

SECOND PARTY OPINION (SPO)

Sustainability Quality of the Issuer and Sustainable Finance Framework

PT Pertamina (Persero)

28 February 2024

VERIFICATION PARAMETERS

| | |
|-------------------------------------|--|
| Type(s) of instruments contemplated | <ul style="list-style-type: none">Use of Proceeds Financing Instruments |
| Relevant standards | <ul style="list-style-type: none">Green Bond as administered by ICMA (as of June 2021 with June 2022 Appendix 1)Green Loan as administered by LMA (as of February 2023)Climate Transition Finance Handbook as administered by ICMA (as of June 2023) |
| Scope of verification | <ul style="list-style-type: none">PT Pertamina (Persero) Sustainable Finance Framework (as of February 27, 2024)PT Pertamina (Persero) Eligibility Criteria (as of February 27, 2024) |
| Lifecycle | <ul style="list-style-type: none">Pre-issuance verification |
| Validity | <ul style="list-style-type: none">Valid as long as the cited Framework remains unchanged |

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SCOPE OF WORK

PT Pertamina (Persero) (“the Issuer”, “the Company”, or “Pertamina”) commissioned ISS Corporate Solutions (ISS-Corporate) to assist with its Use of Proceeds Financing Instruments by assessing four core elements to determine the sustainability quality of the instruments:

1. Pertamina’s Sustainable Finance Framework (as of February 27, 2024)– benchmarked against the International Capital Market Association's (ICMA) Green Bond Principles (GBP) and Loan Market Association (LMA) Green Loan Principles (GLP).
2. The Eligibility Criteria – whether the project categories contribute positively to the United Nations Sustainable Development Goals (UN SDGs) and how they perform against proprietary issuance-specific key performance indicators (KPIs) (See Annex 1).
3. Implementation of the ICMA Climate Transition Finance Handbook’s (CTFH) recommendations based on the publicly available information.
4. Linking the transaction(s) to Pertamina’s overall Environmental, Social, and Governance (ESG) profile – drawing on the issuance-specific Use of Proceeds (UoP) categories.

PERTAMINA’S BUSINESS OVERVIEW

PT Pertamina (Persero) engages in the exploration and production of oil and gas, in both upstream and downstream sectors. It is classified in the Integrated Oil & Gas industry, as per ISS ESG’s sector classification.

It operates through the following segments: Upstream, Refinery and Petrochemical, Commercial and Trading, Gas, Power and New & Renewable Energy, Integrated Marine Logistics, Financial and Services, and Holding. The company was founded on December 10, 1957 and is headquartered in Jakarta, Indonesia.

ASSESSMENT SUMMARY

| SPO SECTION | SUMMARY | EVALUATION ¹ |
|---|---|-------------------------|
| <p>Part I:</p> <p>Alignment with GBP and GLP</p> | <p>The Issuer has defined a formal concept for its Use of Proceeds Financing Instruments regarding use of proceeds, processes for project evaluation and selection, management of proceeds and reporting. This concept is in line with the ICMA GBP and LMA GLP.</p> <p><i>*Some categories (e.g., Emission Reduction, Transition in Shipping) are assessed as providing no clear environmental and/or social benefits according to our methodology (cf. part II of this report). However, it is acknowledged that those project categories are assessed as transition categories and aim at contributing to the Issuer's stated sustainability goals and overall decarbonization strategy.</i></p> | <p>Aligned*</p> |
| <p>Part II:</p> <p>Sustainability quality of the Eligibility Criteria</p> | <p>The Use of Proceeds Financing Instruments will (re)finance eligible asset categories which include:</p> <p>Green categories: Renewable Energy, Green Hydrogen, Transmission and Distribution Networks for Renewable and Low-carbon Gases, Green Buildings, Clean Transportation, Low-carbon Fuels and Environmentally Sustainable Management of Living Natural Resources and Land Use;</p> <p>Transition categories: Emission Reduction, and Transition in Shipping.</p> <p>Product and/or service-related use of proceeds categories² individually contribute to one or more of the following SDGs:</p> | <p>Positive</p> |

¹ The evaluation is based on Pertamina's Sustainable Finance Framework (January 2024 version) and on the ISS ESG Corporate Rating updated on June 11, 2023, and applicable at the SPO delivery date.

² Renewable Energy, Green Hydrogen, Low-carbon Fuels, Clean Transportation and Environmentally Sustainable Management of Living Natural Resources and Land Use

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| |  <p>Process-related use of proceeds categories ³ individually improve (i) the Issuer’s operational impacts and (ii) mitigate potential negative externalities of the Issuer’s sector on one or more of the following SDGs:</p>  <p>For certain criteria of Emission Reduction and Transition in Shipping ⁴ there is no evidence of an environmental contribution or of an improvement on the Issuer and/or end users’ potential negative externalities.</p> <p>The environmental and social risks associated with those use of proceeds categories are managed.</p> | |
| <p>Part III:</p> <p>Implementation of the ICMA CTFH</p> | <p>Implementation of the recommendations of the ICMA Climate Transition Finance Handbook, except for the provision of an independent technical review on (i) the alignment of both the short-term and long-term targets with science-based scenarios in line with the Paris Agreement and (ii) on the credibility of the Issuer’s strategy to reach the targets.</p> <p>The Issuer has a formal climate transition strategy that is relevant to the environmentally material aspects of its business model aimed at supporting the objective of the Paris Agreement. Pertamina provides detailed disclosure on the various elements of its climate strategy, including the link between governance and the implementation of this strategy. Additionally, Pertamina provides a detailed underlying</p> | |

³ Clean Transportation, Emission Reduction, Green Building, Transition in Shipping

⁴ NNI criteria for category mentioned including Emission Reduction Implementation of energy efficiency plans to our upstream and downstream processes such as: investments to monitor and mitigate methane and flaring emissions, Transition in Shipping Newbuilds targeting decarbonization by utilizing an alternative and/or low-carbon emission fuel source (LNG, bio- or electro-methane, hydrogen, bio-diesel, ammonia and other future commercially viable alternative low carbon fuel source technology), Transition in Shipping Investment in R&D, retrofitting, and vessel modifications, to advance the technical and/or operational efficiency of marine vessels allowing for lower emission intensity through the use of low or zero carbon fuels and/or advanced design and/or propulsion technology according to International Maritime Organization (IMO) such as hull cleaning to reduce drag; ▪ speed and routing optimization.

| | |
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| | <p>investment program and the types of investments it makes⁵ during the assessment, such information is only available for its investor instead of public. Pertamina has engaged a consultant to support its transition strategy and roadmap, also they appointed an independent third party verify the disclosure on its GHG emissions data for Scope 1, 2 and 3 (partially) and against with GRI standards. The Issuer has committed will continue the GHG emissions data in 2024 to ensure the data credibility. However, given there are currently no commonly established reference points available for benchmarking such targets in the oil and gas sector (e.g., the SBTi is currently unable to accept commitments or validate targets for companies in the oil and gas or fossil fuels sectors) and limited information are available on the alignment of Pertamina' targets with science based or not. Additionally, Pertamina has committed to achieving net-zero Scope 1 and 2 GHG emissions by 2060. Additionally, Pertamina plans to achieve a 23% reduction in absolute Scope 1 and 2 GHG emissions by 2025, amounting to approximately 9.1 million tons of CO₂e. By 2030, the Company aims for a 32% reduction in absolute Scope 1 and 2 GHG emissions from the BAU scenario, equating to around 21.4 million tons of CO₂e. This reduction is also referenced to the 2010 baseline emission and the 2021 re-calculated baseline emission calculation. However, based on the limited information provided, we are unable to assess whether Pertamina' current alignment follows a defined pathway to net-zero. It's worth highlighting the observed linkage between the planned eligibility criteria of the projects to be financed and the decarbonization efforts.</p> |
| <p>Part IV: Linking the transaction(s) to Pertamina's ESG profile</p> | <p>The key sustainability objectives and the rationale for issuing Use of Proceeds Financing Instruments are clearly described by the Issuer. The majority of the project categories considered are in line with the sustainability objectives of the Issuer.</p> <p>At the date of publication of the report and leveraging ISS ESG Research, no severe controversies have been identified.</p> |

Consistent with Issuer's sustainability strategy

⁵ Pertamina plans to allocate 15.3% of the total investment funds Capex (Capital Expenditure) to ESG-related projects by 2023 and increase this allocation to 29.04% by 2040, according to its sustainable finance framework. A more detailed breakdown of the CAPEX required for the new green/transition business (e.g. CCS/CCUS, Bioenergy, Hydrogen, Battery and EV, carbon business and renewable energy) is provided in the internal document titled "Final NZE Roadmap and Strategy," with a total estimated investment of around 120 billion USD.

SPO ASSESSMENT

PART I: ALIGNMENT WITH GREEN BOND PRINCIPLES AND GREEN LOAN PRINCIPLES.

