

Second-Party Opinion Pertamina Geothermal Energy Green Financing Framework



Evaluation Summary

Sustainalytics is of the opinion that the Pertamina Geothermal Energy Green Financing Framework is credible and impactful and aligns with the four core components of the Green Bond Principles 2021, Green Loan Principles 2021 and ASEAN Green Bond Standards 2018. This assessment is based on the following:



USE OF PROCEEDS The eligible category for the use of proceeds, Renewable Energy, is aligned with those recognized by the Green Bond Principles, Green Loan Principles, and ASEAN Green Bond Standards. Sustainalytics considers that investments in the eligible category are expected to support the clean energy transition in Indonesia and advance the UN Sustainable Development Goals, specifically SDG 7 and 9.



PROJECT EVALUATION / SELECTION PGE has established the Green Finance Committee (GFC), which comprises of senior representatives from several departments to oversee the project evaluation and selection process. PGE has processes in place to identify and mitigate common environmental and social risks associated with the eligible projects, which are applicable to all allocation decisions made under the Framework. Sustainalytics considers these risk management systems to be adequate and the project selection process to be in line with market practice.



MANAGEMENT OF PROCEEDS PGE's treasury department will oversee the management of proceeds. The allocation process will be tracked using a green financing transactions register. PGE intends to fully allocate net proceeds within 24 months following the date of receipt and unallocated proceeds will be temporarily held in cash or cash equivalents. This is in line with market practice.



REPORTING PGE intends to report on the allocation and impact of eligible projects on an annual basis until full allocation via a publicly available report on its website. Allocation reporting may include the list and description of eligible expenditures with their respective allocated amounts, the share of financing versus refinancing and balance of unallocated proceeds. Impact reporting may include environmental impact indicators and project examples where feasible. Sustainalytics views the allocation and impact reporting as aligned with market practice.

Evaluation date August 9, 2022

Issuer Location Jakarta, Indonesia

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Alignment with the ASEAN Green Bond Standards 2018

The ASEAN Green Bond Standards 2018 provide guidance to issuers and communicate more specifically on what issuers should do to issue credible green bonds in ASEAN countries. Sustainalytics is of the opinion that the green categories under the Framework are aligned with the ASEAN Green Bond Standards 2018.

Introduction

PT Pertamina Geothermal Energy (“PGE” or the “Company”) is an Indonesian pure-play geothermal energy company and an affiliate of PT Pertamina (Persero), Indonesia’s largest state-owned oil and gas company. Established in 2006, PGE is a geothermal energy producer in Indonesia, accounting for 82% of the country’s geothermal installed capacity (from both its own and joint operations contracts) as of December 2021.

PGE has developed the Pertamina Geothermal Energy Green Financing Framework (the “Framework”) under which it intends to issue green bonds, loans and sukuk and use the proceeds to finance or refinance, in whole or in part, existing and future projects aimed at supporting the clean energy transition in Indonesia. The Framework defines eligibility criteria in one area:

1. Renewable Energy

PGE engaged Sustainalytics to review the Framework, dated May 2022, and provide a Second-Party Opinion on the Framework’s environmental credentials and its alignment with the Green Bond Principles 2021 (GBP),¹ Green Loan Principles 2021 (GLP)² and ASEAN Green Bond Standards 2018 (ASEAN GBS).³ This Framework will be published in a separate document.⁴

Scope of work and limitations of Sustainalytics’ Second-Party Opinion

Sustainalytics’ Second-Party Opinion reflects Sustainalytics’ independent⁵ opinion on the alignment of the reviewed Framework with current market standards and the extent to which the eligible project categories are credible and impactful.

As part of the Second-Party Opinion, Sustainalytics assessed the following:

- The Framework’s alignment with the Green Bond Principles 2021, as administered by ICMA, the Green Loan Principles 2021, as administered by LMA, APLMA and LSTA and the ASEAN Green Bond Standards 2018 as administered by ACMF;
- The credibility and anticipated positive impacts of the use of proceeds; and
- The alignment of the issuer’s sustainability strategy and performance and sustainability risk management in relation to the use of proceeds.

For the use of proceeds assessment, Sustainalytics relied on its internal taxonomy, version 1.11, which is informed by market practice and Sustainalytics’ expertise as an ESG research provider.

