

Second-Party Opinion

Union Pacific Green Financing Framework



Evaluation Summary

Sustainalytics is of the opinion that the Union Pacific Green Financing Framework is credible and impactful and aligns with the four core components of the Green Bond Principles 2021. This assessment is based on the following:



USE OF PROCEEDS The eligible categories for the use of proceeds – Clean Transportation, Circular Economy Adapted Products, Production, Technologies and Processes, Energy Efficiency, Renewable Energy, Sustainable Water and Wastewater Management, Terrestrial and Aquatic Biodiversity – are aligned with those recognized by the Green Bond Principles. Sustainalytics considers that investments in the eligible categories are expected to lead to positive environmental impacts and advance the UN Sustainable Development Goals, specifically SDGs 6, 7, 9, 12 and 15.



PROJECT EVALUATION / SELECTION Union Pacific’s Green Finance Committee is responsible for evaluating and selecting projects. Union Pacific has an environmental and social risk assessment process in place that applies to all eligible assets. Sustainalytics considers these risk management systems to be adequate and the project evaluation and selection process to be aligned with market practice.



MANAGEMENT OF PROCEEDS Union Pacific’s Finance Department will be responsible for the allocation and management of the bond proceeds. The department will manage and track the proceeds using internal systems. Union Pacific intends to fully allocate the proceeds to eligible assets within three years from issuance. Pending full allocation, unallocated proceeds will be temporarily managed according to Union Pacific’s normal liquidity practices. This is in line with market practice.



REPORTING Union Pacific intends to report the allocation of proceeds on its website on an annual basis until full allocation. Allocation reporting includes information such as amount allocated to eligible assets, the balance of unallocated proceeds and the proportion of financing and refinancing. Additionally, Union Pacific is committed to reporting on relevant impact metrics. Sustainalytics views Union Pacific’s allocation and impact reporting as aligned with market practice.

Evaluation date July 15, 2022

Issuer Location Omaha, United States

Report Sections

Introduction.....	2
Sustainalytics’ Opinion	3
Appendices	10

For inquiries, contact the Sustainable Finance Solutions project team:

John-Paul Iamonaco (Toronto)
Project Manager
john-paul.iamonaco@sustainalytics.com
(+1) 416 861 0403

Titus Vilches (Amsterdam)
Project Support

Sameen Ahmed (Toronto)
Project Support

Stefan Spataru (Amsterdam)
Project Support

Paramjot Kaur (New York)
Client Relations
susfinance.americas@sustainalytics.com
(+1) 646 518 9623

Introduction

Union Pacific Railroad Company is the principal operating company of Union Pacific Corporation (“Union Pacific”, “UNP” or the “Company”), a major rail freight operator headquartered in Omaha, Nebraska, USA. Union Pacific provides rail-based logistics services through its rail network that connects 23 states in the western United States. As of December 2021, UNP and its subsidiaries had nearly 30,000 employees and reported USD 21.8 billion in operating revenue.¹

UNP has developed the Union Pacific Green Financing Framework dated July 2022 (the “Framework”) under which it intends to issue green bonds and use the proceeds to finance and refinance, in whole or in part, existing and future projects that are expected to generate positive environmental impacts. The Framework defines eligibility criteria in six areas:

1. Clean Transportation
2. Circular Economy Adapted Products, Production, Technologies and Processes
3. Energy Efficiency
4. Renewable Energy
5. Sustainable Water and Wastewater Management
6. Terrestrial and Aquatic Biodiversity

UNP engaged Sustainalytics to review the Union Pacific Green Financing Framework and provide a Second-Party Opinion on the Framework’s environmental credentials and its alignment with the Green Bond Principles 2021 (GBP)². The Framework has been published in a separate document.³

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

Sustainalytics’ Second-Party Opinion reflects Sustainalytics’ independent⁴ opinion on the alignment of the reviewed Framework with the current market standards and the extent to which the eligible project categories are credible and impactful.

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

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

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

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

This document contains Sustainalytics’ opinion of the Framework and should be read in conjunction with that Framework.

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

¹ Union Pacific Corporation, “2021 Investor Factbook” (2022), at:

https://www.up.com/cs/groups/public/@uprr/@investor/documents/investordocuments/pdf_unp_2021_factbook.pdf

² The Green Bond Principles are administered by the International Capital Market Association and are available at <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>.

