



ANNEX - SECOND PARTY OPINION

EAST JAPAN RAILWAY COMPANY

GREEN BOND

PRE-ISSUANCE ASSESSMENT

Prepared by: DNV Business Assurance Japan K.K.

Location: Kobe, Japan

Date: 15 February 2023

Ref. Nr.: PRJN- 507825-2023-ANX-JPN-01

This ANNEX is prepared based on the East Japan Railway Company Sustainability Finance Framework Second Party Opinion (hereinafter, "Master SPO") (Ref. Nr.: PRJN-461128-2022-AST-JPN-01 *5 December 2022), which was assessed against the East Japan Railway Company Sustainability Finance Framework (hereinafter, "Framework").

*For more information on the ANNEX - Second Party Opinion, see following DNV website <https://www.dnv.jp/news/page-227965> Release of a new evaluation service (Master SPO + ANNEX)



Executive Summary

DNV Business Assurance Japan K.K. (hereinafter, "DNV") has confirmed that the East Japan Railway Company Green Bond (hereinafter, "BOND") to be executed by East Japan Railway Company (hereinafter, "JR East"), based on the Framework^{*1} which has already been assessed its eligibility^{*2} and that is planned to be executed and managed through appropriate internal processes.

*1: East Japan Railway Company Sustainability Finance Framework

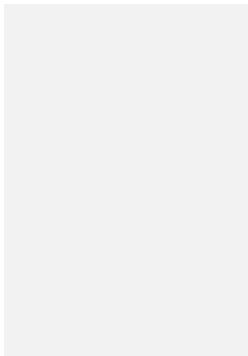
*2: East Japan Railway Company Sustainability Finance Framework Second Party Opinion

Table-1 provides an overview of the BOND and ANNEX - Second Party Opinion. The additional criteria to be assessed in the ANNEX - Second Party Opinion are Element-1 (Use of Proceeds) and Element-4 (Reporting) which are under the specific use of proceeds bond (response to the four elements). In addition, this report includes opinion against to EU taxonomy criteria related to "Transportation".

The conformances against to the criteria for the other elements has already been assessed its eligibility in accordance with Framework.

Table-1 JR East Green Bond ANNEX - Second Party Opinion

Target finance	JR East Green Bond	
Target organization	East Japan Railway Company	
Target framework	East Japan Railway Company Sustainability Finance Framework	
Target external review	East Japan Railway Company Sustainability Finance Framework Second Party Opinion Ref. Nr.: PRJN-461128-2022-AST-JPN-01 Issued on 5 December 2022	
Target criteria	Criteria for the use of proceeds bond <ul style="list-style-type: none"> - Green Bond Principles (ICMA, 2021) - Green Bond Guidelines (MoE, 2022) - EU taxonomy "Transportation" (EU committee) 	
Bonds with specific use of proceeds (response to the four elements)	Element-1 (Use of proceeds)	<ul style="list-style-type: none"> - Confirmed reliance on the Framework. Additional assessment was implemented as follows: <ul style="list-style-type: none"> • Train cars; Investments in relation to manufacturing or renovation of train cars powered by electricity • Railway facilities; Investment (capital expenditure) and expenses (operating expenditure) for the maintenance, renovation or renewal of railway equipment, tracks, signals, station buildings, rail yards and other essential facilities for railway operations
	Element-2 (Process for project evaluation and selection)	<ul style="list-style-type: none"> - Confirmed reliance on Framework
	Element-3 (Management of proceeds)	<ul style="list-style-type: none"> - Confirmed reliance on Framework



Element-4 (Reporting)

- Confirmed reliance on Framework. Additional review were carried out as follows:
 - Allocation of proceeds: items and categories
 - Environmental benefits:
 - **Train Cars**; CO₂ emissions stemming from railway operations (g-CO₂/person-km)
 - **Railway facilities; Details** of maintenance, renovation and renewal of essential facilities to operate railways, including tracks, signals, station buildings and rail yards
 - ➔ Details are described in section V

DNV, as an external reviewer, provided an additional eligibility assessment on the use of proceeds and reporting of the BOND, based on an assessment of the Framework, additional criteria (EU taxonomy, Transportation) and other relevant documents and information provided by JR East. DNV also confirmed that there were no changes to the other items (in accordance with the framework).



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Revision History

Date of Issue	Remarks
15 February, 2023	Initial version, JR East Green Bond ANNEX - Second Party Opinion

Disclaimer

Our assessment relies on the premise that the data and information provided by Fundraiser to us as part of our review procedures have been provided in good faith. Because of the selected nature (sampling) and other inherent limitation of both procedures and systems of internal control, there remains the unavoidable risk that errors or irregularities, possibly significant, may not have been detected. Limited depth of evidence gathering including inquiry and analytical procedures and limited sampling at lower levels in the organization were applied as per Scope of work. DNV expressly disclaims any liability or co-responsibility for any decision a person or an entity may make based on this Statement.