As part of this engagement, Sustainalytics held conversations with various members of PGE’s management team to understand the sustainability impact of their business processes and planned use of proceeds, as well as management of proceeds and reporting aspects of the Framework. PGE representatives have confirmed that: (1) they understand it is the sole responsibility of PGE to ensure that the information provided is complete, accurate or up to date; (2) they have provided Sustainalytics with all relevant information; and (3) any provided material information has been duly disclosed in a timely manner. Sustainalytics also reviewed relevant public documents and non-public information. This document contains Sustainalytics’ opinion of the Framework and should be read in conjunction with that Framework.

Any update of the present Second-Party Opinion will be conducted according to the agreed engagement conditions between Sustainalytics and PGE.

Sustainalytics’ Second-Party Opinion, while reflecting on the alignment of the Framework with market standards, is no guarantee of alignment nor warrants any alignment with future versions of relevant market standards. Furthermore, Sustainalytics’ Second-Party Opinion addresses the anticipated impacts of eligible projects expected to be financed with bond and loan proceeds, but does not measure the actual impact. The

¹ The Green Bond Principles are administered by the International Capital Market Association and are available at: <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>.

² The Green Loan Principles are administered by the Loan Market Association, Asia Pacific Loan Market Association and Loan Syndications & Trading Association and are available at: <https://www.lsta.org/content/green-loan-principles/>

³ The ASEAN Green Bond Standards are administered by the ASEAN Capital Markets Forum and are available at: <https://www.theacmf.org/initiatives/sustainable-finance/asean-green-bond-standards>.

⁴ The Pertamina Geothermal Energy Green Financing Framework will be available on PGE’s website at: <https://www.pge.pertamina.com/>

⁵ When operating multiple lines of business that serve a variety of client types, objective research is a cornerstone of Sustainalytics and ensuring analyst independence is paramount to producing objective, actionable research. Sustainalytics has therefore put in place a robust conflict management framework that specifically addresses the need for analyst independence, consistency of process, structural separation of commercial and research (and engagement) teams, data protection and systems separation. Last but not the least, analyst compensation is not directly tied to specific commercial outcomes. One of Sustainalytics’ hallmarks is integrity, another is transparency.

measurement and reporting of the impact achieved through projects financed under the Framework is the responsibility of the Framework owner. Upon twenty-four (24) months following the evaluation date set stated herein, PGE is encouraged to update the Framework, if necessary, and seek an update to the Second-Party Opinion to ensure ongoing alignment of the Framework with market standards and expectations.

In addition, the Second-Party Opinion opines on the potential allocation of proceeds, but does not guarantee the realized allocation of the bond and loan proceeds towards eligible activities.

No information provided by Sustainalytics under the present Second-Party Opinion shall be considered as being a statement, representation, warrant or argument, either in favour or against, the truthfulness, reliability or completeness of any facts or statements and related surrounding circumstances that PGE has made available to Sustainalytics for the purpose of this Second-Party Opinion.

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Pertamina Geothermal Energy Green Financing Framework

Sustainalytics is of the opinion that the Pertamina Geothermal Energy Green Financing Framework is credible and impactful, and aligns with the four core components of the GBP, GLP and ASEAN GBS. Sustainalytics highlights the following elements of the Framework:

- Use of Proceeds
 - The eligible category, Renewable Energy, is aligned with those recognized by the GBP, GLP and ASEAN GBS. Sustainalytics notes that the proceeds from the instruments issued under the Framework are expected to contribute to emissions reductions and facilitate the transition to a low-carbon economy in Indonesia.
 - PGE intends to use part of the proceeds for project-based lending and equity investments into its pure-play subsidiaries. PGE defines pure-play companies as those that derive at least 90% of their revenue from green activities, as defined under the Framework. Sustainalytics recognizes that the GBP and GLP prefer project-based lending and financing, which provide more transparency in general than non-project-based financing, but notes that financing pure-play companies through green bonds, loans and sukus is commonly accepted in the market as an approach that can generate positive impact.
 - While PGE has not established a look-back period for capital expenditures, PGE has established a 36-month look-back period for its refinancing of operating expenditures, which Sustainalytics considers to be in line with market practice.
 - Under the Renewable Energy category, PGE intends to finance or refinance the construction, operation and transmission of geothermal energy projects. This may include the following:
 - Geothermal power plants with direct emissions below 100 gCO₂/kWh;
 - Supporting activities such as steam supply and generation and procurement of service and materials such as geothermal expert services; and
 - Transmission and supporting infrastructure dedicated to connecting renewables to the power grid.
 Sustainalytics considers the above activities to be aligned with market practice.
 - PGE may also finance or refinance site exploration. PGE has confirmed with Sustainalytics that expenditures related to site explorations will be limited to 30% of total proceeds for any financing transactions undertaken with its Framework. Sustainalytics notes that site exploration is an essential process linked to the feasibility of geothermal power plants; however, it does not always guarantee direct environmental impact. As such, Sustainalytics further encourages PGE to limit the financing of site exploration expenditures under the Framework to no more than 10% of the net proceeds.
 - The Framework provides exclusionary criteria prohibiting the use of proceeds to finance projects or expenditures associated with oil and gas power plants, coal and nuclear. Sustainalytics views the exclusion of these activities as strengthening the Framework.
- Project Evaluation and Selection
 - PGE has established the Green Finance Committee (GFC) to oversee the project evaluation and selection process. The GFC consists of PGE's Chief Financial Officer, Vice President of Treasury,