³ The Union Pacific Green Financing Framework is available on Union Pacific Corporation’s website at: <https://www.up.com/investor/green-financing/index.htm>

⁴ When operating multiple lines of business that serve a variety of client types, objective research is a cornerstone of Sustainalytics and ensuring analyst independence is paramount to producing objective, actionable research. Sustainalytics has therefore put in place a robust conflict management framework that specifically addresses the need for analyst independence, consistency of process, structural separation of commercial and research (and engagement) teams, data protection and systems separation. Last but not the least, analyst compensation is not directly tied to specific commercial outcomes. One of Sustainalytics’ hallmarks is integrity, another is transparency.

Sustainalytics' Second-Party Opinion, while reflecting on the alignment of the Framework with market standards, is no guarantee of alignment nor warrants any alignment with future versions of relevant market standards. Furthermore, Sustainalytics' Second-Party Opinion addresses the anticipated impacts of eligible projects expected to be financed with an amount equal to the net proceeds from bond issuances but does not measure the actual impact. The measurement and reporting of the impact achieved through projects financed under the Framework is the responsibility of the Framework owner. Upon twenty-four (24) months following the evaluation date set stated herein, UNP is encouraged to update the Framework, if necessary, and seek an update to the Second-Party Opinion to ensure ongoing alignment of the Framework with market standards and expectations.

In addition, the Second-Party Opinion opines on the potential allocation of an amount equal to the net proceeds but does not guarantee the realised allocation of an amount equal to the net bond proceeds towards eligible activities.

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

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Union Pacific Green Financing Framework

Sustainalytics is of the opinion that the Union Pacific Green Financing Framework is credible and impactful, and aligns with the four core components of the GBP. Sustainalytics highlights the following elements of UNP's Green Financing Framework:

- Use of Proceeds:
 - The eligible categories, Clean Transportation, Circular Economy Adapted Products, Production, Technologies and Processes, Energy Efficiency, Renewable Energy, Sustainable Water and Wastewater Management, Terrestrial and Aquatic Biodiversity, are aligned with those recognized by the GBP.
 - The Framework defines a look-back period of 24 months for refinancing of eligible projects, which Sustainalytics views as in line with market practice for capital expenditures.
 - Under the Clean Transportation category, UNP intends to finance expenditures related to low-carbon transportation and associated infrastructure, such as: (i) the purchase of new rolling stock, vehicles and equipment such as battery-electric locomotives and associated infrastructure; zero-emission vehicles and associated infrastructure; and refrigerated boxcars with hybrid refrigeration units; (ii) technological upgrades of existing rolling stock and energy management solutions for greater fuel efficiency and improvements on refrigerated boxcars to facilitate connection to hybrid power sources; and (iii) replacement and expansion of intermodal facilities as well as investments in electric and hybrid intermodal cranes and installation of new sidings and siding extensions to promote a shift of freight to rail alternatives. Sustainalytics notes that the Framework excludes infrastructure and rolling stock for railway lines that are dedicated to the transportation of fossil fuels.
 - Sustainalytics highlights that using proceeds for the purchase of battery-electric locomotives or new zero-emission vehicles is recognized as credible and impactful and is in alignment with the Low Carbon Transport Sector Criteria of the Climate Bonds Standard.
 - For expenditures related to technological improvements of its existing rolling stock, the Company has communicated that it intends to make investments in energy and fuel-efficient upgrades aimed at improving its GHG emissions profile. In 2021 UNP's GHG emissions intensity was 13.259 gCO₂e/tkm,⁵ which Sustainalytics views positively as

⁵ UNP, "Sustainability Metrics and Frameworks", at: <https://www.up.com/aboutup/esg/sustainability-metrics-frameworks/index.htm>

it is below the 25 gCO₂e/tkm emissions threshold criteria⁶ for the low-carbon transport sector. However, Sustainalytics also notes that UNP is unable to provide asset-level emissions performance data, which would provide additional assurance relating to the environmental credentials of the green assets. Nevertheless, based on the above and considering that the Company's fleet modernization program holds the potential to reduce the associated GHG emissions intensity further, Sustainalytics expects the financing under the Framework to result in positive environmental outcomes.