This section evaluates the alignment of the Pertamina’s Sustainable Finance Framework (as of February 27, 2024) with the ICMA Green Bond Principles and LMA Green Loan Principles.

| GBP/GLP | ALIGNMENT | OPINION |
|----------------------------------|------------|---|
| <p>1. Use of Proceeds</p> | <p>✓ *</p> | <p>The Use of Proceeds description provided by Pertamina’s Sustainable Finance Framework is aligned with the Green Bond and Loan Principles.</p> <p>The Issuer’s green categories align with the project categories as proposed by the Green Bond and Loan Principles. Criteria are defined in a clear and transparent manner. Disclosure of an allocation period and commitment to report by either project individually or by category has been provided and environmental benefits are described, and quantified. The Issuer defines exclusion criteria for harmful projects categories.</p> <p>The Issuer defines a look-back period of 3 years, in line with best market practice.</p> <p><i>*Some categories (e.g., Emission Reduction, Transition in Shipping) are assessed as providing no clear environmental and/or social benefits according to our methodology (cf. part II of this report). However, it is acknowledged that those project categories are assessed as transition categories and aim at contributing to the Issuer’s stated sustainability goals and overall decarbonization strategy.</i></p> |

| | | |
|---|----------|---|
| <p>2. Process for Project Evaluation and Selection</p> | <p>✓</p> | <p>The Process for Project Evaluation and Selection description provided by Pertamina’s Sustainable Finance Framework is aligned with the Green Bond and Loan Principles.</p> <p>The project selection process is defined and structured in a congruous manner. ESG risks associated with the project categories are identified and managed through an appropriate process. Moreover, the projects selected show alignment with the sustainability strategy of the Issuer.</p> <p>The Issuer involves various stakeholders and clearly defines responsibilities in the process for project evaluation and selection and is transparent about it, which is in line with best market practice.</p> |
| <p>3. Management of Proceeds</p> | <p>✓</p> | <p>The Management of Proceeds provided by Pertamina’s Sustainable Finance Framework is aligned with the Green Bond and Loan Principles.</p> <p>The net proceeds collected will be equal to the amount allocated to eligible projects, with no exceptions. The net proceeds are tracked in an appropriate manner and attested in a formal internal process. The net proceeds are managed per instrument level i.e. bond by bond or loan by loan approach. Moreover, the Issuer discloses the temporary investment instruments for unallocated proceeds.</p> |
| <p>4. Reporting</p> | <p>✓</p> | <p>The allocation and impact reporting provided by Pertamina’s Sustainable Finance Framework is aligned with the Green Bond and Loan Principles.</p> <p>The Issuer commits to disclose the allocation of proceeds transparently and to report in an appropriate frequency. The reporting will be publicly available on the Issuer’s website.⁶ Pertamina explains that the level of expected reporting will be at project individually or</p> |

⁶ Pertamina, 2024, sustainability <https://pertamina.com/en/Sustainability>

| | | |
|--|--|---|
| | | <p>category level and the type of information that will be reported. Moreover, the Issuer commits to report annually, until the proceeds have been fully allocated.</p> <p>The Issuer is transparent on the level and information of the impact reporting, and defines its frequency, scope and duration, in line with best market practices. Moreover, the Issuer commits to get the allocation report audited by an external party, in line with best market practices.</p> |
|--|--|---|

PART II: SUSTAINABILITY QUALITY OF THE ELIGIBILITY CRITERIA

A. CONTRIBUTION OF THE USE OF PROCEEDS FINANCING INSTRUMENTS TO THE UN SDGs⁷

Companies can contribute to the achievement of the SDGs by providing specific services/products which help address global sustainability challenges, and by being responsible corporate actors, working to minimize negative externalities in their operations along the entire value chain. The aim of this section is to assess the SDG impact of the UoP categories financed by the Issuer in two different ways, depending on whether the proceeds are used to (re)finance:

- specific products/services,
- improvements of operational performance.

1. Products and services

The assessment of UoP categories for (re)financing products and services is based on a variety of internal and external sources, such as the ISS ESG SDG Solutions Assessment (SDGA), a proprietary methodology designed to assess the impact of an Issuer's products or services on the UN SDGs, as well as other ESG benchmarks (the EU Taxonomy Climate Delegated Acts, the ICMA Green and/or Social Bond Principles and other regional taxonomies, standards and sustainability criteria).

The assessment of UoP categories for (re)financing specific products and services is displayed on a 3-point scale (see Annex 1 for methodology):



Each of the Use of Proceeds Financing Instruments Use of Proceeds categories has been assessed for its contribution to, or obstruction of, the SDGs:

| USE OF PROCEEDS (PRODUCTS/SERVICES) | CONTRIBUTION OR OBSTRUCTION | SUSTAINABLE DEVELOPMENT GOALS |
|---|-----------------------------|---|
| <p>Renewable Energy</p> <p><i>Expenditures and costs associated to the construction, development, acquisition, maintenance and production of renewable energy:</i></p> | <p>Contribution</p> |   |

⁷ The impact of the UoP categories on UN Social Development Goals is assessed with proprietary methodology and may therefore differ from the Issuer's description in the framework.

- *Solar PV and CSP power*
- *Onshore and offshore wind power*
- *Geothermal facilities with lifecycle GHG emissions below 100gCO₂e/kWh*
- *Hydropower which either (i) are run-of-river without reservoir, (ii) have a power density above 5W/m²⁸ or (iii) have lifecycle GHG emissions below 100gCO₂e/kWh*
- *Bioenergy using eligible feedstock⁹ which including waste and residues from POME (Palm Oil Mill Effluent) produced from liquid waste of the palm oil plantation, woodchip (sawmill and forest residues) and Empty Fruit Bunch (EFB)*

Renewable Energy

Transmission, distribution and storage infrastructures directly connected to eligible renewable energy facilities

Contribution



Green Hydrogen

Production, storage and transport of green hydrogen produced with lifecycle GHG emissions below 3tCO₂e/tH₂ including

Contribution



⁸ Pertamina confirm the size of Hydropower is no more than 1000 MW.

⁹ Pertamina has defined the enabling feedstock at least 80% of GHG emissions savings according to Annex VI to Directive (EU) 2018/2001: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001>, also not be using first generation as feedstock

electrolysis using low-carbon electricity¹⁰(e.g. Geothermal)

Transmission and distribution networks for renewable and low-carbon gases

- *Construction or operation of new transmission and distribution networks dedicated to hydrogen or other low-carbon gases;*
- *Conversion/repurposing of existing natural gas networks to 100% hydrogen;*
- *Retrofit of gas transmission and distribution networks that enables the integration of hydrogen and other low-carbon gases in the network, including any gas transmission or distribution network activity that enables the increase of the blend of hydrogen or other low carbon gases in the gas system*

Contribution



Clean Transportation

- *Charging infrastructure or battery swapping station for electric vehicles*

Contribution



¹⁰ Pertamina confirms that it complies with life-cycle GHG emissions savings that are calculated using the methodology referred to in Article 28(5) of Directive (EU) 2018/2001 or, alternatively, using ISO 14067:2018119 or ISO 14064- 1:2018120. The life-cycle GHG emission saving has been verified by an independent third party, which is SGS, as stated in the Sustainability Report 2022. Similarly, Pertamina will engage an external independent party to verify the alignment with the stated Directive as per the criteria in the FW

Clean Transportation

- *Purchasing the Zero-emissions passenger cars and Manufacturing light commercial vehicles components including batteries*

Contribution



Low-carbon Fuels

Production, distribution and refining of biofuels: Biofuels and biogas from biological origin, compliant with the sustainability and greenhouse gas emissions savings criteria laid down Article 29 of the EU renewable Energy Directive (2018/2001/EU)

e.g. Used Cooking oil¹¹

Contribution



Environmentally sustainable management of living natural resources and land use¹²

- *Rehabilitation and restoration of natural forest with detailed forest management plan*
- *Project to protect and increase primary natural habits in Indonesia*

Contribution



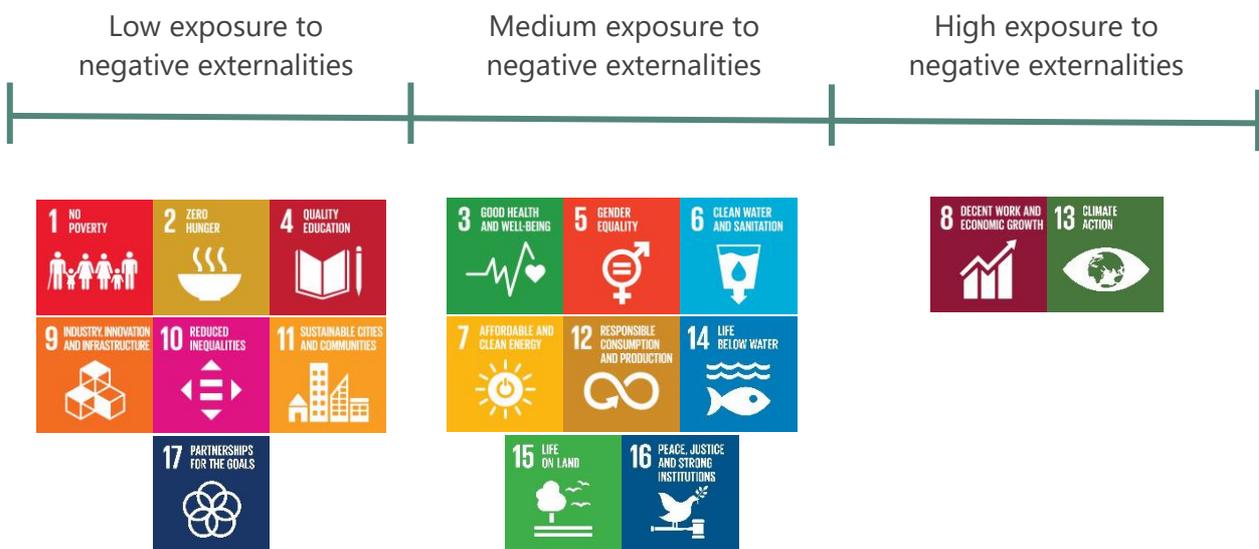
¹¹ This assessment is limited on the provided example – used cooking oil only. In addition, Pertamina will engage an external independent party to verify the alignment with the stated Directive as per the criteria in the Framework

¹² Pertamina is only covering the additionality portion and not to restore portion due to operational impact.