- Corporate Secretary, and Vice Presidents of the Business Development and ESG strategy teams. Additional members may be appointed to the GFC based on the recommendations of existing committee members, subject to approval by PGE's board of directors.
- The GFC will be responsible for evaluating, selecting and approving eligible projects according to the Framework's eligibility criteria.
 - PGE has processes in place to identify and manage environmental and social risks commonly associated with the eligible projects, which is applicable to all allocation decisions made under the Framework. Sustainalytics considers these environmental and social risk management systems to be adequate. For further details, please refer to Section 2.
 - Based on the presence of a dedicated committee with cross-functional expertise and the presence of risk management systems, Sustainalytics considers this process to be in line with market practice.
- **Management of Proceeds**
 - PGE's treasury department will oversee the management of proceeds. The allocation of proceeds will be tracked using a green financing transactions register.
 - PGE commits to fully allocating net proceeds within 24 months from the date of receipt. Pending full allocation, unallocated proceeds will be temporarily held in cash or cash equivalents. PGE will communicate to investors of a contingency plan within 3 months from the expiry of the end of the disbursement period, in the event where the Company requires additional time beyond the disbursement period to fully allocate the net proceeds.
 - Based on the management of proceeds, disclosure of temporary proceeds and allocation period, Sustainalytics considers this process to be in line with market practice.
 - **Reporting**
 - PGE intends to report on the allocation and impact of eligible projects on an annual basis until full allocation via a Green Financing Impact Report (GFIR). The GFIR will be made publicly available on the Company's website and disseminated to investors.
 - Allocation reporting may include the list and description of eligible expenditures with their respective allocated amounts, the breakdown of eligible projects according to the component being financed (e.g. assets or capital expenditures), share of financing versus refinancing and balance of unallocated proceeds and its temporary treatment.
 - Impact reporting may include environmental impact indicators and project examples where feasible, as well as information on its data reporting and impact assessment methodologies. Examples of environmental impact indicators include annual GHG emissions avoided or reduced (tCO₂e), annual GHG emissions emitted by the geothermal power plants (tCO₂e), annual geothermal power generation (GWh) and the capacity of geothermal plants (MW).
 - Based on PGE's commitment to allocation and impact reporting on an annual basis, Sustainalytics considers this process to be in line with market best practice.

Alignment with ASEAN Green Bond Standards 2018

The ASEAN Green Bond Standards 2018 provide guidance to issuers and communicate more specifically about what issuers should do to issue credible green bonds in ASEAN countries. Sustainalytics is of the opinion that the eligible green project category under the Pertamina Geothermal Energy Green Financing Framework aligns with the ASEAN GBS. For detailed information, please refer to Appendix 1: Alignment with ASEAN Green Bond Standards 2018.

Alignment with Green Bond Principles 2021 and Green Loan Principles 2021

Sustainalytics has determined that the Pertamina Geothermal Energy Green Financing Framework aligns to the four core components of the GBP and GLP. For detailed information, please refer to Appendix 2: Green Bond/Green Bond Programme External Review Form.

Section 2: Sustainability Strategy of PGE

Contribution of the Framework to PGE's sustainability strategy

PGE adopts its holding company's, PT Pertamina (Persero) ("Pertamina"), sustainability strategies and policies. Therefore, Sustainalytics focuses on Pertamina's sustainability targets and practices in the following section.