- Sustainalytics recognizes that investments in railway infrastructural upgrades will support the optimization of transport use, duration and distance in many cases, and thus hold the potential to reduce fuel consumption and associated GHG emissions. Additionally, for investments in intermodal facilities, Sustainalytics recognizes the Company's intention of promoting the modal shift of freight transportation from trucks to railroads, which have the potential to reduce GHG emissions by 75% compared to trucks.⁷
- Sustainalytics notes that, under intermodal freight facilities, the Framework contemplates investments in electric and hybrid cranes. Despite providing substantial fuel and emissions savings over conventional counterparts, hybrid cranes may prolong fossil fuel consumption. Nonetheless, Sustainalytics considers the financing of hybrid cranes to have a net positive environmental impact, in light of the benefits from intermodal freight facilities including reduced fuel use, lower emissions and increased capacity for transporting freight. However, Sustainalytics encourages UNP to prioritize investments in electric cranes over hybrid cranes, where feasible.
- Under the Circular Economy Adapted Products, Production, Technologies and Processes category, UNP may finance expenditures for the refurbishment, repurposing or remanufacturing of products such as rolling stock components, batteries, used railroad ties and metal. Sustainalytics notes the Company's confirmation that such activities will increase the beneficial life of assets that would otherwise be disposed.
- Under the Energy Efficiency category, UNP may finance investments that reduce energy consumption or support energy conservation, including: (i) heating, ventilation, air-conditioning, lighting, and electrical equipment that are Energy Star certified, and (ii) assets and technologies for monitoring and optimizing the amount and time of energy consumption such as smart meters, load controls and sensors.
- Under the Renewable Energy category, the Company may finance the acquisition, investment, development, maintenance and operation of on-site and off-site generation and distribution of renewable energy from solar or wind sources. The Company may also finance the purchase of renewable energy and storage capacity through long-term (greater than five years) power purchase agreements and virtual power purchase agreements.
- Under the Sustainable Water and Wastewater Management category, the Company may finance expenditures in technologies, products, systems, equipment and facilities for the capture and treatment of industrial wastewater from equipment washing and maintenance, spill prevention controls and countermeasure plans, and the collection, distribution, treatment, recycling, or reuse of water, stormwater, or wastewater. UNP confirmed that at the time of investment, all investments under this category will exceed environmental regulations. Sustainalytics encourages UNP to report on the environmental benefits associated with expenditures in this category.
- Under the Terrestrial and Aquatic Biodiversity category, the Company may finance expenditures in nature-based solutions for reforestation and forest conservation, wetland conservation, and habitat restoration and protection. The Company has confirmed that reforestation projects will be subject to environmental management plans, such as the Forest Stewardship Council (FSC)⁸

⁶ The universal freight threshold of 25 gCO₂e/t-km for all types of freight transport is based on the IEA's 2DS Freight Activity Model, as per the CBI Background Paper on Low Carbon Transport (2020), at: https://www.climatebonds.net/files/files/CBI-Transport_Criteria-04B.pdf

⁷ UNP, "2021 Building America Report", (p.6) at:

https://www.up.com/cs/groups/public/@uprr/@corprel/documents/up_pdf_natedocx/pdf_up_2021_bar.pdf

⁸ Forest Stewardship Council, at: <https://fsc.org/en/about-us>

or the Programme for the Endorsement of Forest Certification (PEFC).⁹ Sustainalytics notes that reforestation projects will use tree species well-adapted to local conditions.

- Project Evaluation and Selection:
 - UNP’s Green Finance Committee (the “Committee”) will be responsible for evaluating and selecting eligible assets in line with the Framework’s eligibility criteria from a shortlist of projects identified by the Treasury Group working alongside the Committee. The Committee has representatives from finance, operations, supply chain, and sustainability and strategy.
 - UNP has in place an environmental and social risk management process to ensure that all eligible assets are compliant with the Company’s risk management policies.
 - Based on the oversight for project selection and the presence of environmental and social risk management systems, Sustainalytics considers the process to be in line with market practice.
- Management of Proceeds:
 - UNP’s Finance Department will be responsible for the allocation and management of an amount equal to the net proceeds. The department will manage and track the proceeds on a bond-by-bond basis using internal systems.¹⁰
 - UNP intends to achieve full allocation of an amount equal to the net proceeds to eligible assets within three years of issuance. Pending allocation, unallocated proceeds will be temporarily managed according to the Company’s liquidity management policies.
 - Based on the presence of an internal tracking system and disclosure of temporary use of proceeds, Sustainalytics considers this process to be in line with market practice.
- Reporting:
 - UNP intends to report on the allocation of proceeds in a report on a designated website annually until full allocation, and thereafter, as necessary in the event of material developments. Allocation reporting will include the total amount allocated to eligible assets, the balance of unallocated proceeds and the proportion of financing and refinancing.
 - In addition, the Company is committed to reporting on relevant impact metrics which may include tCO₂e emissions avoided and energy savings achieved.
 - Based on the availability of allocation and impact reporting, Sustainalytics considers this process to be in line with market practice.

Alignment with Green Bond Principles 2021

Sustainalytics has determined that the Union Pacific Green Financing Framework aligns with the four core components of the GBP. For detailed information, please refer to Appendix 1: Green Bond/Green Bond Program External Review Form.