2. Improvements of operational performance (processes)

The below assessment aims at qualifying the direction of change (or “operational impact improvement”) resulting from the operational performance projects (re)financed by the UoP categories, as well as related UN SDGs impacted. The assessment displays how the UoP categories are mitigating the exposure to the negative externalities relevant to the business model and the sector of the Issuer.

According to ISS ESG SDG Impact Rating methodology, potential impacts on the SDGs related to negative operational externalities¹³ in the Integrated Oil & Gas (to which Pertamina belongs) are the following:



The table below aims at displaying the direction of change resulting from the operational performance improvement projects. The outcome displayed does not correspond to an absolute or net assessment of the operational performance.

| USE OF PROCEEDS (PROCESSES) | OPERATIONAL IMPACT IMPROVEMENT ¹⁴ | SUSTAINABLE DEVELOPMENT GOALS |
|--|--|---|
| <p>Clean Transportation</p> <p><i>Purchasing of Zero-emissions passenger cars and light commercial vehicles</i></p> | <p>✓</p> |  |

¹³ Please, note that the impact of the Issuer’s products and services resulting from operations and processes is displayed in section 3 of the SPO.

¹⁴ Limited information is available on the scale of the improvement as no threshold is provided. Only the direction of change is displayed.

Green Buildings

New development and existing buildings that will receive any one of the following certification systems ¹⁵:

- *LEED® (Leadership in Energy and Environmental Design): Minimum certification of Gold or above*
- *BREEAM (Building Research Establishment Environmental Assessment Method): Minimum Very Good or above*
- *Singapore Building and Construction Authority (BCA) Green Mark: Minimum certification of GoldPLUS or above;*

✓



Emission reduction

Implementation of energy efficiency plans to our upstream and downstream processes such as: investments to monitor and mitigate methane and flaring emissions

16

Emission reduction

Development, construction, installation and maintenance of projects of capture and storage of CO₂

✓



Transition in Shipping

Investment into ballast or reverse osmosis water treatment equipment to be installed on vessels¹⁷

✓



¹⁵ The assessment is limited to the certifications listed in the Framework

¹⁶ In the Upstream business, gas replaces kerosene in supply chains, supporting Indonesian government programs in Prabumulih and Tarakan. It's also commercialized in Tambun and Subang. In Downstream, gas substitutes diesel, contributing to the ecosystem. Hence, according to ISS-Corporate methodology, projects financed are assessed as No Net Impact where categories are assessed, and it does not have any impact on any SDGs and has no clear environmental and/or social benefits. However, it is acknowledged that those project categories are assessed as transition categories and aim at contributing to the Issuer's stated sustainability goals and overall decarbonization strategy.

¹⁷ The aim of these projects is to protect the maritime environment from the spread of foreign species or dangerous aquatic organisms and pathogens due to the discharge of ballast water from the vessel. Using reverse osmosis, Pertamina can process sea water/waste to be reused. Therefore, it can reduce in terms of fetching clean water on the land (preventing water stress and scarcity on the land)

Transition in Shipping

Newbuilds targeting decarbonization by utilizing an alternative and/or low-carbon emission fuel source exclusively¹⁸

- *bio- or electro-methane,*
- *Green hydrogen,*
- *Green ammonia*

✓



Transition in Shipping

Newbuilds targeting decarbonization by utilizing an alternative and/or low-carbon emission fuel source¹⁹

- *LNG,*
- *bio- or electro-methane,*
- *hydrogen,*
- *bio-diesel, ammonia*
- *or other future commercially viable alternative low carbon fuel source technology*

✓²⁰

Transition in Shipping

Investment in R&D, retrofitting, and vessel modifications, to advance the technical and/or operational efficiency of marine vessels allowing for lower emission intensity through the use of low or zero carbon fuels and/or advanced design and/or propulsion technology according to International Maritime Organization (IMO)²¹, such as

✓



¹⁸ Pertamina confirms that bio- or electro-methane feedstock does not compete with first-generation biomass.

¹⁹ This involves the utilization of LNG, bio- or electro-methane, hydrogen, bio-diesel, ammonia, or other future commercially viable alternative low-carbon fuel source technology. Currently not assessed by ISS-Corporate as green fuel, it may encompass dedicated and dual-fueled vessels, utilizing alternative fuel sources.

²⁰ Most of Pertamina's vessels are used to transport fossil fuels. However, in the future, we plan to transport low-carbon fuels such as ammonia, hydrogen, and CO₂. Hence, according to ISS-Corporate methodology, projects financed are assessed as No Net Impact where categories are assessed, and it does not have any impact on any SDGs and has no clear environmental and/or social benefits. However, it is acknowledged that those project categories are assessed as transition categories and aim at contributing to the Issuer's stated sustainability goals and overall decarbonization strategy.

²¹ Pertamina will ensure R&D is carried out aligned with the International Maritime Organization (IMO) roadmap in order to achieve the IMO NZE target by 2050.

SECOND PARTY OPINION

Sustainability Quality of the Issuer
and Sustainable Finance Framework

- *installation of low energy light bulbs; and*
- *installation of solar/wind auxiliary power for accommodation services.*

B. MANAGEMENT OF ENVIRONMENTAL & SOCIAL RISKS ASSOCIATED WITH THE ELIGIBILITY CRITERIA

The table below evaluates the Eligibility Criteria against issuance-specific KPIs. All of the assets are/will be located in Indonesia mostly and other Pertamina overseas operation site.²²

ASSESSMENT AGAINST KPIs

Labour Standards

All Categories

- ✓ Pertamina has policies in place to systematically ensure that assets financed under this framework provide for high labor standards for its own employees and volunteers. In its Sustainability Report 2022, Pertamina confirmed that it has joined UN Global Compact²³ and Indonesia has ratified to most of the International Labour Organization Fundamental Conventions.²⁴ In addition, Pertamina has certified for the ISO 37001:2016 Anti-Bribery Management system in order to minimize the risks of the bribery.

Renewable Energy (only for Solar)

- ✓ Pertamina has a Human Rights Policy to promote human rights in its business,²⁵ which covers suppliers and contractors, systematically providing measures for ensuring a high level of labor standards. In its latest policy (in Indonesian only), the 9 core conventions of the International Labour Organization, which have been ratified by the Government of Indonesia, are referenced, as well as the United Nations Global Company principles, to uphold labor standards in its supply chain.

Health and Safety

All Categories

- ✓ Pertamina has Health, Safety, Security and Environment (HSSE) Policy and the Sustainability Policy in place to guide the Company's overall Labor, Health and Safety standards. The Sustainability Policy underpins Pertamina's commitment to implement the highest standards of Health, Safety and Environmental practices to its employees, contractor workers, communities, and consumers. The HSSE Policy outlines the measures Pertamina has in place to ensure its employees' health and safety. Furthermore, Pertamina has certified ISO

²² Pertamina, 2023, Pertamina Group Affiliates Abroad, <https://pertamina.com/en/pertamina-group-affiliates-abroad>

²³ Pertamina, Jun 2023, [Sustainability Report 2022](#)

²⁴ ILO, 2023, NORMLEX Information System on International Labour Standards https://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102938

²⁵ Pertamina, 2021, Human Rights Policy, <https://www.pertamina.com/Media/File/Human%20Rights%20Policy%5BEN%5D.pdf>

45001:2018, which guarantees that its operations are up to health and safety standards.

Renewable Energy (only for Solar)

✓ Pertamina confirms that there is a contractual requirement for its contractors to prepare a Health, Safety, Environment (HSE) Plan which contains management plans (which includes but is not limited to, their compliance with Pertamina's HSSE Policy, HSSE performance indicators, responsibilities, labor medical examination, labor insurance, training and upskilling for their labor, HSSE communication, and work site hazard analysis). The HSSE plan is evaluated and accepted with a minimum passing grade of at least 80% of HSSE Plan requirements in order to minimize related risks.

