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Powered by Shades of Green

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Second Party Opinion

Pacific Hydro Chile S.A.'s Green Finance Framework

Nov. 3, 2023

Location: Chile Sector: Power generation Alignment With Principles Not aligned = 🗙 Aligned = 🗸 Conceptually aligned = \mathbf{O} Green Bond Principles, ICMA, 2021 Dark Green Loan Principles, LMA/LSTA/APLMA, 2023 green See Alignment Assessment for more detail. a low-carbon climate resilient future. Our Shades of Green

Strengths

Pacific Hydro Chile's ("PHC's") focus on solar, battery energy storage systems (BESS), and wind power supports Chile's power grid transition, which partially depends on fossil fuels (38% non-renewable as of 2022). Renewable generation (remaining 62%) is critical to decarbonizing the energy sector, while BESS will help integrate renewable sources into grids by managing intermittency challenges.

Weaknesses

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Activities that correspond to the long-term vision of

Analytical Approach >

Areas to watch

Project selection criteria could be stronger. While renewable energy projects have significant climate benefits, quantitative performance thresholds for lifecycle impacts can help manage associated emissions. While there are no joint ventures currently in its project pipeline, PHC's sustainability screening and monitoring processes for potentially eligible JVs could be clearer.

PHC could strengthen environmental and social safeguards for materials sourcing, particularly for higher-risk battery energy storage systems and solar PV.

Less than 2.5% of PHC's annual operating expenditures on fossil fuels used to transport materials needed for installing new renewable energy assets could be financed via proceeds of issuances made under the framework. PHC commits to transition into low carbon heavy duty vehicles as they become available in Chile

Eligible Green Projects Assessment Summary

Eligible projects under issuer's green finance framework are assessed based on their environmental benefits and risks, using Shades of Green methodology.

Renewable energy

Dark green

Hydropower, onshore wind power, and solar power (PV) facilities in Chile.

Renewable energy infrastructure

Dark to Medium green

Infrastructure related to the above renewable energy technologies, including energy storage solutions such as batteries.

See Analysis Of Eligible Projects for more detail.

Issuer Sustainability Context

This section provides an analysis of the issuer's sustainability management and the embeddedness of the financing framework within its overall strategy.

Company Description

PHC is a Chilean pure play renewable energy owner, operator, and developer with a total net installed capacity of 428 megawatts (MW). PHC's portfolio comprises a mix of mature and recently constructed assets. Apart from two hydropower projects commissioned in the early 1900s and later acquired by PHC, the company was responsible for developing the other assets in its portfolio. As of May 2023, the company operates three run-of-river hydropower plants (plants that use the energy from flowing water rather than large dams with artificial reservoirs; 187 MW) and one wind power plant (82 MW) in central Chile. The remaining 159 MW of installed capacity comes from two run-of-river hydropower plants operated by Tinguiririca Energia, a 50- 50 joint venture (JV) between PHC and Norway-based Statkraft. The company's future plans include diversifying its portfolio with wind power plants, solar power plants, and battery energy storage systems (BESS).

PHC is fully owned by China's state-owned integrated energy company, State Power Investment Corp. Ltd. (SPIC). SPIC has a total installed capacity of 187 gigawatts (GW), generating electricity through renewable (50%), thermal (46%), and nuclear sources (4%). SPIC also engages in other activities such as producing coal and smelting aluminium.

Material Sustainability Factors

Climate transition risk

Power generation is the largest direct source of greenhouse gas emissions globally, making this sector highly susceptible to the growing public, political, legal, and regulatory pressure to accelerate climate goals. Public awareness of the urgency for climate action has reached a turning point. In turn, policymakers and regulators are more often pushing for faster transition to lower-carbon energy, especially as these technologies become more mature and cost competitive. The number of countries announcing pledges to achieve net-zero emissions over the coming decades continues to grow. With no direct emissions, renewable energy technologies have a vital role to play in reducing emissions associated with power and heat, which will be vital for limiting global temperature rise to 1.5C. Specifically, the Chilean government has set a legally binding net-zero target (as outlined in the "Climate Change Law") to be achieved by 2050. This goal also encompasses a coal phase-out target set for 2030.