Section 2: Sustainability Strategy of UNP

Contribution of framework to Union Pacific Corporation’s sustainability strategy

Sustainalytics is of the opinion that UNP demonstrates a commitment to sustainability with a strategy built on five key pillars: safety and ethics, workforce diversity, sustainable solutions, emissions reduction and community engagement. In terms of environmental sustainability, the Company focuses on key areas such as reduction of emissions through a low-carbon transportation infrastructure, protection of natural resources, and support of land conservation initiatives. UNP’s sustainability reports have been published regularly since 2009 with ESG reports being aligned with the Sustainability Accounting Standards Board (SASB)¹¹ and the Global Reporting Initiatives (GRI)¹² standards, CDP reporting guidelines¹³ and the Task Force on Climate-related Financial Disclosures (TCFD) recommendations.^{14,15}

UNP has demonstrated and reported on its commitments to these focus areas through the following initiatives:

⁹ Programme for the Endorsement of Forest Certification, at: <https://www.pefc.org/what-we-do>

¹⁰ Bond-by-bond basis refers to a non-portfolio approach to the management and tracking of proceeds.

¹¹ SASB, “Rail Transportation”, available at: <https://www.sasb.org/standards/download/>

¹² Global Reporting Initiatives Standards, at: <https://www.globalreporting.org/standards>

¹³ CDP Reporting guidelines are available at: <https://www.cdp.net/en/guidance/guidance-for-companies>

¹⁴ Task Force on Climate-related Financial Disclosures (TCFD) recommendations, available at:

<https://www.fsb-tcfd.org/recommendations/>

¹⁵ The ESG reports of the Company are aligned with the SASB and GRI standards, while environmental disclosures are additionally aligned with CDP reporting and TCFD recommendations.

- In 2021, UNP set emissions reduction targets to reduce absolute scopes 1 and 2 GHG emissions¹⁶ and GHG emissions on a well-to-wheel basis¹⁷ by 26% by 2030 versus 2018. This target represents 85% of UNP's total calculated emissions in 2018 (UNP's baseline year) and has been validated by the Science Based Targets initiative (SBTi). The Company has further committed to re-evaluating these goals by 2025 with the aim of achieving net zero emissions by 2050.¹⁸ To achieve its target, the Company is working to reduce fuel consumption through implementation of Precision Scheduled Railroading (PSR) principles to improve operational efficiency, increase its use of low-carbon biofuels and the adoption of alternative propulsion technology. Additionally, since 2010, UNP has invested up to USD 3.4 billion to retire and replace 2,500 older locomotives and purchased 1,300 new locomotives that are more fuel efficient. Through its fleet modernization program, the Company rebuilt 175 locomotives in 2020, with each rebuilt engine resulting in approximately 53% reduction in emissions and an additional 5% reduction in fuel consumption per engine, and expects to modernize another 100 engines in 2022. UNP also aims to implement its Energy Management System (EMS) through its entire fleet, which is expected to reduce GHG emissions by 4% annually by 2025. The Company's Rail cleaning technology, installed in over a fourth of its fleet by 2021 is estimated to improve tractive power of a locomotive by up to 20%, reducing the number of locomotives needed to move freight, thus reducing GHG emissions.¹⁹
- UNP is committed to diverting waste from landfills and taking initiatives for recycling and waste management. Under this commitment, UNP diverted approximately 56% of the waste generated from its operations from landfills in 2021.²⁰ The Company's Environmental Policy²¹ outlines this commitment to responsibly minimizing, disposing, recycling and repurposing waste generated in operations.
- UNP works with community partners and non-profit organizations on conservation plans to manage biodiversity and protect ecosystems in its rail network. The Company also implements plans to prevent stormwater pollution at 270 facilities, as well as spill prevention control and countermeasure plans at 140 facilities and wastewater treatment systems at 90 facilities. Furthermore, in 2021, UNP established a Business Resource Group which is focused on sustainability initiatives such as developing nature-based solutions and circular economy solutions.²²

Sustainalytics is of the opinion that the Union Pacific Green Financing Framework is aligned with the Company's overall sustainability strategy and initiatives and will further the Company's action on its key environmental priorities.

Approach to managing environmental and social risks associated with the projects

Sustainalytics acknowledges that the Company intends to invest an amount equal to the net proceeds from the bonds issued under the Framework towards eligible projects that are expected to have positive environmental impact. However, Sustainalytics is aware that such eligible projects could also lead to negative environmental and social outcomes. Some key environmental and social risks possibly associated with the eligible projects include occupational health and safety, community relations and stakeholder participation, emissions, effluents and waste generated in construction.