In additional, audits are conducted by Pertamina on its contractors. Contractors are also required to conduct regular safety inspections and report to Pertamina directly. All these measures are support by the Contractor Safety Management System Guideline (CSMS) and recorded.

Conservation and Biodiversity Management

Renewable Energy (all sources), Green Hydrogen, Transmission and distribution networks for renewable and low-carbon gases, Green Buildings and Low-carbon Fuels

✓ Pertamina confirms to have measures in place to systematically ensure that all assets financed under this framework will undergo Environmental Impact Assessments (EIA) at the planning stage. Under the Guidelines on Sustainable Environmental Management, the Issuer states that all activities must obtain Environmental Approval from the Central Government and the Regional Government depending on the operating location. Environmental assessment is conducted according to the Ministry of Environment & Forestry regulations during the process to ensure that measures to manage and monitor environmental impacts are in place, as well as to ensure that the activity does not cause pollution, destruction, disturbance to the environment or other social impacts. Environmental Approval is carried out through EIA documents and their feasibility tests.

Carbon Capture and Storage

✓ On March 3, 2023, the Ministry of Energy and Mineral Resources of the Republic of Indonesia ("MEMR") issued Regulation No. 2 of 2023 on Carbon Capture and Storage (CCS) and Carbon Capture Utilization and Storage (CCUS)

in upstream oil and gas business activities (the "Regulation").²⁶ This regulation provides much-needed guidance for this sector. Pertamina confirms that they are working on developing policies and procedures based on Regulation No. 2/2023, covering planning, operation, and post-closure monitoring activities. In addition, the policies and procedures will be finalized and come into effect before any CCS project is financed under this framework.

The regulation mandates that geological studies, risk assessments, and mitigation measures need to be conducted and submitted during the planning phase. Given the specificity of CCS and CCUS, all projects located in Indonesia shall be completed. Additionally, as explained above, Pertamina has defined a set of policies to ensure that every activity goes through an environmental impact assessment, under its Guidelines on Sustainable Environmental Management, which provides adequate measures for protecting conservation and biodiversity.

Renewable Energy (only wind and geothermal)

Pertamina has a specific guideline titled "Guideline Preparing Biodiversity Action Plan (BAP) To Achieve Net Positive Impact (NPI)." Which applies to whole group including holding, sub Holding and subsidiary levels activities with objectives:



- Management of biodiversity and ecosystem services through the Mitigation Hierarchy
- Establishing No Net Loss and Net Positive Impact targets
- Carrying out the Biodiversity Action Plan as an implementation strategy of the Mitigation Hierarchy to achieve Net Positive Impact targets.

This guideline encompasses various stages, including the identification of biodiversity baseline and impact, biodiversity baseline survey and determination, and biodiversity impact assessment and target setting during the planning stage. Subsequently, it involves the implementation of the BAP, monitoring, reporting, and verification, as well as evaluation and improvement, this demonstrate that a system is in place to uphold conservation and biodiversity with Pertamina operation.

Sustainable forestry



As mentioned earlier, Pertamina follows a specific guideline titled "Guideline Preparing Biodiversity Action Plan (BAP) to achieve Net Positive Impact (NPI)." This guideline is applicable across the entire group, including holding, sub-

²⁶Indonesia. Ministry of Energy and Mineral Resources, 2023, Minister of Energy and Mineral Resources Regulation Number 2 of 2023 concerning Implementation of Carbon Capture and Storage, as well as Carbon Capture, Utilization and Storage in Upstream Oil and Gas Business Activities <https://jdih.maritim.go.id/en/permen-esdm-nomor-2-tahun-2023>

holding, and subsidiary levels, to achieve positive impact targets. Pertamina ensures biodiversity management throughout the entire value chain, covering aspects such as feed (e.g., position on pesticide and chemical fertilizer use, crop management, deforestation, soil degradation, biodiversity). Additionally, Pertamina affirms a commitment to avoiding logging in primary forests, ecologically significant secondary forests, or protected areas, such as Ramsar sites, UNESCO Natural World Heritage sites, IUCN protected areas I-IV, and Intact Forest Landscape areas.

Fire Management

Sustainable Forestry



Pertamina has measures in place to prevent and control forest from wildfires occurring around its operational areas. Pertamina confirms that it conducts regular patrolling and inspections for assets it owns, including lands. The Issuer also confirms that maintenance on vacant land (including vacant lands in forests, rural areas, and cities) such as vegetation control and patrol are also conducted. Further, risk evaluations are conducted by considering the availability and adequacy of resources for assets that have potential risk of fire and the impact on the community and stakeholders around the asset.

On-site Safety

Renewable Energy (only bioenergy), Green Hydrogen, Transmission and distribution networks for renewable and low-carbon gases, Clean Transportation (only for manufacturing of EV (if production line financed)), Carbon Capture and Storage, Low-carbon Fuels



Pertamina has obtained ISO 45001:2018 for its own operations that ensures high operational safety standards are in place.

Community Dialogue

Renewable Energy (geothermal, hydropower, wind only), Transmission and distribution networks for renewable and low-carbon gases



Pertamina has measures to conduct community dialogue before constructions. According to its work procedures – Implementation of Communication, Participation and Consultation (PELAKSANAAN KOMUNIKASI, PARTISIPASI DAN KONSULTASI), Pertamina will conduct proactive communication with stakeholders and external parties which include its customer, government, press, non-governmental organization, contractor, and nearby community

regarding environmental impact aspects and high-risk occupational health and safety in both verbally and in writing.

In addition, Pertamina provides several ways of communication around projects. Also, Pertamina offer compensation to communities if they are affected by the projects.

Environmental Aspects of Construction (or Production) and Operation

Renewable Energy (all sources), Transmission and distribution networks for renewable and low-carbon gases, and Low-carbon Fuels

✓ Pertamina has general policies and commitment to environment protection, starting with environmental impact assessment at the planning stage, environmental management plan and monitoring along with the project lifecycle. Under Pertamina's Guidelines on Sustainable Environmental Management, all activity must obtain Environmental Approval from the Central Government and the Regional Government. Environmental assessment is conducted according to the Ministry of Environment & Forestry regulations during the process to ensure that measures to manage and monitor environmental impacts are in place, as well as to ensure that the activity does not cause pollution, destruction, disturbance to the environment or other social impacts.

Moreover, Pertamina has provided some evidence (environmental impact analysis report for a BATANG JEWEL integrated industrial area) during the assessment regarding some significant impacts were studied during per and construction phase which including noise, dust (air pollution), traffic, water runoff erosion and/or loss of biodiversity etc. to showcase how they take measures to minimize the impact.

Battery Production Plant

✓ Pertamina confirms that there is no battery production plant is in operation and they are currently exploring opportunities to build and operate such plants. Additionally, Pertamina affirms that these plants will be located in Indonesia, and any batteries produced will be intended for the Indonesian market, with no export to Europe. Consequently, they will adhere to and reference Indonesian regulations including Presidential Regulation No. 55, 2019 (Acceleration of the Battery-Based Electric Motor Vehicle (BEV) Program), Minister of Industry Regulation No 9, 2021: Standards for Business Activities and/or Products in the Implementation of Risk-Based Business Licensing in the Industrial Sector. Standard Parts of the Battery Industry Business, Governmental Regulation No. 74/2001 on Hazardous and Toxic Substances Management and Governmental Regulation No. 101/2014 on Hazardous

Waste Management rather than complying with the European Directive on the Restriction of the Use of Hazardous Substances in Electrical and Electronic Equipment. Given, that there is no operation of the battery plant, there is no policy in place as of now, However, Pertamina confirms that they plan to develop such policies starting of next year which will likely adopt some international and industry standards that including IEC 60950-1, ANSI C84.1 & IEEE 100, IEEE 1312 & IEEE 100, and NFPA 70 to ensure the safety of handling battery which including the hazardous material. Such a policy will be ready before the operation of the battery plants.



Pertamina has policies in place to systematically ensure that assets are financed under this framework for which comprehensive life-cycle assessments have been conducted. Under the Guidelines on Sustainable Environmental Management, Life cycle assessments are conducted in accordance with ISO 14040:2016 and ISO 14044:2016. Additionally, Pertamina will follow the UL 1974 standard for the battery recycling process.

Clean Transportation, Green Hydrogen



Pertamina has policies in place to systematically ensure that assets financed under this framework provide for a comprehensive environmental management system. Pertamina confirms that it will be mandatory for assets financed under this Framework to obtain ISO14001.

Renewable Energy (only solar), Transmission and distribution networks for renewable and low-carbon gases



Pertamina does has measures in place systematically ensuring that assets financed under this framework feature take back and recycling at end-of-life. It has policy and commitment to implement 4R (reduce, reuse, recycle and recovery) for waste (both hazardous and non-hazardous waste). To support that, Pertamina has a procedure on Circular Economy Implementation. Pertamina confirms that all electronic waste will be managed by third party which has obtained the business permit from Government of Indonesia. It also follows and complies with Indonesia regulations as stated in Guidelines on Sustainable Environmental Management, HSSE Policy, Sustainability Policy, and Pertamina Standard of Hazardous Waste Management.