Pertamina has established a 2030 Decarbonization Roadmap, which outlines its commitment to a 30% reduction in scope 1 and 2 GHG emissions by 2030 from a 2010 baseline.⁶ To achieve this target, Pertamina aims to raise the share of renewable energy in its business portfolio from 1% in 2021 to 17% by 2030⁷ and commits to allocating 14% of its capital expenditure in support of this ambition.⁸ Renewable energy technologies that will make up this portfolio include geothermal, hydrogen, bioenergy and energy storage systems. In addition to investing in renewables, Pertamina has initiated several emissions reductions and energy efficiency initiatives, including waste heat recovery, steam reduction optimization and implementation of low nitrogen oxide technologies. These initiatives have resulted in 1.8 million MWh in energy savings in 2021 and a cumulative 7.4 million tCO₂e in emissions reductions between 2010 and 2021.⁹ Being close to reaching its 2030 target of a 30% reduction having achieved approximately 29% in emissions reductions at the end of 2021, Pertamina recently announced the intention of raising its ambition to achieve around 38% in emissions reductions by 2030.¹⁰

PGE contributes to Pertamina's emissions reduction and renewable energy target by enabling the expansion of geothermal capacity to a target of 1,128 MW by 2025¹¹ and 2,745 MW by 2030.¹² To meet the geothermal capacity target, PGE intends to expand its installed capacity by up to 600 MW over the next five years.¹³

Sustainalytics is of the opinion that the Pertamina Geothermal Energy Green Financing Framework is aligned with Pertamina's overall sustainability strategy and initiatives and will further its holding company's action on its key environmental priorities.

Approach to managing environmental and social risks associated with the projects

Sustainalytics recognizes that the net proceeds from the bonds, loans and sukus issued under the Framework will be directed towards eligible renewable energy projects that are expected to have positive environmental impact. However, Sustainalytics is aware that such eligible projects could also lead to negative environmental and social outcomes. Some key environmental and social risks possibly associated with the eligible projects could include occupational health and safety, community relations and stakeholder participation, land use and biodiversity issues associated with large-scale infrastructure development, and emissions, effluents and waste generated in construction.

Sustainalytics is of the opinion that PGE is able to manage or mitigate potential risks through implementation of the following policies and procedures of its holding company, Pertamina:

- To manage occupational health and safety risks, Pertamina has established a Health, Safety, Security and Environment (HSSE) Policy¹⁴ in accordance with the ISO 45001:2018 standard.^{15,16} As part of this policy, employees are required to commit to preventing and managing HSSE accidents throughout the workplace by adopting safety process controls, ensuring preparedness of emergency and crisis responses systems, and conducting incident investigation and learning to prevent future incidents from occurring. Additionally, the Policy requires the implementation of a HSSE management system, which encourages the continuous monitoring, evaluation and improvement of HSSE performance.
- Regarding community relations and stakeholder participation risks, PGE adopts Pertamina's Sustainability Policy¹⁷ and Human Rights Policy,¹⁸ which details the Company's commitment to protecting and respecting the rights of local communities and Indigenous Peoples in the areas where the Company operates. Under these policies, PGE is committed to: (i) conducting stakeholder

⁶ Pertamina, "Sustainability Report 2021", available at: https://www.pertamina.com///Media/File/Pertamina_Sustainability_Report_2021.pdf

⁷ Pertamina, "Ready for Transition, Pertamina Continues to Grow New Renewable Energy", (2021), available at: <https://www.pertamina.com/en/news-room/news-release/ready-for-transition-pertamina-continues-to-grow-new-renewable-energy>

⁸ Pertamina, "Pertamina's Commitment to Sustainability Programs", (2022), available at: <https://pertamina.com/en/news-room/energia-news/pertamina.s-commitment-to-sustainability-programs>

⁹ Pertamina, "Sustainability Report 2021", available at: https://www.pertamina.com///Media/File/Pertamina_Sustainability_Report_2021.pdf

¹⁰ Pertamina, "Pertamina's Commitment to Sustainability Programs", (2022), available at: <https://pertamina.com/en/news-room/energia-news/pertamina.s-commitment-to-sustainability-programs>

¹¹ Pertamina, "Sustainability Report 2021", available at: https://www.pertamina.com///Media/File/Pertamina_Sustainability_Report_2021.pdf

¹² Pertamina, "Ready for Transition, Pertamina Continues to Grow New Renewable Energy", (2021), available at: <https://www.pertamina.com/en/news-room/news-release/ready-for-transition-pertamina-continues-to-grow-new-renewable-energy>

¹³ Based on the Pertamina Geothermal Energy Green Financing Framework.