Physical climate risk

Given fixed assets, generators are relatively more exposed to physical climate risks compared to other sectors. For stakeholders, extreme weather events--including wildfires, hurricanes, and storms--are becoming more frequent and severe and can result in power outages for large populations of users. As water is often a significant resource for hydropower plants, exposure to flooding, drought or warmer temperatures can also negatively impact operations. In turn, these dynamics, coupled with regulatory pressure to preserve security of supply, are driving players to enhance the resilience of assets. The physical climate risks generally involve significant financial losses for operators due to repairs, but more importantly from exposure to extreme power price spikes or claims due to business disruption. We expect these dynamics to continue but vary regionally depending on regulatory responses. For example, in Chile, a persistent decrease in precipitation in the O'Higgins region over the past few dry seasons has led to the Chilean government declaring agricultural emergencies in the region. The risk of water scarcity has prompted PHC to renegotiate agreements with local farmers to ensure sufficient water for both the company's hydropower generation and agricultural needs.

Impact on communities

Renewable energy projects are typically situated in secluded areas, either rural, indigenous or other communities. While construction of renewable energy projects can promote job creation, improve energy access, and reduce air pollution, they could

impact communities and compete for land with other vital activities that are part of traditional land management, which include agriculture. This can lead to community opposition, conflicts over land rights, and resource allocation issues. It is crucial for the sector to engage in actions to minimize the environmental and social impact, secure community consent, and ensure that local communities benefit from its assets implementation.

Biodiversity and resource use

Renewable power and storage, which are growing to meet climate goals, require large land areas that can be located in sensitive habitats where they can alter ecosystems, impact species, and compete with other valuable land uses such as agriculture. In most jurisdictions, local regulations require that renewable projects are accompanied by environmental impact assessments to identify biodiversity risks as well as mitigation measures to avoid or reduce potential harm. In addition to siting concerns, renewable energy infrastructure construction, operation, and decommissioning can entail ecosystem disruptions and biodiversity risks without sufficient safeguards. The sourcing of materials for energy infrastructure, particularly for solar generation and batteries, can also contribute to biodiversity loss. The sector's growing demand for critical raw materials could pose other environmental risks such as pollution or accessibility to those resources, that may conflict or jeopardize future climate goals. This may become an increasing concern, depending on the pace of the transition.

Issuer And Context Analysis

The project categories included in the financing framework-- renewable energy and renewable energy infrastructure--aim to address climate transition risk, which we consider to be a material sustainability factor for the company. In addition, physical climate risk is a relevant risk in the context of the country and the industry of the issuer. Power generators in Chile are exposed to certain physical climate risks, such as variability in precipitation patterns and extended drought periods. Moreover, we think renewable energy projects and related infrastructure can affect local communities and biodiversity if not managed adequately.

PHC's overarching strategy is to invest in renewable energy to enable a transition away from fossil fuels, but it has yet to formalize its sustainability strategy, including targets. For example, on climate mitigation, PHC has been reducing its carbon footprint related to employee travel, owned-transportation assets, and electricity consumption, but has yet to tackle embedded emissions associated with the purchase of energy infrastructure technologies and construction materials. PHC plans to publish its first sustainability report in 2024, in which it will disclose its sustainability strategy.

Physical climate risks are managed according to internal risk management procedures. PHC considers its assets as exposed to floods, earthquakes, and wildfires. The company has identified water scarcity risks to its hydropower assets and has established operational controls to mitigate risks, such as taking into consideration high versus low flow season for off-take agreements and replacing turbines to increase efficiency with less water flow. Additionally, within this financing framework, PHC is seeking to diversify into other renewable energy solutions, namely solar PV, wind, and BESS. Nevertheless, it is unclear what climate scenarios PHC is using to assess its physical climate risk exposure.