Renewable Energy (only biofuels) and Low-carbon Fuels,



Pertamina does has policies in place to implement an energy management system aimed at reducing energy consumption. They have a Key Performance Indicator (KPI) related to sustainable energy, specifically focusing on energy efficiency implementation. However, while they have mentioned cogeneration

technology as one of the options to support their operations and achieve GHG emission goals, there are no measures in place to ensure that projects financed under this framework utilize cogeneration technology systemically.



Pertamina has policies and commitment in place to comply with and implement Environmental Management Systems. Pertamina confirms that it will be mandatory for all asset financed under this Framework to be certified with ISO 14001.

Renewable Energy (Geothermal)



Pertamina has policies in place to systematically ensure that assets financed under this framework are not located in the proximity to major fault lines. The majority of geothermal facilities are located on a ring of fire, which poses tectonic risk. Pertamina has made numerous efforts to identify risks and implement mitigation measures in order to ensure that all risks have been managed as low as reasonably practicable.



Pertamina has measures to avoid contamination of soil and groundwater for the majority of its activity since 90% of its operation units are certified with an ISO 14001 Environmental Management System (EMS), which guarantees that Environment impact assessments are part of environmental document and permit approval at the planning stage. Pertamina confirms that these measures will be mandatorily covered by EMS for all geothermal projects financed under the framework, and applicable from the planning stage until post operation phases.

Renewable Energy (Hydropower)



Pertamina has a policy and commitment to promote biodiversity conservation by avoiding operations with the highest environmental biodiversity value and incorporating biodiversity requirements in project planning and operation. This policy will also extend to hydropower projects, an area that Pertamina has identified as an opportunity. Currently, there are no specific policies in place to systematically outline measures for protecting habitats and wildlife during the operation of hydropower plants, as no such plants are currently in operation.

Green Buildings



Pertamina has issued a green procurement policy in 2022 to ensure its commitment to the environment and responsible procurement and uses a system to minimize the impact on the environment. They ensure that suppliers and contractors implement the principles of green procurement by doing periodic monitoring through the Contractor Safety Management System

(CSMS). Pertamina confirms that the CMSM covers: renewable content; recycled content; embodied energy; re-usability; durability and maintainability; third-party certification of wood-based materials (FSC/PEFC); and local sourcing/material origin. In addition, Pertamina confirms that it is part of the tender requirements and HSSE plan that contractors are required to submit a procurement list before the project starts.

Transmission and distribution networks for renewable and low-carbon gases

✓ For the construction of distribution and transmission pipelines, Pertamina adheres to the regulations set by the Ministry of Environment & Forestry. This compliance is reflected in documents such as the Environmental Impact Analysis (AMDAL), Environmental Management (UKL), or Environmental Monitoring Program (UPL) documents. Additionally, Pertamina follows Indonesia's Ministry of Energy and Mineral Resources (MoEMR) regulation No. 32/2021, ensuring technical inspection and safety checks for installations and equipment in Oil & Gas Business activities at every stage, from planning and construction to installation, maintenance, and post-operation. While there is limited information about the provided documentation, Pertamina confirms the inclusion of all environmental and safety requirements in its operations, aligning with regulatory guidelines and mandates, as they clearly provide the relevant regulations during the SPO assessment.

Carbon Capture and Storage

On March 3, 2023, the Ministry of Energy and Mineral Resources of the Republic of Indonesia ("MEMR") issued Regulation No. 2 of 2023 on Carbon Capture and Storage (CCS) and Carbon Capture Utilization and Storage (CCUS) in upstream oil and gas business activities (the Regulation).²⁷ This regulation provides much-needed guidance for this sector.

✓ The regulation mandates the completion and submission of geological studies, risk assessments, and mitigation measures during the planning phase. Additionally, it requires asset owners to undertake measures ensuring the reduction of greenhouse gas (GHG) emissions. This includes capturing carbon emissions, transporting them, and securely and permanently storing them in the Injection Target Zone. Moreover, asset owners or their contractors are obliged to establish a monitoring plan, considering the characteristics of CCS locations and employing direct/indirect methods to identify potential risks, such as leakage, groundwater contamination, integrity of buffer zone layers, impermeable zone layers, geological traps, and estimation of other potential risks resulting from Carbon Emission Injection, with measurement and

²⁷Indonesia. Ministry of Energy and Mineral Resources, 2023, Minister of Energy and Mineral Resources Regulation Number 2 of 2023 concerning Implementation of Carbon Capture and Storage, as well as Carbon Capture, Utilization and Storage in Upstream Oil and Gas Business Activities <https://jdih.maritim.go.id/en/permen-esdm-nomor-2-tahun-2023>

verification. Pertamina affirms its commitment to developing policies and procedures in accordance with Regulation No. 2/2023, encompassing planning, operation, and post-closure monitoring activities. Furthermore, these policies and procedures will be finalized and implemented before any CCS project is financed under this framework.

User Safety

Green Buildings



Pertamina has an Emergency, Crisis, and Business Continuity Management Guideline that was approved in 2021 and this guideline applies to all business entities. In addition, there is also a FERAT (Fire and Emergency Risk Assessment Technique) assessment which is carried out regularly every year. Pertamina confirms these guidelines will be systematically applied for all assets financed under this framework.

Site Location

Green Buildings



Pertamina does not have policies in place that ensure accessibility and favor the use of soft mobility. However, Pertamina provides dormitory for the workers in rural area inside project perimeter.

Water

Green Buildings

There is limited information available regarding specific measures or initiatives pertaining to water consumption savings or water efficiency improvements in its green building projects.



However, Pertamina has a group policy and a commitment to implementing sustainable water management, with a focus on reducing freshwater use, particularly in water-stressed areas. The set targets include a 5% reduction in freshwater consumption by 2025 and a 10% reduction by 2030, aiming to achieve a Net Positive Water Impact. Pertamina has developed the Pertamina Water Tools to assess water risk in its unit operations, considering factors such as Availability, Accessibility, and Quality.

Waste

Green Hydrogen

Pertamina does not has a policy for recycling and waste handling, encompassing both hazardous and non-hazardous waste, in relation to the Green Hydrogen project. This project marks the inaugural venture into the hydrogen business in Indonesia, with expectations of commercialization by 2027. Simultaneously, MoEMR is in the process of formulating specific regulations for the hydrogen business, a sector in which Pertamina is actively engaged.

- Acknowledging this, Pertamina affirms its commitment to preparing the necessary infrastructure and internal procedures to support the Green Hydrogen business. These preparations are set to align with forthcoming regulations. Pertamina committed that policies will be established in advance before projects/assets are financed under this framework. However, there is limited visibility at present on the regulations and policies addressing recycling and waste handling associated with the green hydrogen projects, with no positive assessment available as of now.

Energy Efficiency

Green Hydrogen

Similar to the above waste handling for green hydrogen projects, Pertamina does not has policy in place to guarantee the energy efficiency of the Green Hydrogen projects, despite its broader commitment to utilizing energy efficiently and incorporating energy efficiency into Pertamina's decarbonization programs.

- While affirming this commitment, Pertamina acknowledges the absence of a dedicated policy in this regard. Pertamina reiterates its dedication to preparing the required infrastructure and internal procedures to support the Green Hydrogen business, aligning them with forthcoming regulations. Pertamina committed that policies will be established in advance before projects/assets are financed under this framework. However, there is limited visibility at present regarding regulations and policies addressing the energy efficiency of the Green Hydrogen projects, with no positive assessment available as of now.

Transmission and distribution networks for renewable and low-carbon gases

- ✓ Pertamina has policy and commitment to use energy efficiently and energy efficiency is part of Pertamina's decarbonization programs. They have a Key Performance Indicator (KPI) related to sustainable energy, specifically focusing on energy efficiency implementation. Cogeneration technology is one of the options to support their operations and achieve GHG emission goals. In

addition, there is regular checking and analysis of operational performance, in order to ensure energy efficiency.

PART III: IMPLEMENTATION OF THE ICMA CLIMATE TRANSITION FINANCE HANDBOOK RECOMMENDATIONS

1. Climate Transition Strategy and Governance

Pertamina is an oil and gas company with a climate transition strategy in place, including commitments to invest in carbon reduction projects for (i) decarbonizing its own operations, (ii) producing low-carbon fuels, (iii) engaging in carbon capture, storage, and credit business, and (iv) supporting customer decarbonization through renewable energy. Adaption of its business model to make positive contribution: PERTAMINA is aimed to grow its business beyond oil and gas. PERTAMINA's new business building is one of two pillars for energy transition comprises of NBS, CCS/CCUS, EV battery, Blue & Green Hydrogen, Carbon Market Business, etc. In addition, PERTAMINA has also formed a sub holding which specifically handles the New & Renewables Energy business. The Company's transition strategy is outlined in two key documents: (i) its 2022 Sustainability Report²⁸, which aligned with the recommendations of the Taskforce on Climate-related Financial Disclosure (TCFD) provided an overview, and (ii) a more in-depth internal document titled "Final NZE Roadmap and Strategy.