Sustainalytics is of the opinion that UNP is able to manage or mitigate potential risks through implementation of the following:

- With occupational health and safety as a key priority, UNP has designed policies and programs to reduce accidents and injuries across its workforce. The Company's reportable injury rate per 200,000 employee-hours of 0.98 in 2021, a 9% increase versus 2020. UNP has engaged third-party experts to further improve safety performance through better coaching and training and root-cause analyses.²³ The Company also expects its contractors and suppliers to share its commitment to health and

¹⁶ Scope 1 comprises direct emissions from all owned or controlled sources, while scope 2 relates to indirect emissions from the generation of purchased energy.

¹⁷ Well-to-wheel emissions include well-to-tank emissions, which are scope 3 emissions generated upstream in the value chain during fuel production and transport, and tank-to-wheel emissions, which are scope 1 emissions related to the consumption of fuel.

¹⁸ UNP, "2021 Climate Action Plan", at:

https://www.up.com/cs/groups/public/@uprr/@corprel/documents/up_pdf_nateddocs/pdf_up_2021_climate_action_pln.pdf

¹⁹ Ibid.

²⁰ UNP, "2021 Building America Report", (p.12) at:

https://www.up.com/cs/groups/public/@uprr/@corprel/documents/up_pdf_nateddocs/pdf_up_2021_bar.pdf

²¹ UNP, "Environmental Policy", at: <https://www.up.com/aboutup/environment/policy/index.htm>

²² UNP, "2021 Building America Report", (p.12) at:

https://www.up.com/cs/groups/public/@uprr/@corprel/documents/up_pdf_nateddocs/pdf_up_2021_bar.pdf

²³ Ibid.

safety and requires them to adopt its general safety practices and enforce occupational health and safety standards of their own, as outlined in the Company's Supplier's Code of Conduct.²⁴ UNP also requires all contractors to be registered with eRailSafe which sets industry standards for safety and security management for railroads and the vendors serving the industry. Additionally, contractors are also required to follow specific safety regulations such as the OSHA, FRA and FMCSA requirements.²⁵

- UNP engages with federal and state regulatory processes including the US Environmental Protection Agency (EPA), Federal Railroad Administration, Surface Transportation Board and US Customs and Border Protection (CBP), on a variety of ESG topics to inform decision making. The Company is also actively involved with various industry associations on matters such as development of policy recommendations, safety protocols, and shared knowledge and research.²⁶
- UNP complies with relevant environmental laws and regulations and the requirement for an environmental risk assessment for all construction-related projects.²⁷ Sustainalytics also notes that all financing under the Framework will take place in the US which is on the list of Designated Countries under the Equator Principles, indicating that environmental and social governance legislation systems and institutional capacity are sufficient to ensure mitigation of the common environmental and social risks.²⁸

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

Section 3: Impact of Use of Proceeds

All six use of proceeds categories are aligned with those recognized by the GBP. Sustainalytics has focused on two below where the impact is specifically relevant in the local context.

Importance of clean freight transportation in the US

In 2021, the freight rail system in the US accounted for 25% of global freight rail activity.²⁹ According to the US Department of Transportation, freight moved by rail accounted for 28% of the country's total domestic freight transport as of 2019, with 52% of goods moved by rail being bulk commodities, such as agriculture and energy products. The potential high capacity of freight rail offers a low-carbon solution for future transportation demands from increasing urbanization in the US.³⁰ Rail freight is the most energy efficient and least carbon-intensive land-based transport mode, considering that trains use eight times less energy and emit four times less GHG emissions than trucks per tonne of carried freight.³¹ The alignment with the pathway to net zero by 2050 requires a faster shift from carbon-intensive modes, including trucks and airplanes to rail by 2030. Accelerating this shift to decrease reliance on fossil fuel transportation requires up to USD 475 billion in investments in the rail sector, specifically in rail infrastructure and rolling stock, according to the IEA.³²

In this context, Sustainalytics considers UNP's investment in clean transportation to be well positioned to deliver positive environmental impact through its Green Financing Framework.

Importance of increasing the share of renewable energy in the US

The electricity sector is the second largest source of GHG emissions in the US, accounting for 25% of total GHG emissions in 2020.³³ As of 2020, 60% of US electricity generation comes from fossil fuels, such as natural gas, coal and petroleum, and 20% comes from nuclear energy.³⁴ From 1990 to 2019, GHG emissions from electricity generation decreased by 12%, as a result of the increase in renewable energy and energy

²⁴ UNP, "Supplier's Code of Conduct", at: https://www.up.com/suppliers/code_of_conduct/index.htm

²⁵ UNP, "2021 Building America Report", (p.19) at:

https://www.up.com/cs/groups/public/@uprr/@corprel/documents/up_pdf_natedocx/pdf_up_2021_bar.pdf

²⁶ Ibid.