Globally, local opposition to renewable energy projects is a risk companies are exposed to, that said local opposition is not uncommon in Chile. Such controversies could pose risks for project development, making robust social safeguards important. In line with regulation, any future greenfield projects require social impact assessments, and the company has processes in place to avoid flooding or limiting water availability to other users. Additionally, the company engages with communities by developing and executing local community projects, training programs, and electricity services. Moreover, PHC focuses on run-of-river hydropower that entails significantly lower potential social impacts than hydropower with large-scale dams and reservoirs.

In our view, impact on biodiversity and use of resources are relevant considerations for renewable energy projects, especially in areas with high biodiversity. When developing new projects, PHC's environmental team carries out a preliminary assessment in line with its environmental management system (ISO 14001 certified) to determine if there are any critical risks

or potential impacts that do not meet PHC's environmental criteria. These criteria follow Chile's national legislation, which requires an assessment of the biodiversity found at the asset's proposed site location and mandates the remediation of potential losses.

When necessary, PHC implements mitigation, restoration, and compensation measures based on these assessments. Similarly, for operational assets, PHC evaluates biodiversity impacts and has measures in place to protect and preserve terrestrial and aquatic biodiversity based on local regulatory frameworks. While PHC operates in accordance with local regulation, additional voluntary measures are unclear. Currently, the company has publicly available biodiversity reports for the regions where it operates.

Alignment Assessment

This section provides an analysis of the framework's alignment to Green Bond and Loan principles.

Alignment With Principles

Aligned = 🗸 Conceptually aligned = **O**

- ✓ Green Bond Principles, ICMA, 2021
- ✓ Green Loan Principles, LMA/LSTA/APLMA, 2023

✓ Use of proceeds

All the framework's green project categories are shaded in green, and the issuer commits to allocate the net proceeds issued under the framework exclusively to eligible green projects. Please refer to Analysis of Eligible Projects section for more information on our analysis of the environmental benefits of the expected use of proceeds. In addition, the company will disclose the share of financing versus refinancing in its allocation of proceeds. The maximum look-back period is three years, in line with market practice.

Not aligned = 🗙

Process for project evaluation and selection

The framework outlines the process to select and approve eligible projects. PHC's environmental team provides a preliminary assessment of environmental and social risks for eligible projects. Its board of directors will be then responsible for evaluating and approving eligible projects to be financed under the framework. Additionally, PHC's management team has the right to exclude at their own discretion any asset or project. Nevertheless, we note the absence of specific environmental expertise on the final selection committee and that there is no established controversy screening nor additional exclusion criteria for green financing beyond general company-level environmental and social policies.

Management of proceeds

PHC commits to earmark net proceeds to financing and refinancing of eligible green projects. The company intends to allocate an amount equal to the net proceeds from a green finance instrument within three years from the issue date, and at the latest by the time of maturity of each issuance. PHC's finance department will keep a register to record the allocation of net proceeds to eligible green projects. In case of divestment or project cancellation, PHC will allocate the remaining proceeds to new eligible projects as soon as practical. Unallocated proceeds will be managed according to PHC's overall liquidity management policy and may be invested in short-term money market instruments or held as cash.

✓ Reporting

PHC commits to publishing annually an allocation report on its website until full allocation of proceeds. The company intends to commission an external review from an independent third party in respect of allocation under the framework, though it does not intend to have its impact reporting externally verified. In terms of allocation, the green finance report will include financing by

project category including breakdown by type of renewable (wind, solar, hydropower, and BESS), share of new financing versus refinancing, project examples, financing outstanding by bonds versus loans, and net proceeds awaiting allocation, if any.

