An S&P Global Second Party Opinion (SPO) includes S&P Global Ratings’ opinion on whether the documentation of a sustainable finance instrument, framework, or program, or a financing transaction aligns with certain third-party published sustainable finance principles. Certain SPOs may also provide our opinion on how the issuer’s most material sustainability factors are addressed by the financing. An SPO provides a point-in-time opinion, reflecting the information provided to us at the time the SPO was created and published, and is not surveilled. We assume no obligation to update or supplement the SPO to reflect any facts or circumstances that may come to our attention in the future. An SPO is not a credit rating, and does not consider credit quality or factor into our credit ratings. See Analytical Approach: Second Party Opinions.

Second Party Opinion

Gansu Provincial Highway Aviation Tourism Investment Group Co. Ltd.'s Green Finance Framework

Sept. 28, 2023

Location: China
Sector: Transportation infrastructure

Alignment With Principles

Aligned = ✔ Conceptually aligned = ○ Not aligned = ✗

✔ Green Bond Principles, ICMA, 2021 (with June 2022 Appendix 1)

See Alignment Assessment for more detail.

Strengths

The solar facility, a low-carbon renewable energy source, supports China’s power grid transition, in which coal currently plays a large role in its generation capacity.

Weaknesses

No weakness to report.

Areas to watch

Gansu Provincial Highway Aviation Tourism Investment Group Co. Ltd.’s (GHATG) disclosures are limited, with no sustainability report. This is common for local government-owned entities in China.

Uncertainties around lifecycle emissions and environmental impacts exist, including material sourcing and end-of-life challenges (e.g. decommissioning plan, recyclability of solar panels and batteries).

The solar industry raises complex social considerations, from sourcing materials for panels and batteries to their installation. As the sponsor of a solar plant, GHATG is indirectly exposed to potential issues around working conditions in its supply chain.
Eligible Green Projects Assessment Summary

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

<table>
<thead>
<tr>
<th>Renewable energy</th>
<th>Dark green</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development, construction, installation, and maintenance of solar facilities (including photovoltaic or thermodynamic plants).</td>
<td></td>
</tr>
</tbody>
</table>

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

Established in 1999, Gansu Provincial Highway Aviation Tourism Investment Group Co. Ltd. mainly engages in the construction, operation, and management of expressways in the Gansu Province of China. The company’s operating profit is dominated by its toll-road related segments, other businesses being trading, tourism-related services, and financial services. It is wholly owned by the Gansu provincial government through the provincial State-owned Assets Supervision and Administration Commission (SASAC). In the first quarter of 2023, the company’s assets reached US$99.1 billion-equivalent, with an operating income of US$6.0 billion and a total profit of US$23.2 million.

Material Sustainability Factors

Climate transition risk

Transportation is the fastest growing source of emissions worldwide, and transportation users like autos, airlines and freight, account for about a quarter of global greenhouse gas emissions according to the International Energy Agency. Infrastructure design and condition can affect greenhouse gas emissions and existing transportation infrastructure may require investment to support wider decarbonization trends. The exponential growth in electric vehicle sales is calling for the addition of dedicated infrastructure on toll roads, such as charging stations. Infrastructure development also produces significant emissions due to land use changes and reliance on carbon-intensive materials such as steel and cement. In the context of China, the transition to a low-carbon economy will require a massive shift in resources, innovation, and new technologies to enhance energy efficiency and resource productivity as the country emits a third of global greenhouse gases (see "China’s Transition to a Low-Carbon Economy and Climate Resilience Needs Shifts in Resources and Technologies," the World Bank, Oct. 12, 2022).

Physical climate risk

Acute physical risks--such as storms, wildfires, and floods--can impair, disrupt, or even destroy assets, limiting the availability of essential infrastructure including roads and mass transit systems. Over time, both acute and chronic risks--changing temperature and precipitation patterns and sea level rise--may shorten the useful life of vehicles and infrastructure. Many service interruptions are regional, but the key role of transportation access in communities and economies can lead to major impacts. Their impacts can also be much broader if key assets--like bridges, tunnels, or ports--are unavailable for extended periods. The increasing frequency and often severity of acute physical risks and the assets' long-term nature and fixed locations point to growing materiality. The impacts of physical climate risks may extend beyond the assets themselves and play out to an infrastructure provider’s region or service area. This could have more prolonged impacts on demand, potentially affecting stakeholders. Gansu Province, in the north-central and northwestern China, has a semi-arid to arid continental climate with risks of droughts and landslides.