¹⁴ Pertamina, "Health, Safety, Security and Environment Policy", (2021), available at: <https://www.pertamina.com/Media/File/HSSE%20Policy%20Signed%20%5bENG%20&%20IND%5d.pdf>

¹⁵ The ISO 45001 specifies requirements for an Occupational Health and Safety management system, which enables organizations to provide safe and healthy workplaces by preventing work-related injury and ill health. More information at: <https://www.iso.org/standard/63787.html>

¹⁶ Pertamina, "Sustainability Report 2021", available at: https://www.pertamina.com///Media/File/Pertamina_Sustainability_Report_2021.pdf

¹⁷ Pertamina, "Sustainability Policy 2021", available at: https://www.pertamina.com///Media/File/Pertamina_Sustainability_Report_2021.pdf

¹⁸ Pertamina, "Human Rights Policy", (2021), available at: <https://www.pertamina.com/Media/File/Human%20Rights%20Policy%5bEN%5d.pdf>

consultations with local and surrounding communities on environmental and community involvement issues; (ii) respecting the rights of Indigenous Peoples by protecting culturally sensitive areas, avoiding their involuntary resettlement and maintaining their right to customary and social practices; and (iii) establishing a feedback and grievance redress mechanism for both internal and external stakeholders.

- To manage land use and biodiversity issues associated with large-scale infrastructure development, PGE is required to avoid operating in areas with high biodiversity value, establish an environmental management system that incorporates requirements to protect biodiversity, conserve natural resources, as well as rehabilitate and restore the land upon site closure.¹⁹ Furthermore, in compliance with Indonesia's Environmental Protection and Management law, PGE is required to conduct an environmental and social impact analysis (AMDAL) and establish an environmental management and monitoring programme (UKL-UPL) before the commencement of large-scale developments.²⁰ The AMDAL and UKL-UPL needs to be prepared by a certified consultant and approved by the Indonesian government and covers a wide range of aspects including impacts on the climate, landscape, water, flora and fauna, socio-economic conditions, community relations and waste management.
- PGE adopts additional policies to manage emissions, effluents and waste generated in construction, other than those imposed by Indonesia's Environmental Protection and Management law. Pertamina's HSSE Policy requires all employees to implement the waste management principles of reduce, reuse, recycle and recovery by practicing effluent discharge quality improvement and adequate hazardous and non-hazardous waste handling.²¹ Additionally, Pertamina is certified to the ISO 14001:2015²² and ISO 50001:2018²³ standards on Environmental Management System and Energy Management System, respectively,²⁴ which specifies the presence of robust processes that help to effectively mitigate the environmental impact of its business activities as well as efficiently reduce energy use.
- PGE's holding company Pertamina has faced controversies regarding offshore oil spills in the Java Sea in 2018 and 2019. However, PGE is a pure-play geothermal energy company and operates independently from its holding company. The incidents that have occurred are therefore not directly related to PGE and the use of proceeds under this Framework.

Based on these policies, standards and assessments, Sustainalytics is of the opinion that PGE has implemented adequate measures and is well-positioned to manage and mitigate environmental and social risks commonly associated with the eligible projects.

Section 3: Impact of Use of Proceeds

The use of proceeds category is aligned with those recognized by the GBP, GLP, and ASEAN GBS. Sustainalytics has focused below on where the impact is specifically relevant in the local context.

Importance of Promoting Renewable Energy in Indonesia

According to the International Energy Agency, Indonesia's energy consumption has been increasing by an average of 4.2% annually for the last 20 years, driven by a growing economy, rising middle class and urbanization.²⁵ Indonesia is one of the major coal producers and exporters globally²⁶ and has a high dependency on fossil fuel, which accounted for more than 80% of the country's energy mix in 2019.²⁷ Indonesia's National Energy Policy details its commitment to reducing petroleum use to 25% of its primary energy supply while raising the share of renewables in its energy mix to 23% by 2025 and at least 31% by 2050.²⁸ With renewables accounting for 12% of Indonesia's electricity mix in 2021 and the nation's electricity

¹⁹ Pertamina, "Sustainability Policy 2021", available at: https://www.pertamina.com///Media/File/Pertamina_Sustainability_Report_2021.pdf