The impact reporting may, where applicable, include quantitative performance metrics such as energy generation capacity financed, divided into wind, solar, and hydropower assets (MW); actual annual energy generation financed, also divided into wind, solar, and hydropower assets (MWh); and annual avoided greenhouse gas emissions (metric tons of carbon dioxide equivalent) from projects financed. Additionally, PHC intends to disclose methodologies used to quantify metrics. However, calculations will depend on data availability.

Analysis Of Eligible Projects

This section provides details of our analysis of eligible projects, based on their environmental benefits and risks, using the Shades of Green methodology.

Under its green finance framework, PHC will finance or refinance acquisitions and development of renewable energy projects in Chile--including solar PV, wind, and hydropower--as well as related infrastructure including BESS.

PHC considers financing wind power plants with BESS and refinancing of currently operated hydropower assets as part of its medium-term strategy. Additionally, acquisitions may include special purpose vehicles (SPVs), where PHC may take full ownership or enter joint ventures (JVs), although we don't expect the latter in the medium term.

The framework explicitly excludes fossil energy generation, nuclear energy generation, research and/or development within weapons and defense, potentially environmentally negative resources extraction, gambling, or tobacco. However, financed operating expenditures may include a minor share (less than 2.5% of the company's operations and maintenance budget) of fossil fuel used to transport materials needed for installing new renewable energy assets.

Overall Shades of Green assessment

Based on the project category shades of green detailed below, and consideration of environmental ambitions reflected in the green finance framework, we assess the framework as Dark Green.

Dark green

Activities that correspond to the long-term vision of a low-carbon climate resilient future.

Our <u>Shades of Green</u> Analytical Approach >

Green project categories

Renewable energy	
Assessment	Description
Dark green	• Hydropower
	Onshore wind power
	Solar power (PV) facilities in Chile

Analytical considerations

- Renewable energy, including hydropower, wind, and solar generation, is key to decarbonizing the energy sector, as long as impacts on local biodiversity are carefully managed.
- At the same time, PHC does not have any quantitative performance criteria for project lifecycle greenhouse gas emissions. This reduces visibility on the full climate impacts of renewable energy projects, such as emissions from materials sourcing, manufacturing, transportation, construction, and end-of-life disposal.

- PHC sells energy to both regulated and unregulated customers. The company mostly serves electricity distribution companies and currently has a power purchase agreement with a major copper mining company in Chile. This exposure to an emissionintensive sector is minor--it currently represents 17% of end-consumers. We note the associated climate impacts the mining industry is exposed to, and the environmental risks such as water and air pollution. At the same time, copper is a critical material in the energy sector's low-carbon transition and decarbonizing the electricity use of this sector is important.
- The company intends to sell energy attribute certificates (EACs) from renewable energy projects financed under the framework. We note that globally, tariffs paid for EACs have so far been insufficient to meet additionality criteria (see **Purchased Energy** Emissions In Second Party Opinions for more details).
- Renewable energy projects themselves can create risks of local pollution and impacts on biodiversity and ecosystems that need to be managed carefully, especially during the construction phase. PHC undertakes environmental and social impact assessments before construction and implements mitigation measures as required under Chilean law, which we view as positive. Nevertheless, we would consider disclosure from the issuer on any additional voluntary measures implemented by the issuer as a stronger practice.
- PHC doesn't expect to allocate proceeds to new hydropower projects and will focus on refinancing existing hydro assets. Its current facilities are run-of-river hydropower systems that do not rely on artificial reservoirs and that have smaller social and environmental impacts. The decomposition of organic matter within the dam is minimal because the stored water is not exposed to air and sun. The issuer confirmed there is no risk of methane emissions in their assets.
- At the same time, because it remains eligible under the framework, we note that although hydropower is a clean and renewable energy source overall, the construction of new large hydropower facilities can have significant climate emissions from materials, construction, and reservoirs as well as impacts on the local environment, hydrology, biodiversity, and communities. If PHC pursues any new hydropower projects, robust environmental and social safeguards to manage these risks should be in place. While project selection criteria could be strengthened, we consider PHC has appropriate policies and procedures to mitigate these risks.
- Solar panel supply chains involve meaningful environmental and social risks from the mining of raw materials, including concerns about forced labor in some manufacturing. PHC supply policy aims to reduce its exposure to such risks. We expect the company to provide further transparency around specific sourcing criteria for solar PV when investing funds in such projects.