Workforce health and safety

The health and safety of employees and passengers is critical, given that the transportation industry sees regular incidents and accidents, especially on roads. Workplace incidents can result in injuries and fatalities, which can also affect companies’ operations, legal exposure, and reputation.
Issuer And Context Analysis

The framework’s renewable project aims to address climate transition risk, which is one of the material sustainability factors (MSFs) for the company. GHATG supports the Gansu Province’s 14th Five-Year Energy Development Plan and the national dual-carbon strategy, which aims to peak carbon dioxide emissions by 2030 and achieve carbon neutrality before 2060. The company has therefore established the "green highway + green energy" strategy, making use of its highway assets in Gansu Province, where it has abundant solar energy sources. The company commits to applying environmental protection and energy-saving initiatives in its operations. Nevertheless, the company has yet to set specific targets on decarbonization.

Physical climate risks are important considerations for solar power facilities. GHATG mainly relies on the third-party feasibility study to assess and mitigate potential risks. For instance, the feasibility study has included geotechnical and hydrometeorological assessment to manage the associated physical risks.

While the project’s feasibility study covers workforce health and safety risks, it focuses on the solar plant’s direct scopes. GHATG has identified key occupational health and safety hazards throughout the project lifecycle and their corresponding countermeasures. As the sponsor of a solar plant, the company is also indirectly exposed to potential issues around working conditions in its supply chain. GHATG commits to not allocating raised funds to activities involving harmful or exploitative forms of forced or child labor; and activities violating national laws, regulations or international conventions and agreements, according to the framework’s exclusion list.

GHATG does not have sustainability disclosure or reporting, leading to limited tracking of its sustainability performance. We therefore have less insight on the company’s detailed agenda to address these MSFs (e.g., approaches to address physical and climate transition risks) nor do we have information on the progress on executing its sustainability strategy beyond the project included in this framework. That said, GHATG commits to disclose on its website the financed project’s impact. Reporting will cover the expected impacts with quantitative impact indicators.
Alignment Assessment

This section provides an analysis of the framework’s alignment to Green Bond Principles.

Alignment With Principles

✔ Green Bond Principles, ICMA, 2021 (with June 2022 Appendix 1)

✔ Use of proceeds

The framework’s green project category is shaded in green, and GHATG commits to allocate an amount equal to the net proceeds issued under the framework exclusively to renewable energy. Please refer to Analysis of Eligible Projects section for more information on our analysis of the environmental benefits of the expected use of proceeds. The company endeavors to contribute to Sustainable Development Goals’ (SDGs) target 7.2 (by 2030, increase substantially the share of renewable energy in the global energy mix) and 9.1 (develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all). In addition, the maximum look-back period for refinancing is three years, in line with market practice.

✔ Process for project evaluation and selection

The framework outlines the process to screen projects. The company’s department of planning and development will submit an annual investment plan to the board of directors for approval and then to the provincial government's SASAC for review. GHATG also commits to not allocating raised funds to activities listed on the framework’s exclusion list. The company mainly relies on the feasibility study to identify and manage the associated environmental and social risks.

✔ Management of proceeds

GHATG relies on its fund management system to track and monitor the allocation and management of proceeds. The company commits to reallocating proceeds if invested projects cease to comply with the framework’s eligibility criteria. Pending allocation, unallocated proceeds will be held in cash deposits.

✔ Reporting

GHATG commits to reporting the allocation of the net proceeds, and the expected environmental impacts of the financed projects. It will report the information annually on the company’s website, until the full allocation of the net proceeds. The company will disclose the renewable energy produced (in megawatt hour) and the renewable energy capacity (in megawatt).
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.

For each financing under the framework, GHATG expects to allocate 100% of proceeds under the framework to renewable energy.

The eligible assets will include assets for which GHATG has commenced operations or placed-in-service prior to the applicable green financing, unless otherwise noted in the respective financing documents.

Overall Shades of Green assessment

Based on the project category shades of green detailed below, and consideration of environmental ambitions reflected in GHATG’s green finance framework, we assess the framework dark green.