²⁰ Republic of Indonesia, "Law of Republic of Indonesia No. 32 of 2009", (2009), available at: <https://www.fao.org/faolex/results/details/es/c/LEX-FAOC097643/>

²¹ Pertamina, "Health, Safety, Security and Environment Policy", (2021), available at: <https://www.pertamina.com/Media/File/HSSE%20Policy%20Signed%20%5bENG%20&%20IND%5d.pdf>

²² The ISO 14001 maps out a framework that a company or organization can follow to set up an effective environmental management system. More information at: <https://www.iso.org/iso-14001-environmental-management.html>

²³ The ISO 50001 is designed to support organizations and companies to set up an effective energy management system that helps to efficiently reduce energy use. More information at: <https://www.iso.org/iso-50001-energy-management.html>

²⁴ Pertamina, "Sustainability Report 2021", available at: https://www.pertamina.com///Media/File/Pertamina_Sustainability_Report_2021.pdf

²⁵ International Energy Agency, "Indonesia", (2019), at: <https://www.iea.org/countries/indonesia>

²⁶ Ibid.

²⁷ Asian Development Bank, "Indonesia Energy Sector Assessment, Strategy, and Road Map – Update", (2020), at: <http://dx.doi.org/10.22617/TCS200429>

²⁸ UNFCCC, "First Nationally Determined Contribution Republic of Indonesia", (2016), at: https://unfccc.int/sites/default/files/NDC/2022-06/First%20NDC%20Indonesia_submitted%20to%20UNFCCC%20Set_November%20%202016.pdf

demand forecasted to grow by 7% by 2027,²⁹ Indonesia needs to strengthen investments in the renewable energy sector to meet the targets outlined in the National Energy Policy. The country spent USD 1.51 billion on renewable energy in 2021, just 20% of what it needs to invest annually from 2021 to 2025 to reach the 23% renewable energy target mix by 2025.³⁰

Sustainalytics is of the opinion that PGE's financing of geothermal energy projects is expected to directly contribute to increasing the renewable energy capacity in Indonesia and thereby advance efforts in achieving Indonesia's national renewable energy targets.

Alignment with/contribution to SDGs

The Sustainable Development Goals (SDGs) were adopted in September 2015 by the United Nations General Assembly and form part of an agenda for achieving sustainable development by the year 2030. The green bonds, loans and sukus issued under the Pertamina Geothermal Energy Green Financing Framework are expected to advance the following SDGs and targets:

Use of Proceeds Category	SDG	SDG target
Renewable Energy	7. Affordable and Clean Energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.
	9. Industry, Innovation and Infrastructure	9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

Conclusion

PGE has developed the Pertamina Geothermal Energy Green Financing Framework under which it may issue green bonds, loans and sukus and use the proceeds to finance or refinance renewable energy projects. Sustainalytics considers that the geothermal energy projects funded by the green finance proceeds are expected to contribute to emissions reductions and facilitate the transition to a low-carbon economy in Indonesia.

The Pertamina Geothermal Energy Green Financing Framework outlines a process by which proceeds will be tracked, allocated, and managed, and commitments have been made for reporting on the allocation and impact of the use of proceeds. Furthermore, Sustainalytics believes that the Pertamina Geothermal Energy Green Financing Framework is aligned with the overall sustainability strategy of the Company and that the green use of proceeds category will contribute to the advancement of the UN Sustainable Development Goals 7 and 9. Additionally, Sustainalytics is of the opinion that PGE has adequate measures to identify, manage and mitigate environmental and social risks commonly associated with the eligible projects funded by the proceeds.

Based on the above, Sustainalytics is confident that Pertamina Geothermal Energy is well-positioned to issue green bonds, loans and sukus and that the Pertamina Geothermal Energy Green Financing Framework is robust, transparent, and in alignment with the four core components of the Green Bond Principles 2021, Green Loan Principles 2021 and ASEAN Green Bond Standards 2018.