Renewable energy infrastructure	
Assessment	Description
Dark to Medium green	Infrastructure related to the above renewable energy technologies, including energy storage solutions such as batteries.
Analytical considerations	

- Energy storage technologies such as lithium batteries are crucial for facilitating greater integration of renewables into the grid and part of the solution for Chile's net-zero 2050 goal.
- At the same time, lithium batteries are associated with significant climate and environmental risks in materials sourcing, manufacture, and end-of-life disposal. Mining lithium and other raw materials for batteries can have substantial adverse environmental and social impacts. We see the development and disclosure of specific sourcing requirements and alignment with third-party standards as best practice for risk mitigation. Some battery materials can be carbon-intensive to produce and currently depend on fossil fuel inputs. Investments in battery recycling are crucial for mitigating the wider environmental impacts of battery material demands. Moreover, contingent upon the source of materials, we note that certain battery components may present significant social risks within their supply chains. These potential risks include impacts on communities and human rights violations. This is not particular to PHC but an industry-wide exposure.
- PHC's current strategy for mitigating potential environmental and social risks in its battery value chain is to focus on large-scale suppliers that have internal policies to mitigate such risks. However, we note that these risks are often concentrated in the raw material extraction phase of the value chain, an area currently not covered by PHC's existing policies. We expect PHC will improve its procedures to avoid or mitigate potential climate emissions as well as social and local ecosystem impacts in its selection of additional storage project types. The shading interval reflects a need to strengthen specific sustainability criteria for battery raw materials as well as end-of-life processes.

Second Party Opinion: Pacific Hydro Chile S.A.'s Green Finance Framework

- PHC could allocate proceeds to other renewable energy storage solutions not specified under the framework. Some storage technologies may entail risks related to climate warming and resilience as well as other environmental risks, such as water-related impacts, which are reflected in the shading interval.
- According to the issuer, other infrastructure could include transmission lines. PHC confirms it will only send renewable power through the lines. We note, however, that in Chile, transmission is considered public infrastructure and so other power producers could transmit fossil fuel-based electricity.

S&P Global Ratings' Shades of Green



Note: For us to consider use of proceeds aligned with ICMA Principles for a green project, we require project categories directly funded by the financing to be assigned one of the three green Shades.

LCCR--Low-carbon climate resilient. An LCCR future is a future aligned with the Paris Agreement; where the global average temperature increase is held below 2 degrees Celsius (2 C), with efforts to limit it to 1.5 C, above pre-industrial levels, while building resilience to the adverse impact of climate change and achieving sustainable outcomes across both climate and non-climate environmental objectives. Long term and near term--For the purpose of this analysis, we consider the long term to be beyond the middle of the 21st century and the near term to be within the next decade. Emissions lock-in--Where an activity delays or prevents the transition to low-carbon alternatives by perpetuating assets or processes (often fossil fuel use and its corresponding greenhouse gas emissions) that are not aligned with, or cannot adapt to, an LCCR future. Stranded assets--Assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities (as defined by the University of Oxford).

Related Research

- Analytical Approach: Second Party Opinions: Use of Proceeds, July 27, 2023
- FAQ: Applying Our Integrated Analytical Approach for Use-of-Proceeds Second Party Opinions, July 27, 2023
- Analytical Approach: Shades of Green Assessments, July 27, 2023
- Purchased Energy Emissions In Second Party Opinions And ESG Evaluations, March 23, 2023
- <u>S&P Global Ratings ESG Materiality Maps</u>, July 20, 2022

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