven expected to be granted in near future) as part of its expansion of electricity supply in eastern Indonesia.

3. IFC is presently preparing a pilot bridge financing structure for delineation drilling as a stand-alone project, which can be replicated / scaled to increase private sector participation under the proposed GREM Facility, subject to availability of sponsors with funding appetite for geothermal exploration in Indonesia. The intention is to make an IFC bridge financing product available once resource risk has been significantly reduced through public funding support for exploration drilling of the first few wells. The pilot bridge finance deal will be an opportunity for IFC to identify the key bankability requirements that can be applied under the GREM Facility. Meanwhile, KfW, in partnership with AfD, has expressed interest in cooperating with PT SMI and the World Bank on support to geothermal development. It is expected that KfW and AfD could provide financial support on terms that would be similar to those of GREM or provide parallel financing to the beneficiaries of the proposed resource risk mitigation facility, for instance as financing for SOEs for delineation. It is being discussed with KfW and AfD to align eligibility criteria and financing terms that would allow a concerted approach to risk mitigation.

4. **Component 2: Technical Assistance and Capacity Building (US$10 million).** The Component will finance a capacity building program to enhance PT SMI’s capacity in managing the Facility, and technical assistance to key sector stakeholders in improving the overall sector governance and investment climate for geothermal in Indonesia. Capacity building to PT SMI will include broad support in governance of the Facility and management of the geothermal portfolio, including development of eligibility criteria, screening developers’ proposals, validating complex geoscientific data, evaluating quality of environmental and social safeguards due diligence and developers’ financial capability. In addition, the Component will provide regulatory advisory and operational support to key stakeholders, particularly MEMR, in improving the investment climate and doing business environment in the sector and addressing the key bottlenecks as above identified.

**SAFEGUARDS**

**A. 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

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15 PT SMI will need to carry out integrity due diligence of potential borrowers, such as Anti Money Laundering/Combating the Financing of Terrorism (AML/CFT), blacklists, reputational risk searches.
with agricultural land uses, forests, surface geothermal features and landscapes, and potentially other types of natural habitats within the project area of influence. 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.

B. Borrower’s Institutional Capacity for Safeguard Policies

PT SMI supports and catalyzes the GoI’s infrastructure development through PPP with private and multilateral financial institutions. PT SMI recently managed the Bank’s and other donors’ safeguards policies as a Financial Intermediary under the IIGF, IIFF and RIDF.

PT SMI has developed an Operations Manual and Environmental and Social Management System on its programs supporting local government investments through various funds. PT SMI has a safeguards team in the Environmental Social Safeguard and Business Continuity Management Division under the Risk Management Directorate, with capable staffs. This team will oversees the implementation of the safeguards instruments on sub-projects.

On geothermal sector, PT SMI has been engaging with the Bank with the on-going GEUDP, the first window of Risk Mitigation Facility, for which Environmental and Social Management Framework (ESMF), Resettlement Policy Framework and Indigenous Peoples Policy Framework (IPPF) were prepared. The instruments detail the safeguard policies, principles, procedures, institutional arrangements, and workflows of PT SMI to guide the avoidance, minimization, or mitigation of adverse impacts. The GREM safeguards instruments build upon the GEUDP instruments. Presently, PT SMI is hiring one Environmental and one Social Specialists under the PMU of GEUDP capable to support GREM as well. There are also on-call consultants including environmental and social experts under the Project Advisory Division. Capacity building is needed to strengthen the issue screening, managing consultants, and safeguards instruments review.

The public entities involved have extensive experience with geothermal development, including: 1) MEMR, with whom rests the overall coordination of the program; and 2) MOF, with a long-standing engagement in the sector, as well as establishing dedicated funds within PT SMI.

Component 2 of the Project would also strengthen PT SMI capacity in screening developers’ proposals, including validation of complex geoscientific data, evaluating quality of safeguards due diligence and prior public consultations, and developers’ financial capability through hiring technical experts and training staffs. During project preparation the Task Team reviews the capacity needs of PT SMI to 1) implement the safeguards instruments; 2) comply with the Safeguards Policies, and 3) to supervise the compliance of the developers. A detailed plan will be prepared in the GREM ESMF.

C. Environmental and Social Safeguards Specialists on the Team

Chaohua Zhang, Social Specialist
Ninid Kania Dewi, Social Specialist
Penelope Ruth Ferguson, Environmental Specialist
Agustina Parwitosari, Environmental Specialist
D. Policies that might apply

<table>
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<th>Safeguard Policies</th>
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<th>Explanation (Optional)</th>
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<tr>
<td>Environmental Assessment OP/BP 4.01</td>
<td>Yes</td>
<td>The project is proposed to be Category FI because it involves investment of Bank funds through a financial intermediary, in establishing a resource risk mitigation facility. The 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.</td>
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<td>Exploration 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; and (vi) production, handling, storage and disposal of drilling mud and fluids during the exploration phase; (vii) production, storage and handling of brines, noise and visual impacts during the production phase.</td>
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<td>The ESMF will provide three stages of screening: (1) desk review of the long list of potential sites to exclude non-starters such as sites within biodiversity reserves. This will include screening of sub-projects that might affect directly or indirectly any sensitive area, including protected areas, buffer zones, non-</td>
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protected critical area; (2) document review/field reconnaissance to identify any fatal flaws in sites proposed for further consideration, such as no way to evacuate power except through a protected area; and (3) screening to determine what level of environmental assessment should be prepared for a site where exploration is planned. This will include the preparation of a Cumulative Impact Assessment to be carried out by the Facility as part of the TA component. The ESMF will include model terms of reference for ESIs and ESMPs, in addition to providing for a detailed compliance framework for monitoring, supervision, auditing and reporting environmental and social issues during construction. The ESMF will also include the mitigation hierarchy for addressing impacts on Natural habitats. In addition to assessment of exploration impacts, ESIs and ESMPs will identify the key potential impacts of site development and operation along with mitigation requirements and approximate costs, as this information will be relevant to the decision whether or not to explore.