²⁹ BP, "Statistical Review of World Energy", (2021), at: <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2021-full-report.pdf>

³⁰ International Institute for Sustainable Development, "Indonesia Must Quadruple its Annual Renewable Investment Target to Reach its Climate Objectives", (2022), at: <https://www.iisd.org/articles/indonesia-annual-renewable-investment-target>

Appendices

Appendix 1: Alignment to the ASEAN Green Bond Standards 2018 (ASEAN GBS)

ASEAN GBS Criteria	Alignment with the	
	ASEAN GBS	Sustainalytics' comments on alignment with the ASEAN GBS
Eligibility	Yes	The ASEAN GBS requires that issuers must be in or that the proceeds be directed to assets in an ASEAN country. PGE qualifies given that PGE intends to finance or refinance projects in Indonesia.
Use of Proceeds	Yes	The ASEAN GBS offers specific clarification that fossil fuel power generation projects are excluded. PGE has confirmed this exclusion criteria in the Framework.
Process for Project Evaluation and Selection	Yes	The ASEAN GBS specifies information that must be clearly communicated to investors before issuance regarding project selection. The PGE's Green Finance Committee, which comprises of senior representatives from several departments, is responsible for reviewing, selecting and approving eligible assets under the Framework.
Management of Proceeds	Yes	The ASEAN GBS mandates that proceeds must be appropriately tracked and that temporary investments be disclosed. Within the Framework, PGE disclosed that it will track and monitor the eligible instruments using a green financing transactions register. Unallocated proceeds will be held as cash or cash equivalents.
Reporting	Yes	The ASEAN GBS requires annual reporting on the allocation of funds and the expected impacts. PGE confirms that it will provide an annual allocation report until full allocation and report on the impact of the use of proceeds.
Annual Review	Yes	The ASEAN GBS encourages, but does not require, annual reviews. As of 2022, PGE does not intend to provide annual reviews.

Appendix 2: Green Bond / Green Bond Programme - External Review Form

Section 1. Basic Information

Issuer name:	Pertamina Geothermal Energy
Green Bond ISIN or Issuer Green Bond Framework Name, if applicable:	Pertamina Geothermal Energy Green Financing Framework
Review provider's name:	Sustainalytics
Completion date of this form:	August 9, 2022

Section 2. Review overview

SCOPE OF REVIEW

The following may be used or adapted, where appropriate, to summarise the scope of the review.

The review assessed the following elements and confirmed their alignment with the GBP:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Use of Proceeds | <input checked="" type="checkbox"/> Process for Project Evaluation and Selection |
| <input checked="" type="checkbox"/> Management of Proceeds | <input checked="" type="checkbox"/> Reporting |

ROLE(S) OF REVIEW PROVIDER

- | | |
|---|--|
| <input checked="" type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (please specify): | |

Note: In case of multiple reviews / different providers, please provide separate forms for each review.

EXECUTIVE SUMMARY OF REVIEW and/or LINK TO FULL REVIEW (if applicable)

Please refer to Evaluation Summary above.

Section 3. Detailed review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Overall comment on section (if applicable):

The eligible category for the use of proceeds, Renewable Energy, is aligned with those recognized by the Green Bond Principles, the Green Loan Principles, and ASEAN Green Bond Standards. Sustainalytics considers that investments in the eligible category are expected to support the clean energy transition in Indonesia and advance the UN Sustainable Development Goals, specifically SDG 7 and 9.

Use of proceeds categories as per GBP:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Renewable energy | <input type="checkbox"/> Energy efficiency |
| <input type="checkbox"/> Pollution prevention and control | <input type="checkbox"/> Environmentally sustainable management of living natural resources and land use |
| <input type="checkbox"/> Terrestrial and aquatic biodiversity conservation | <input type="checkbox"/> Clean transportation |
| <input type="checkbox"/> Sustainable water and wastewater management | <input type="checkbox"/> Climate change adaptation |
| <input type="checkbox"/> Eco-efficient and/or circular economy adapted products, production technologies and processes | <input type="checkbox"/> Green buildings |
| <input type="checkbox"/> Unknown at issuance but currently expected to conform with GBP categories, or other eligible areas not yet stated in GBP | <input type="checkbox"/> Other (please specify): |

If applicable please specify the environmental taxonomy, if other than GBP:

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section (if applicable):

PGE has established the Green Finance Committee (GFC) which comprises of senior representatives from several departments to oversee the project evaluation and selection process. PGE has processes in place to identify and mitigate common environmental and social risks associated with the eligible projects, which are applicable to all allocation decisions made under the Framework. Sustainalytics considers these risk management systems to be adequate and the project selection process to be in line with market practice.