In alignment with TCFD recommendations, Pertamina's sustainability report incorporates information about the business's strategy, metrics and targets, risk management, and governance. The 2022 sustainability report provides detailed insights into its in-house designed scenario. This scenario considers national demand, macro-economic growth, policy and regulations, and the global outlook to analyze both businesses as usual (BAU emissions generated) and emission reductions (unconditional/Counter Measure 1 (CM1) and conditional/ Counter Measure 2 (CM2) reduction)²⁹ in the energy sector category, aligning with the Nationally Determined Contribution (NDC) of the Government of the Republic of Indonesia. The NDC aims to prevent a 2°C increase in global average temperatures and encourages efforts to limit temperature increases to 1.5°C above preindustrial levels. The scenario analysis assesses risks and opportunities related to climate change, and the risks are managed with the support of the international standard ISO 31000:2018 - Risk Management — Guidelines. However, according to scenario analysis by the Network for Greening the Financial System (NGFS) it suggests that NDCs include all pledged policies, even if not yet implemented, assuming a moderate and heterogeneous climate ambition at the beginning of 2021. This scenario envisions emissions declining but still leading to 2.6°C of warming, associated with moderate to severe physical risks³⁰, also Intergovernmental Panel on Climate Change (IPCC) in its Climate Change 2022 Mitigation of Climate Change Summary for Policymakers report, mentions that the projected global GHG emissions from NDCs

²⁸Pertamina, 2022, Sustainability report

https://www.pertamina.com///Media/File/Pertamina_Sustainability%20Report%202022_270723.pdf

²⁹ Counter Measure 1 (CM1) Scenario, also known as the unconditional scenario, is an emission scenario with a mitigation plan considering sectoral development targets. Through this scenario, the emission reduction target is set at 31.89% from the business-as-usual scenario by 2030. Counter Measure 2 (CM2) Scenario, or the conditional scenario, is an emission scenario with a more ambitious mitigation plan that takes sectoral development targets into account if international support is available. In this scenario, the emission reduction target will reach 43.20% of the business-as-usual (BAU) scenario by 2030

³⁰ Network for Greening the Financial System (NGFS), 2023, Scenarios Portal <https://www.ngfs.net/ngfs-scenarios-portal/explore/>

announced prior to COP26 would make it likely that warming will exceed 1.5°C and also make it harder after 2030 to limit warming to below 2°C³¹. As such, there is limited information available to confirm that Pertamina's transition strategy is genuinely aligned with the Paris Agreement scenario, and only able to confirm the targets are in harmony with the Nationally Determined Contribution (NDC) of the Government of the Republic of Indonesia.

Pertamina has committed to achieving net-zero Scope 1 and 2 GHG emissions by 2060. Additionally, Pertamina plans to achieve a 23% reduction in absolute Scope 1 and 2 GHG emissions by 2025, amounting to approximately 9.1 million tons of CO₂e. This reduction is referenced to the 2010 baseline emission and the 2021 rebaseline emission calculation.

By 2030, the Company aims for a 32% reduction in absolute Scope 1 and 2 GHG emissions from the BAU scenario, equating to around 21.4 million tons of CO₂e. This reduction is also referenced to the 2010 baseline emission and the 2021 re-calculated baseline emission calculation. However, it is not explicitly stated whether this target represents a specific percentage of the total emissions, as Pertamina is disclosing its Scope 3 emissions for Category 1 and Category 11 only, and no Scope 3 GHG emissions target is set. The Company's GHG data is publicly available in its 2022 sustainability report and has been audited by an independent third party.

In the governance aspect Sustainability management is carried out by the Sustainability Committee chaired by the President Director with members consisting of the Director of Finance, the Director of Strategy, Portfolio and Business Development, the Director of Logistics and Infrastructure, Secretary of Committee, and the person in charge of the field. The Committee has responsibilities related to sustainability aspects, including: (1) Overseeing, establishing and providing direction regarding ambitions, strategies, roadmaps, policies, initiatives and performance measures; (2) Identifying the impacts and risks of the Company's operations on the economy, social and environment, as well as monitoring efforts to prevent risks; (3) Monitoring the achievement of targets and deliverables; (4) Monitoring the achievement of the Company's performance in Sustainability based on a third party assessment; (5) Directing and monitoring external communications related to Sustainability Aspects; (6) Providing direction regarding the implementation of external Sustainability-based funding for the Company; (7) Coordinating with the Board of Commissioners, Board of Directors, Directorates or Sub holdings in implementing the Sustainability Aspect. However, there is no information demonstrating the link between executive remuneration and ESG-related aspects. Additionally, Pertamina plans to allocate 15.3% of the total investment funds Capex (Capital Expenditure) to ESG-related projects by 2023 and increase this allocation to 29.04% by 2040, according to its sustainable finance framework. A more detailed breakdown of the CAPEX required for the new green/transition business (e.g. CCS/CCUS, Bioenergy, Hydrogen, Battery and EV, carbon business and renewable energy) is provided in the internal document titled "Final NZE Roadmap and Strategy," with a total estimated investment of around 120 billion USD. Additionally, in the 2022 sustainability report, Pertamina has reported

³¹ Intergovernmental Panel on Climate Change (IPCC), 2022. Climate Change 2022 Mitigation of Climate Change Summary for Policymakers https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SPM.pdf

its broader sustainability strategy to mitigate relevant environmental and social externalities and contribute to the UN Sustainable Development Goals³².

For the boarder sustainability aspect, Pertamina has a flagship program Realisasi dana Tanggung Jawab Sosial Lingkungan (TJSL) to address environmental and social topics including the externalities, program includes investments on education quality, supporting MSMEs, enhancing community empowerment, and supporting enterprises owned by historically underrepresented groups, formation of an Energy Independent Village with a Solar/ Wind/Microhydro Power plant. These initiatives are reported in the 2022 sustainability report.

Opinion: *Pertamina has a Sustainable Finance Framework, sustainability policy,³³ and sustainability report that communicates its strategy to address climate-related risks, opportunities and try to achieve the Paris Agreement goals. The Framework outlines how the Company's business model will change, and the Company sets interim and long-term targets for Scope 1 and 2 GHG emissions that aim to be in line with the Paris Agreement. However, it does not include the Scope 3 emission targets. The Issuer's annual report provides information on the governance structures that keep climate strategy at the forefront of decision-making, including various committees and staff dedicated to climate change issues. Additionally, the Issuer has a broader sustainability strategy that considers its impact on other environmental and social externalities through a its flagship program Realisasi dana Tanggung Jawab Sosial Lingkungan (TJSL). Pertamina's Sustainability Committees has the key responsibility for directing and overseeing ESG management in all business operations. Although Pertamina has appointed an independent third party to assure its sustainability report 2022 against the Recommendations of the TCFD and report criteria of GRI which include the GHG emissions data. Yet, the third party has not review credibility of its strategy to reach the GHG emissions reduction targets or of the alignment of these targets with the chosen scenario of CM1, it is worth noting that certification schemes available for the O&G sector are limited. For example, one of the most widespread certification schemes (SBTi) is currently unable to accept commitments or validate targets for companies in the oil and gas O&G or fossil fuels sectors.*

2. Business Model Environmental Materiality

Pertamina carbon mitigation strategies include GHG emissions avoidance, reduction, and offsetting measures. The plan is divided into six core categories, including:

- Upstream (e.g. existing business: cut and reduce Oil and Gas production, new business: carbon capture and storage),
- Refining and Petrochemical (R&P) (e.g., existing business: cut and reduce Oil refinery, new business: growth and expand the biofuels and hydrogen production),

³² Pertamina, 2022, Sustainability report, page 55 and 92

https://www.pertamina.com///Media/File/Pertamina_Sustainability%20Report%202022_270723.pdf

³³ Pertamina, 2021, Sustainability,

policy[https://pertamina.com///Media/File/Sustainability%20Policy%20Pertamina%20Signed%20\[ENG-IND\].pdf](https://pertamina.com///Media/File/Sustainability%20Policy%20Pertamina%20Signed%20[ENG-IND].pdf)

- Commercial and Trading (C&T) (new business: growth and expand biofuels and EV charging),
- Gas (new business: growth and expand biomethane production),
- Integrated Marine Logistics (IML) (existing business: Renew ships into dual-fuel engines and add lever to improve fuel efficiency, move fully to zero-carbon fuel for ships (e.g. Ammonia, E-methanol, new business purchase tankers for ammonia transport) and
- Power & NRE (PNRE) (new business: growth and expand renewables, battery, electric two-wheelers (E2W) and Hydrogen plans).

such decarbonization roadmap is based on the scenarios considering national demand, macro-economic growth, policy and regulations, and the global outlook to analyze both business as usual (BAU) and emission reductions (unconditional/CM1 and conditional/CM2 reduction) in the energy sector category and up to 2060, which is significant to existing and further business models and core activities.