²⁷ Ibid.

²⁸ Equator Principles, "Designated Countries", (2020) at: <https://equator-principles.com/about-the-equator-principles/designated-countries/>

²⁹ IEA, "Rail", (2021), at: <https://www.iea.org/reports/rail>

³⁰ US Department of Transportation, "Freight Rail Overview", at: <https://railroads.dot.gov/rail-network-development/freight-rail-overview>

³¹ IEA, "Rail", (2021), at: <https://www.iea.org/reports/rail>

³² IEA, "The Future of Rail – Opportunities for energy and the environment", (2019), p.89, at: https://iea.blob.core.windows.net/assets/fb7dc9e4-d5ff-4a22-ac07-ef3ca73ac680/The_Future_of_Rail.pdf

³³ US Environmental Protection Agency, "Sources of Greenhouse Gas Emissions", at: <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#electricity>

³⁴ US Energy Information Administration, "Electricity Explained", at: <https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php>

efficiency.³⁵ Although renewable energy generation in the US has experienced significant growth since 2008, it accounted for only 20.1% of the country's total electricity generated in 2021.^{36,37} More specifically, wind energy contributed to 9.2% of total electricity generation in the country, while solar energy contributed 2.8% in the same year.³⁸

Projections show a likely increase in US renewables to approximately 35% of total capacity by 2030.³⁹ However, this figure is well below the projected proportion of renewables in the global energy system of 40% by the same year.⁴⁰ Consequently, significantly more investments in renewable energy are required in order to meet the Paris Agreement climate target of limiting temperature increases to well below 2°C.⁴¹ According to the DOE National Renewable Energy Laboratory, presently available technologies have the capacity to increase renewable electricity generation to account for 80% of the US electricity generation by 2050, including via wind and solar.⁴² In 2021, the US government set a goal to reach 100% carbon-free electricity by 2035, and this is expected to further add to the renewable energy momentum in the country.⁴³

Considering the above, Sustainalytics believes that the activities carried out under the Framework are expected to contribute towards increasing the renewable energy generation and supporting the clean energy transition in the US.

Alignment with/contribution to SDGs

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

Use of Proceeds Category	SDG	SDG target
Clean Transportation	9. Industry, innovation and infrastructure	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
Circular Economy Adapted Products, Production, Technologies and Processes	12. Responsible consumption and production	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
Energy Efficiency	7. Affordable and clean energy	7.3 By 2030, double the global rate of improvement in energy efficiency
Renewable Energy	7. Affordable and clean energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix
Sustainable Water and Wastewater Management	6. Clean water and sanitation	6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials,

³⁵ US Environmental Protection Agency, "Sources of Greenhouse Gas Emissions", at: <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#electricity>

³⁶ US Energy Information Administration, "U.S. primary energy consumption by energy source", (2020), at: <https://www.eia.gov/energyexplained/us-energy-facts/>

³⁷ US Energy Information Administration, "What is U.S. electricity generation by source", at: <https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>

³⁸ Ibid.

³⁹ EIA, "Annual Energy Outlook 2022" (2022), at: https://www.eia.gov/outlooks/aeo/ppt/AEO2022_ReleasePresentation.pptx

⁴⁰ IEA, "World Energy Outlook 2021" (2021) at: <https://iea.blob.core.windows.net/assets/4ed140c1-c3f3-4fd9-acae-789a4e14a23c/WorldEnergyOutlook2021.pdf>

⁴¹ International Renewable Energy Agency, "Renewable energy: a key climate solution", (2017) at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/Nov/IRENA_A_key_climate_solution_2017.pdf?la=en&hash=A9561C1518629886361D12EFA11A051E004C5C98

⁴² US National Renewable Energy Laboratory, "Renewable Electricity Futures Study", at: <https://www.nrel.gov/docs/fy13osti/52409-ES.pdf>

⁴³ The White House, "FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies", (2021), at: <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>

		halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
Terrestrial & Aquatic Biodiversity	15. Life on land	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

Conclusion

Union Pacific has developed the Union Pacific Green Financing Framework under which it may issue green bonds and use the proceeds to finance in whole or in part, existing or future projects related to clean transportation, circular economy adapted products, production, technologies and processes, energy efficiency, renewable energy, sustainable water and wastewater management and terrestrial and aquatic biodiversity. Sustainalytics considers that the projects funded by the green bond proceeds are expected to provide positive environmental impact.