Green project categories

Renewable energy

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Development, construction, installation, and maintenance of solar facilities (including photovoltaic or thermodynamic plants).</td>
</tr>
<tr>
<td>Dark green</td>
<td>The company has identified a specific eligible asset--the Liangzhou District Jiuduntan Photovoltaic Power Generation Project. It is a photovoltaic power generation station with a 100 megawatt (MW) capacity and energy storage capacity with 15% of the installed capacity. After the construction is completed, it will be connected to the local power grid.</td>
</tr>
</tbody>
</table>

Analytical considerations

- The utilization of renewable energy is key to the low carbon transition and contributes to climate change mitigation. The framework’s solar power generation project will participate in integrating renewable energy into the local power grid and to China’s dual-carbon strategy. Coal currently plays a large role in the grid. Therefore, greater deployment of renewable energy sources, including solar, is essential for low-carbon and climate-resilient socioeconomic development in the region. The battery storage feature mitigates the intermittency issue of renewable electricity. GHATG estimates that the identified eligible project will save 63,500 tons of standard coal per year.

- There are lifecycle carbon emissions considerations during the development, construction, installation, and maintenance phases such as from material sourcing, manufacturing, transportation, and equipment end-of-life. While GHATG has conducted a feasibility study for the identified eligible project, it does not specify a lifecycle emission threshold. In addition, the company shared that decommissioning plans (e.g., the handling of end-of-life solar panels and batteries) are still under discussion, raising uncertainties over the end-of-life impacts.

- The framework does not exclude fossil-fuel based equipment or machineries to be used during the solar facility’s life cycle. That said, electric machineries may not be widely available, taking into account the local context.

- The project site is located in Gansu Province, a mostly desert area. GHATG relies on the feasibility study, conducted by a third-party and based on national standards (Guobiao), to identify and manage physical climate risks such as droughts, dust storms, and landslides. Other environmental impacts such as land use change and biodiversity risks appear to be sufficiently managed, as per the feasibility study commissioned by GHATG, in the natural environment of the Loess Plateau.
S&P Global Ratings’ Shades of Green

<table>
<thead>
<tr>
<th>Assessments</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark green</td>
<td>Activities that correspond to the long-term vision of an LCCR future.</td>
</tr>
<tr>
<td>Medium green</td>
<td>Activities that represent significant steps toward an LCCR future but will require further improvements to be long-term LCCR solutions.</td>
</tr>
<tr>
<td>Light green</td>
<td>Activities representing transition steps in the near-term that avoid emissions lock-in but do not represent long-term LCCR solutions.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Activities that do not have a material impact on the transition to an LCCR future, or, Activities that have some potential inconsistency with the transition to an LCCR future, albeit tempered by existing transition measures.</td>
</tr>
<tr>
<td>Orange</td>
<td>Activities that are not currently consistent with the transition to an LCCR future. These include activities with moderate potential for emissions lock-in and risk of stranded assets.</td>
</tr>
<tr>
<td>Red</td>
<td>Activities that are inconsistent with, and likely to impede, the transition required to achieve the long-term LCCR future. These activities have the highest emissions intensity, with the most potential for emissions lock-in and risk of stranded assets.</td>
</tr>
</tbody>
</table>

Example projects:
- Solar power plants
- Energy efficient buildings
- Hybrid road vehicles
- Health care services
- Conventional steel production
- New oil exploration

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).
# Mapping To The U.N.'s Sustainable Development Goals

Where the Financing documentation references the SDGs, we consider which SDGs it contributes to. We compare the activities funded by the Financing to the International Capital Markets Association (ICMA) SDG mapping and outline the intended linkages within our SPO analysis. Our assessment of SDG mapping does not impact our alignment opinion.

This framework intends to contribute to the following SDGs:

<table>
<thead>
<tr>
<th>Use of proceeds</th>
<th>SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable energy</td>
<td>*7. Affordable and clean energy</td>
</tr>
<tr>
<td></td>
<td>*9. Industry, innovation and infrastructure</td>
</tr>
</tbody>
</table>

*The eligible project categories link to these SDGs in the ICMA mapping.*
Related Research

• ESG Materiality Map Transportation Infrastructure, July 20, 2022

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Second Party Opinion: Gansu Provincial Highway Aviation Tourism Investment Group Co. Ltd.’s Green Finance Framework

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