The Issuer identified opportunities and risks, including climate risks, which were reported in the Sustainability Report 2022. According to the provided information, Pertamina is certified for different ISO certifications like ISO 14001:2015 and ISO 45001:2018 as well as policy, procedure and management in place as a measure to the negative externalities identified³⁴. Furthermore, Pertamina's Sustainable Finance Framework confirms that all its operations align with its Sustainability Policy, comprising guidelines for environmental and social risk management for both its own staff and contractors. Pertamina also shared the 2023 ESG Initiative program progress reports across different business lines during the assessment, including upstream, R&P, PNRE, GAS, and C&T, as well as wastewater programs. In these reports, the risks are reported, focusing more on daily business operations.

Pertamina has disclosed Scope 3 GHG emissions in the Sustainability Report 2022, considering only categories 1 and 11. The total emissions from Scope 3 amount to 169.63 million tons of CO₂e, estimated to be around 85% of the total company GHG emissions (Scope 1, 2, & 3). Additionally, Pertamina has confirmed that assurance for Scope 3 GHG emissions will continue in 2024. Furthermore, the disclosure of Scope 3 emissions for the Sub holding Pertamina group level is scheduled to be completed by 2030.

Opinion: *The Issuer's climate transition strategy as outlined in Pertamina's sustainable Financing Framework is relevant to the environmentally-material parts of the Issuer's business model and projects the value of their portfolio based on scenarios, given it addresses both existing and new business within all its business units. The levers outlined impact core business activities that are the main drivers of the Issuer's current and future environmental impact.*

³⁴ For more detail information, please refer to section - B. MANAGEMENT OF ENVIRONMENTAL & SOCIAL RISKS ASSOCIATED WITH THE ELIGIBILITY CRITERIA in this report.

3. Climate transition strategy to be “science-based”

Pertamina has committed to achieving net-zero Scope 1 and 2 GHG emissions by 2060. Additionally, the Company aims for a 23% reduction in absolute Scope 1 and 2 GHG emissions by 2025, equivalent to approximately 9.1 million tons of CO₂e. This reduction is referenced to the 2010 baseline emission and the 2021 rebaseline emission calculation. By 2030, Pertamina targets a 32% reduction in absolute Scope 1 and 2 emissions from the BAU scenario, amounting to around 21.4 million tons of CO₂e. This reduction is also referenced to the 2010 baseline emission and the 2021 re-calculated baseline emission calculation. However, the target does not explicitly specify a percentage in terms of total emissions. Currently, Pertamina is disclosing Scope 3 GHG emissions for Category 1 and Category 11 without setting a specific target for them. Although Scope 3 GHG emissions are not included in the decarbonization strategy, they still form part of the strategy for the products sold.

Pertamina’s 2022 Sustainability Report, which includes 2022 GHG emissions data, is assured by an independent third party. For the 2010 baseline GHG emissions data, Pertamina collaborated with Indonesia’s reputable academic institution (Gajah Mada University) to conduct baseline emission calculations. The emission data underwent verification and validation, and the baseline emission calculation has been accepted and acknowledged by the Ministry of Environment and Forestry, the regulator, dating back to 2010.

According to the Final NZE Roadmap and Strategy, around 2 million unabated tons in 2060 are intended to be covered by offset to achieve the net-zero target. However, the climate transition strategy lacks confirmation of being “science-based” due to the absence of a Scope 3 emission target and the current lack of a supporting methodology. Additionally, the targets and their alignment with relevant scenarios lack independent review or verification.

Opinion: *Pertamina has publicly disclosed its GHG emissions data and targets, using the PERMENLH No. 12 of 2012 Guidelines for Calculating Emission Loads for Oil and Gas Industry Activities for Scope 1 (Own Use) and Scope 2 (Other Use) (consumption of energy originating from outside), in order to align with international GHG emission accounting standards, Pertamina confirms that they have referenced the American Petroleum Institute (API) Compendium of Greenhouse Gas Emissions Methodologies for the natural gas and oil industry³⁵ as well. For Scope 3, GHG Protocol/IPIECA Category 1 and 11 (Use of Sold Products) are used. Independent assurance has been conducted on both the 2022 GHG emissions data and the 2010 baseline GHG emissions data. Pertamina has confirmed that carbon offsets will be utilized for the unabated emissions to help achieve its emissions reduction targets and has provided an estimated amount. However, since Pertamina does not set a Scope 3 emissions target and lacks a Science-Based Targets Initiative (SBTi) methodology for the oil and gas sector, the confirmation of whether the climate transition strategy is ‘science-based’ is currently unavailable. Pertamina plans to engage with the SBTi in the future to obtain confirmation on the alignment of its climate transition strategy with scientific principles, therefore, the target is not benchmarked against science-based trajectories or third-party trajectories since Pertamina is using in-house scenarios.*

³⁵ American Petroleum Institute (API), 2021, COMPENDIUM OF GREENHOUSE GAS EMISSIONS METHODOLOGIES FOR THE NATURAL GAS AND OIL INDUSTRY, <https://www.api.org/~media/files/policy/esg/ghg/2021-api-ghg-compendium-110921.pdf>

As such, it is difficult to conclude that Pertamina's transition strategy is science-based or not and only able to confirm the targets are in harmony with the Nationally Determined Contribution (NDC) of the Government of the Republic of Indonesia.

4. Implementation Transparency

Pertamina plans to allocate 15.3% of the total investment funds Capex (Capital Expenditure) to ESG-related projects by 2023 and increase this allocation to 29.04% by 2040, according to its sustainable finance framework. A more detailed breakdown of the CAPEX required for the new green/transition business (e.g. CCS/CCUS, Bioenergy, Hydrogen, Battery and EV, carbon business and renewable energy) is provided in the internal document - Final NZE Roadmap and Strategy, with a total estimated investment of around 120 billion USD. Additionally, Pertamina committed to Minimum 30% of realized investment and operational budget for R&D focus on decarbonization by 2025, Minimum 44% of realized investment and operational budget for R&D focus on decarbonization by 2030.

Pertamina is committed to transparent annual reporting of its carbon emissions and performance against targets. Additionally, Pertamina is initiating an internal carbon price, although it has not yet been implemented. The plan involves a subsidiary, PT Pertamina Power Indonesia, selling carbon credits to other Pertamina subsidiaries (PT Pertamina Hulu Energi and PT Pertamina Patra Niaga) via IDX Carbon at a price of approximately \$3 per ton of CO₂e. As part of Pertamina's sustainable finance framework, the eligibility criteria are limited to green and transition projects. However, Pertamina has a TJSL program for social programs and investments, such as empowering human resources, improving education quality, developing MSMEs, providing training for children with disabilities, enhancing community empowerment, and supporting enterprises owned by historically underrepresented groups. These initiatives are reported in the 2022 sustainability report.

According to the Final NZE Roadmap and Strategy, there is no plan to expand oil and gas exploration and refining compared to the current level. Instead, there is a planned reduction in the future (Upstream and Refining and Petrochemical) to avoid potential locked-in GHG emissions from the Issuer's key assets and products.

On the reporting aspect, Pertamina has committed to providing more in-depth reporting of GHG information, including reporting Scope 3 GHG emissions at the sub-holding level by 2030. Additionally, Pertamina is committed to reporting quantitative environmental metrics for projects or assets financed under the sustainable finance framework. Examples of these metrics include but not limited to:

- Annual GHG emissions reduced/avoided in tonnes of CO₂ equivalent.
- Annual renewable energy generation in MWh/GWh (electricity) and GJ/TJ (other energy).
- Capacity of renewable energy plant(s) constructed or rehabilitated in MW.
- Annual hydrogen fuel production in metric tons.

- Number and type of electric vehicles supported.
- Annual CO₂ emission reduced or avoided in tons.
- Recycled polypropylene recycled (tons).
- Circular polypropylene (tons).
- Annual biofuels production (tonnes).
- Biofuels production capacity (tonnes).

As of now, Pertamina does not has a phase-out plan regarding activities/products incompatible with the climate transition strategy (when such activities or products are significantly harmful or display levels of performance inconsistent with science-based GHG emission reduction trajectories). To minimize the impact to the employees and communities due to the transition activities, Pertamina has established Pertamina Sustainability Academy and Sustainability Center to upskill and equip employees and communities with relevant capabilities for energy transition. In partnership with Universitas Pertamina, Pertamina has developed a curriculum for master's degree in sustainability.