The Union Pacific Green Financing Framework outlines a process for tracking, allocating and managing proceeds and makes commitments for UNP to report on the allocation and impact of the use of proceeds. Furthermore, Sustainalytics believes that the Union Pacific Green Financing Framework is aligned with the overall sustainability strategy of the Company and that the use of proceeds are expected to contribute to the advancement of the UN Sustainable Development Goals 6, 7, 9, 12 and 15. Additionally, Sustainalytics is of the opinion that Union Pacific has adequate measures to identify, manage and mitigate environmental and social risks commonly associated with the eligible projects.

Based on the above, Sustainalytics is confident that Union Pacific is well positioned to issue green bonds and that the Union Pacific Green Financing Framework is robust, transparent and in alignment with the four core components of the Green Bond Principles 2021.

Appendix

Appendix 1: Green Bond / Green Bond Program - External Review Form

Section 1. Basic Information

Issuer name:	Union Pacific Corporation
Green Bond ISIN or Issuer Green Bond Framework Name, if applicable:	Union Pacific Green Financing Framework
Review provider's name:	Sustainalytics
Completion date of this form:	July 15, 2022
Publication date of review publication:	
Original publication date [please fill this out for updates]:	

Section 2. Review overview

SCOPE OF REVIEW

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

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

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

ROLE(S) OF REVIEW PROVIDER

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

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

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

Please refer to Evaluation Summary above.

Section 3. Detailed review

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

1. USE OF PROCEEDS

Overall comment on section (*if applicable*):

The eligible categories for the use of proceeds – Clean Transportation, Circular Economy Adapted Products, Production, Technologies and Processes, Energy Efficiency, Renewable Energy, Sustainable Water and Wastewater Management, and Terrestrial & Aquatic Biodiversity – are aligned with those recognized by the Green Bond Principles. Sustainalytics considers that the eligible categories will lead to positive environmental impacts and advance the UN Sustainable Development Goals, specifically SDGs 6, 7, 9, 12 and 15.

Use of proceeds categories as per GBP:

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

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

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section (*if applicable*):

Union Pacific's Green Finance Committee is responsible for evaluating and selecting projects. Union Pacific has an environmental and social risk assessment process in place that applies to all eligible assets. Sustainalytics considers these risk management systems to be adequate and the project evaluation and selection process to be aligned with market practice.

Evaluation and selection

- | | |
|---|---|
| <input checked="" type="checkbox"/> Credentials on the issuer's environmental sustainability objectives | <input checked="" type="checkbox"/> Documented process to determine that projects fit within defined categories |
|---|---|

- | | |
|--|---|
| <input checked="" type="checkbox"/> Defined and transparent criteria for projects eligible for Green Bond proceeds | <input checked="" type="checkbox"/> Documented process to identify and manage potential ESG risks associated with the project |
| <input type="checkbox"/> Summary criteria for project evaluation and selection publicly available | <input type="checkbox"/> Other (<i>please specify</i>): |

Information on Responsibilities and Accountability

- | | |
|--|--|
| <input checked="" type="checkbox"/> Evaluation / Selection criteria subject to external advice or verification | <input type="checkbox"/> In-house assessment |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

3. MANAGEMENT OF PROCEEDS

Overall comment on section (*if applicable*):

Union Pacific's Finance Department will be responsible for the allocation and management of the bond proceeds. The department will manage and track the proceeds using internal systems. Union Pacific intends to fully allocate the proceeds to eligible assets within three years from issuance. Pending full allocation, unallocated proceeds will be temporarily managed according to Union Pacific's normal liquidity practices. This is in line with market practice.

Tracking of proceeds:

- | |
|---|
| <input checked="" type="checkbox"/> Green Bond proceeds segregated or tracked by the issuer in an appropriate manner |
| <input checked="" type="checkbox"/> Disclosure of intended types of temporary investment instruments for unallocated proceeds |
| <input type="checkbox"/> Other (<i>please specify</i>): |

Additional disclosure:

- | | |
|---|--|
| <input type="checkbox"/> Allocations to future investments only | <input type="checkbox"/> Allocations to both existing and future investments |
| <input type="checkbox"/> Allocation to individual disbursements | <input type="checkbox"/> Allocation to a portfolio of disbursements |
| <input checked="" type="checkbox"/> Disclosure of portfolio balance of unallocated proceeds | <input type="checkbox"/> Other (<i>please specify</i>): |

4. REPORTING

Overall comment on section (*if applicable*):

Union Pacific intends to report on allocation of proceeds on its website on an annual basis until full allocation. Allocation reporting includes information such as amount allocated to eligible assets, the balance of unallocated proceeds and the proportion of financing and refinancing. Additionally, Union Pacific is

committed to reporting on relevant impact metrics. Sustainalytics views Union Pacific's allocation and impact reporting as aligned with market practice.