Evaluation and selection

- | | |
|--|---|
| <input checked="" type="checkbox"/> Credentials on the issuer’s environmental sustainability objectives | <input type="checkbox"/> Documented process to determine that projects fit within defined categories |
| <input checked="" type="checkbox"/> Defined and transparent criteria for projects eligible for Green Bond proceeds | <input checked="" type="checkbox"/> Documented process to identify and manage potential ESG risks associated with the project |
| <input type="checkbox"/> Summary criteria for project evaluation and selection publicly available | <input type="checkbox"/> Other (please specify): |

Information on Responsibilities and Accountability

- Evaluation / Selection criteria subject to external advice or verification
- In-house assessment

Other (please specify):

3. MANAGEMENT OF PROCEEDS

Overall comment on section (if applicable):

PGE's treasury department will oversee the management of proceeds. The allocation process will be tracked using a green financing transactions register. PGE intends to fully allocate net proceeds within 24 months from the date of receipt and unallocated proceeds will be temporarily held in cash or cash equivalents. This is in line with market practice.

Tracking of proceeds:

- Green Bond proceeds segregated or tracked by the issuer in an appropriate manner
- Disclosure of intended types of temporary investment instruments for unallocated proceeds
- Other (please specify):

Additional disclosure:

- Allocations to future investments only
- Allocations to both existing and future investments
- Allocation to individual disbursements
- Allocation to a portfolio of disbursements
- Disclosure of portfolio balance of unallocated proceeds
- Other (please specify):

4. REPORTING

Overall comment on section (if applicable):

PGE intends to report on the allocation and impact of eligible projects on an annual basis until full allocation via a publicly available report on its website. Allocation reporting may include the list and description of eligible expenditures with their respective allocated amounts, the share of financing versus refinancing and balance of unallocated proceeds. Impact reporting may include environmental impact indicators and project examples where feasible. Sustainalytics views the allocation and impact reporting as aligned with market practice.

Use of proceeds reporting:

- Project-by-project
- On a project portfolio basis
- Linkage to individual bond(s)
- Other (please specify):

Information reported:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Allocated amounts | <input type="checkbox"/> Green Bond financed share of total investment |
|
 | |
| <input checked="" type="checkbox"/> Other (please specify): share of financing versus refinancing | |

Frequency:

- | | |
|--|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
|
 | |
| <input type="checkbox"/> Other (please specify): | |

Impact reporting:

- | | |
|--|--|
| <input type="checkbox"/> Project-by-project | <input checked="" type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other (please specify): |

Information reported (expected or ex-post):

- | | |
|---|---|
| <input checked="" type="checkbox"/> GHG Emissions / Savings | <input type="checkbox"/> Energy Savings |
| <input type="checkbox"/> Decrease in water use | <input checked="" type="checkbox"/> Other ESG indicators (please specify): Annual GHG emissions emitted by the geothermal power plant (tCO ₂ e), annual geothermal power generation (GWh), capacity of geothermal plant (MW) |

Frequency

- | | |
|--|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
|
 | |
| <input type="checkbox"/> Other (please specify): | |

Means of Disclosure

- | | |
|---|---|
| <input type="checkbox"/> Information published in financial report | <input type="checkbox"/> Information published in sustainability report |
| <input type="checkbox"/> Information published in ad hoc documents | <input checked="" type="checkbox"/> Other (please specify): PGE's website at: https://www.pge.pertamina.com/ |
| <input type="checkbox"/> Reporting reviewed (if yes, please specify which parts of the reporting are subject to external review): | |

Where appropriate, please specify name and date of publication in the useful links section.

USEFUL LINKS (e.g. to review provider methodology or credentials, to issuer's documentation, etc.)

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE

Type(s) of Review provided:

- | | |
|--|--|
| <input type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification / Audit | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (please specify): | |

Review provider(s):

Date of publication:

ABOUT ROLE(S) OF INDEPENDENT REVIEW PROVIDERS AS DEFINED BY THE GBP

- i. **Second-Party Opinion:** An institution with environmental expertise, that is independent from the issuer may issue a Second-Party Opinion. The institution should be independent from the issuer's adviser for its Green Bond framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second-Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.
- ii. **Verification:** An issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from Green Bond proceeds, statement of environmental impact or alignment of reporting with the GBP, may also be termed verification.
- iii. **Certification:** An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against a recognised external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.
- iv. **Green Bond Scoring/Rating:** An issuer can have its Green Bond, associated Green Bond framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialised research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the GBP, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.

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