Opinion: *Pertamina provides details on the technical aspects of the different technology development programs, with planned production targets as well as planned investment amount in his internal documents. Governance and process changes are detailed. Additionally, Pertamina has a clear breakdown of CAPEX/OPEX related to its climate transition initiatives to achieve it decarbonization goals, as well as established Pertamina Sustainability Academy and Sustainability Center to upskill and equip employees and communities to minimize the impact of the transition activities due to employee and communities.*

PART IV: LINKING THE TRANSACTION(S) TO PERTAMINA'S ESG PROFILE

A. CONSISTENCY OF USE OF PROCEEDS FINANCING INSTRUMENTS WITH PERTAMINA'S SUSTAINABILITY STRATEGY

Key sustainability objectives and priorities defined by the Issuer

Pertamina commenced sustainability reporting in 2016. In its sustainability report for 2022,³⁶ Pertamina has incorporated information about the business's strategy, metrics, and targets, risk management, and governance, as well as other sustainability metrics. These align with TCFD recommendations and GRI standards requirements. Additionally, Pertamina has appointed an independent third party to assure the sustainability report.

Pertamina has committed to achieving net-zero Scope 1 and 2 GHG emissions by 2060. Additionally, the Company aims for a 23% reduction in absolute Scope 1 and 2 GHG emissions by 2025, equivalent to approximately 9.1 million tons of CO₂e by 2030, the Company aims for a 32% reduction in absolute Scope 1 and 2 GHG emissions from the BAU scenario, equating to around 21.4 million tons of CO₂e compared to 2010 baseline emission and the 2021 rebaseline emission calculation, all these targets as well as the relevant GHG emissions data are available in its sustainability report, but Pertamina is committed to continue report for keeping tracking the progress of targets achievement.

Pertamina confirmed that it has joined UN Global Compact and has committed to align its Human Right Policies to ILO conventions. However, there is no information available on whether Pertamina is signatory to any industry alliances or collective commitments. Additionally, there is no information available on any verified Science-based target(s) (i.e. SBTi) given the SBTi methodology for the oil and gas sector, the confirmation of whether the climate transition strategy is 'science-based' is currently unavailable.

Pertamina has outlined a climate transition strategy and transition roadmap. This strategy includes commitments to invest in carbon reduction projects, focusing on (i) decarbonizing its own operations, (ii) producing low-carbon fuels, (iii) engaging in carbon capture, storage, and credit businesses, and (iv) supporting customer decarbonization through renewable energy. More detailed information about the NetZero action plan, relevant financial budget, scenarios for the alignment of mid/long term targets, the ESG risk and sustainability strategy management, such as the structure of governance and responsibilities in monitoring/carrying out sustainability strategies, can be found in PART I.B: IMPLEMENTATION OF THE ICMA CLIMATE TRANSITION FINANCE HANDBOOK RECOMMENDATIONS.

Pertamina has confirmed that one of its subsidiaries, Pertamina Geothermal Energy PT Tbk (PGE), issued a green bond of USD 400 million in May 2023. Additionally, Pertamina's Group issued a Green Loan of USD 50 million in December 2022.

³⁶ Pertamina, Jun 2023, [Sustainability Report 2022](#)

Rationale for issuance

To achieve Pertamina Group's and National strategic goals, thereby contributing to Indonesia's Clean Energy targets, Pertamina Group plans to utilize this framework to raise the required capital to support its operations and finance related Green or Transition Projects. As such, Pertamina has developed a Sustainable Finance Framework to issue Green or Transition bonds, loans, and other debt instruments ('Use of Proceeds Financing Instruments')

Opinion: *The key sustainability objectives and the rationale for issuing Use of Proceeds Financing Instruments are clearly described by the Issuer. The majority of the project categories financed are in line with the sustainability objectives of the Issuer.*

B. PERTAMINA'S BUSINESS EXPOSURE TO ESG RISKS

This section aims to provide an overall level of information on the ESG risks to which the Issuer is exposed through its business activities, providing additional context to the issuance assessed in the present report.

ESG risks associated with the Issuer's industry

The Issuer is classified in the Integrated Oil & Gas industry, as per ISS ESG's sector classification. Key challenges faced by companies in terms of sustainability management in this industry are displayed in the table below. Please note, that this is not a company specific assessment but areas that are of particular relevance for companies within that industry.

ESG KEY ISSUES IN THE INDUSTRY

| |
|--|
| Environmental risks and impacts of operations |
| Climate protection and contribution to the energy transition |
| Protection of human rights and community outreach |
| Worker safety and accident prevention |
| Business ethics and relations with governments |

ESG performance of the Issuer

Leveraging ISS ESG's Corporate Rating research, further information about the Issuer's ESG performance can be found on ISS ESG Gateway at: <https://www.issgovernance.com/esg/iss-esg-gateway/>.

Please note that the consistency between the issuance subject to this report and the Issuer's sustainability strategy is further detailed in Part III.A of the report.

Sustainability impact of products and services portfolio

Leveraging ISS ESG's Sustainability Solutions Assessment methodology, the contribution of the Issuer's current products and services portfolio to the Sustainable Development Goals defined by the United Nations (UN SDGs) has been assessed as per the table below. This analysis is limited to the evaluation of final product characteristic ISS-Corporate and does not include practices along the Issuer's production process.

| PRODUCT/SERVICES PORTFOLIO | ASSOCIATED PERCENTAGE OF REVENUE ³⁷ | DIRECTION OF IMPACT | UN SDGS |
|---------------------------------|--|---------------------|---|
| Conventional natural gas | 38.91% | OBSTRUCTION |   |
| Conventional oil | 34.89% | OBSTRUCTION |   |

Breaches of international norms and ESG controversies

At Issuer level

At the date of publication and leveraging ISS ESG Research, no outstanding controversy in which the Issuer would be involved has been identified.

At industry level

Based on a review of controversies over a 2-year period, the top three issues that have been reported against companies within the Integrated Oil & Gas industry are as follows: Failure to mitigate climate change impacts, Failure to prevent water pollution, and Failure to prevent oil spill.

Please note that this is not a company specific assessment but areas that can be of particular relevance for companies within that industry.

³⁷ Percentages presented in this table are not cumulative.

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ANNEX 1: METHODOLOGY

The ISS-Corporate SPO provides an assessment of labelled transactions against international standards using ISS-Corporate proprietary methodology. For more information, please visit: <https://www.issgovernance.com/file/publications/SPO-Use-of-Proceeds-Bonds-and-Loans.pdf>

ANNEX 2: ISS ESG CORPORATE RATING METHODOLOGY

ISS ESG Corporate Rating provides relevant and forward-looking environmental, social, and governance (ESG) data and performance assessments. For more information, please visit: <https://www.issgovernance.com/file/publications/methodology/Corporate-Rating-Methodology.pdf>

ANNEX 3: QUALITY MANAGEMENT PROCESSES

SCOPE

Pertamina commissioned ISS-Corporate to compile a Use of Proceeds Financing Instruments SPO. The Second Party Opinion process includes verifying whether the Sustainable Finance Framework aligns with the ICMA GBP and LMA GLP and to assess the sustainability credentials of its Use of Proceeds Financing Instruments, as well as the Issuer's sustainability strategy.

CRITERIA

Relevant Standards for this Second Party Opinion:

- International Capital Market Association Green Bond Principles and Climate Change Transition Handbook.
- Loan Market Association Green Loan Principles.

ISSUER'S RESPONSIBILITY

Pertamina's responsibility was to provide information and documentation on:

- Framework
- Eligibility criteria
- Documentation of ESG risks management at the framework level

ISS-CORPORATE'S VERIFICATION PROCESS

Since 2014, ISS Group, of which ISS-Corporate is part, has built up a reputation as a highly-reputed thought leader in the green and social bond market and has become one of the first CBI approved verifiers.

This independent Second Party Opinion of the Use of Proceeds Financing Instruments to be issued by Pertamina has been conducted based on a proprietary methodology and in line with the ICMA GBP and LMA GLP.

The engagement with Pertamina took place from September 2023 to February 2024.

ISS-CORPORATE'S BUSINESS PRACTICES

ISS-Corporate has conducted this verification in strict compliance with the ISS Group Code of Ethics, which lays out detailed requirements in integrity, transparency, professional competence and due care, professional behavior and objectivity for the ISS business and team members. It is designed to ensure that the verification is conducted independently and without any conflicts of interest with other parts of the ISS Group.

About this SPO

Companies turn to ISS Corporate Solutions (ISS-Corporate) for expertise in designing and managing governance, compensation, sustainability and cyber risk programs that align with company goals, reduce risk, and manage the needs of a diverse shareholder base by delivering best-in-class data, tools, and advisory services.

We assess alignment with external principles (e.g. the ICMA Green / Social Bond Principles), analyse the sustainability quality of the assets and review the sustainability performance of the Issuer themselves. Following these three steps, we draw up an independent SPO so that investors are as well informed as possible about the quality of the bond / loan from a sustainability perspective.

Learn more: <https://www.isscorporatesolutions.com/solutions/esg-solutions/green-bond-services/>

For more information on SPO services, please contact: SPOsales@isscorporatesolutions.com

Project team

Project lead

Adams Wong
AVP
Sustainable Finance Research

Project support

Clara Schouler
Analyst
Sustainable Finance Research

Project supervision

Marie-Bénédicte Beaudoin
Associate Director
Head of Sustainable Finance
Research

Project Support

Masaki Kadowaki
Associate
Sustainable Finance Research