Use of proceeds reporting:

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

Information reported:

- Allocated amounts
 Green Bond financed share of total investment
 Other (please specify): the amount of net proceeds allocated to eligible projects, amounts pending allocation, and the share of financing and refinancing of existing or new eligible projects

Frequency:

- Annual
 Semi-annual
 Other (please specify):

Impact reporting:

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

Information reported (expected or ex-post):

- GHG Emissions / Savings
 Energy Savings
 Decrease in water use
 Other ESG indicators (please specify): number of new rolling stock, vehicles or equipment deployed and type, number of new infrastructure projects deployed that support clean transportation, expected extension of lifetime for locomotives, reduction in fuel consumption, number/tons of redundant products that have been repurposed/ refurbished and/or remanufactured, renewable energy generated or purchased, amount of wastewater treated, maintenance/safeguarding/increase of natural landscape area (including forest)

Frequency

- Annual Semi-annual
 Other (please specify):

Means of Disclosure

- Information published in financial report Information published in sustainability report
 Information published in ad hoc documents Other (please specify): UNP’s website
 Reporting reviewed (if yes, please specify which parts of the reporting are subject to external review):

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

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

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE

Type(s) of Review provided:

- Consultancy (incl. 2nd opinion) Certification
 Verification / Audit Rating
 Other (please specify):

Review provider(s):

Date of publication:

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

- i. Second-Party Opinion: An institution with environmental expertise, that is independent from the issuer may issue a Second-Party Opinion. The institution should be independent from the issuer’s adviser for its Green Bond framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second-Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles. In particular, it can include an assessment of the issuer’s overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.
- ii. Verification: An issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer’s internal tracking method for use of proceeds, allocation of funds from Green Bond proceeds, statement of environmental impact or alignment of reporting with the GBP, may also be termed verification.
- iii. Certification: An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against a recognised external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.

-
- iv. **Green Bond Scoring/Rating:** An issuer can have its Green Bond, associated Green Bond framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialised research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the GBP, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.

Disclaimer

Copyright ©2022 Sustainalytics. All rights reserved.

The information, methodologies and opinions contained or reflected herein are proprietary of Sustainalytics and/or its third party suppliers (Third Party Data), and may be made available to third parties only in the form and format disclosed by Sustainalytics, or provided that appropriate citation and acknowledgement is ensured. They are provided for informational purposes only and (1) do not constitute an endorsement of any product or project; (2) do not constitute investment advice, financial advice or a prospectus; (3) cannot be interpreted as an offer or indication to buy or sell securities, to select a project or make any kind of business transactions; (4) do not represent an assessment of the issuer's economic performance, financial obligations nor of its creditworthiness; and/or (5) have not and cannot be incorporated into any offering disclosure.

These are based on information made available by the issuer and therefore are not warranted as to their merchantability, completeness, accuracy, up-to-dateness or fitness for a particular purpose. The information and data are provided "as is" and reflect Sustainalytics' opinion at the date of their elaboration and publication. Sustainalytics accepts no liability for damage arising from the use of the information, data or opinions contained herein, in any manner whatsoever, except where explicitly required by law. Any reference to third party names or Third Party Data is for appropriate acknowledgement of their ownership and does not constitute a sponsorship or endorsement by such owner. A list of our third-party data providers and their respective terms of use is available on our website. For more information, visit <http://www.sustainalytics.com/legal-disclaimers>.

The issuer is fully responsible for certifying and ensuring the compliance with its commitments, for their implementation and monitoring.

In case of discrepancies between the English language and translated versions, the English language version shall prevail.

About Sustainalytics, a Morningstar Company

Sustainalytics, a Morningstar Company, is a leading ESG research, ratings and data firm that supports investors around the world with the development and implementation of responsible investment strategies. For more than 30 years, the firm has been at the forefront of developing high-quality, innovative solutions to meet the evolving needs of global investors. Today, Sustainalytics works with hundreds of the world’s leading asset managers and pension funds who incorporate ESG and corporate governance information and assessments into their investment processes. Sustainalytics also works with hundreds of companies and their financial intermediaries to help them consider sustainability in policies, practices and capital projects. With 17 offices globally, Sustainalytics has more than 1500 staff members, including more than 500 analysts with varied multidisciplinary expertise across more than 40 industry groups.

For more information, visit www.sustainalytics.com

Or contact us contact@sustainalytics.com