OP 4.01 and the other policies triggered are also triggered for the technical assistance on regulations for geothermal energy development to ensure that proposed regulatory reforms: (i) do not result in consequences inconsistent with the requirements and principles of Bank safeguards policies; (ii) do incorporate those principles as well as the requirements of Indonesian laws and regulations; and (iii) are exposed to stakeholders including environmental, civil society, and indigenous peoples organizations. 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 Bank will review and approve the TORs for TA activities. The ESMF will provide 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.
<table>
<thead>
<tr>
<th>Performance Standards for Private Sector Activities OP/BP 4.03</th>
<th>No</th>
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<tbody>
<tr>
<td>The WBG EHS Guidelines will apply to the project, both the general guidelines and those for geothermal power generation.</td>
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<tr>
<td>Performance Standards for Private Sector Activities OP/BP 4.03</td>
<td>No</td>
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<tr>
<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>Natural Habitats OP/BP 4.04</td>
<td>Yes</td>
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<tr>
<td>Development adds further drilling, construction of above-ground steam-gathering systems and brine storage and reinjection systems, workshops, power plants and power transmission lines. The impacts of exploration will be assessed in ESIsAs as described under OP 4.01 above. The ESIsAs will also consider the key potential impacts of development (exploitation) in order to inform decision-makers, prior to the decision to explore. Degradation of critical natural habitat will be avoided. This policy is also triggered for the technical assistance component as explained under OP 4.01 above.</td>
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<tr>
<td>Forests OP/BP 4.36</td>
<td>Yes</td>
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<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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<td>Pest Management OP 4.09</td>
<td>No</td>
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<tr>
<td>The project does not involve pest management.</td>
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<tr>
<td>Physical Cultural Resources OP/BP 4.11</td>
<td>Yes</td>
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<tr>
<td>It is likely that PCR will be found near some exploration projects. In some cases, in Indonesia, the manifestation of geothermal energy have themselves been considered sacred by local communities. This policy is also triggered for the technical assistance component as explained under OP 4.01 above.</td>
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<tr>
<td>The environmental screening procedure in the ESMF will ensure the Project will not adversely affect sites having archeological, paleontological, historical,</td>
<td></td>
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<tr>
<td>Topic</td>
<td>Yes/No</td>
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<tr>
<td>Indigenous Peoples OP/BP 4.10</td>
<td>Yes</td>
</tr>
<tr>
<td>Involuntary Resettlement OP/BP 4.12</td>
<td>Yes</td>
</tr>
</tbody>
</table>

For each topic, the following actions are proposed:

- **Indigenous Peoples OP/BP 4.10**: The project is national in scope and the possibility exists that sites considered for exploration will be on lands of indigenous peoples and, in such situations the project activities would have impacts on the local indigenous communities, including both positive and negative impacts. The project follows a programmatic approach and the subprojects will be proposed and selected only during implementation. Therefore an Indigenous Peoples Planning Framework (IPPF) is proposed to be prepared in line with relevant government laws, policies and World Bank OP 4.10 on Indigenous Peoples prior to the project appraisal. Indigenous peoples plans (IPP) will be required to be prepared for subprojects in line with the IPPF when they are identified during project implementation. The IPPF will be prepared based on assessment of the potential project impacts and risks concerning indigenous peoples in the geothermal development sector, and a social assessment related to indigenous peoples in Indonesia, covering the socioeconomic aspects of indigenous peoples, such as their demographics, history, social cultural life, land tenure and livelihoods, institutional and governance system as well as the country’s legal policy framework and government systems related to indigenous peoples. There is no subproject identified during project preparation. The IPPF will lay out the requirements and planning steps for IPP preparation under identified subprojects during implementation. It will define the procedure to be followed in determining whether indigenous peoples are present in the project area, describe the principles and guidelines for preparing Indigenous Peoples Plan (IPP) for subprojects affecting indigenous peoples. The IPPF will be incorporated in the ESMF document.

- **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) will be 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 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 will lay 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 will be incorporated in the ESMF.

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<th>E. Safeguard Preparation Plan</th>
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Tentative target date for preparing the Appraisal Stage PID/ISDS

May 30, 2018

Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal Stage PID/ISDS

The draft ESMF, LARPf and IPPF were prepared and disclosed in March 2018. A Social Assessment and national-level consultations with Government Ministries and NGO’s will inform the preparation of the final ESMF, LARPf and IPPF, due May 25, 2018.

The safeguards capacity of PT SMI to implement the GREM will be assessed during the May 2018 Preparation Mission and a memo prepared on the suitability and any gap filling, by May 25, 2018.
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