Statement of Competence and Independence

DNV applies its own management standards and compliance policies for quality control, in accordance with ISO/IEC 17021:2011 - Conformity Assessment Requirements for bodies providing audit and certification of management systems, and accordingly maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. We have complied with the DNV Code of Conduct¹ during the assessment and maintain independence where required by relevant ethical requirements. This engagement work was carried out by an independent team of sustainability assurance professionals. DNV was not involved in the preparation of statements or data included in the Framework except for this Statement. DNV maintains complete impartiality toward stakeholders interviewed during the assessment process.

¹ DNV Code of Conduct is available from DNV website (www.DNV.com)

I. Scope and Objectives

DNV has been commissioned by JR East to provide a pre-issuance assessment on the JR East Green Bond. Our objective has been to implement an assessment to confirm that JR East meets the criteria established on GBP/GBGLs and related EU taxonomy criteria, which are the criteria for BOND with the specific use of proceeds, to provide ANNEX - Second Party Opinion regarding the eligibility of the BOND.

DNV, as an independent external reviewer, has identified no real or perceived conflict of interest associated with the delivery of this ANNEX - Second Party Opinion for JR East.

In this report, no assurance is provided regarding the financial performance of the BOND, the value of any investments in the BOND, or the long-term environmental benefits of the transaction.

(1) Scope of review*

As per the review, DNV assessed the following elements and confirmed their alignment with the GBP:

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

* DNV has already reviewed "Process for Project Evaluation and Selection", and "Management of Proceeds" and has issued Master SPO as below¹⁾. DNV also confirmed through our assessment with JR East that there were no changes in these elements for the BOND to be issued this time or no additional assessments are required for them.

1) East Japan Railway Company Sustainability Finance Framework Second Party Opinion
Ref. Nr.: PRJN-461128-2022-AST-JPN-01, 5 December 2022

(2) Role(s) of review provider

- | | |
|---|--|
| <input checked="" type="checkbox"/> Second Party Opinion | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification | <input type="checkbox"/> Ratings |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

(3) Standards/guidelines to be applied

No.	Standards/guidelines	Scheme owner
1.	Green Bond Principles (GBP)	International Capital Market Association (ICMA), 2021
2.	Green Bond Guidelines (GBGLs)	Ministry of the Environment, 2022
3.	EU taxonomy (Transportation) ^{*1}	European Commission

*1 This report additionally provides opinion on the alignment with EU taxonomy criteria "Transportation" (Activity number 6.1 "Passenger interurban rail transport" and 6.14 "Infrastructure for rail transport".)



II. Responsibilities of JR East and DNV

JR East has provided the information and data used by DNV during the delivery of this review. DNV's ANNEX - Second Party Opinion represents an independent opinion and is intended to inform JR East and other interested stakeholders in the BOND as to whether the established criteria have been met, based on the information provided to us. In our work we have relied on the information and the facts presented to us by JR East. DNV is not responsible for any aspect of the nominated projects and assets referred to in this opinion and cannot be held liable if estimates, findings, opinions, or conclusions are incorrect. Thus, DNV shall not be held liable if any of the information or data provided by JR East's management and used as a basis for this assessment were not correct or complete.

III. Basis of DNV's Opinion

To provide a more flexible ANNEX - Second Party Opinion for the issuer, JR East, DNV identified the key assessment targets and carried out assessments in accordance with its procedures.

DNV, as an independent external reviewer, provides ANNEX - Second Party Opinion according to the protocol.

Our Protocol includes a set of suitable criteria that can be used to underpin DNV's opinion. The overarching principle behind the green bond as the basis for the opinion are as follows:

"enable capital-raising and investment for new and existing projects with environmental benefits"

As per our Protocol, the criteria against which the BOND has been grouped into common elements below.

The additional assessment for this ANNEX - Second Party Opinion covers Element-1 and Element-4 out of the four common elements of GBPs/GBGLs, and EU taxonomy criteria "Transportation".



Part of four elements and their alignment of the BOND with GBP/GBGLs eligibility have already been assessed for eligibility. Detailed results of the eligibility assessment for such parts can be found in the "East Japan Railway Company Sustainability Finance Framework Second Party Opinion" (Ref. Nr.: PRJN-461128-2022-AST-JPN-01 Issued on 5 December 2022).

(1) Four elements of GBP/GBGLs

Principle One: Use of Proceeds

**Subject to additional assessment of ANNEX - Second Party Opinion*

The Use of Proceeds criteria are guided by the requirement that an issuer of a green bond must use the funds raised to bond eligible activities. The eligible activities should produce clear environmental benefits.

Principle Two: Process for Project Evaluation and Selection

The Project Evaluation and Selection criteria are guided by the requirements that an issuer of a green bond should outline the process it follows when determining eligibility of an investment using the proceeds from green bond, and outline any impact objectives it will consider.

Principle Three: Management of Proceeds

The Management of Proceeds criteria are guided by the requirements that a green bond should be tracked within the issuing organization, that separate portfolios should be created when necessary and that a declaration of how unallocated funds will be handled should be made.

Principle Four: Reporting

**Subject to additional assessment of ANNEX - Second Party Opinion*

The Reporting criteria are guided by the recommendation that at least Sustainability Reporting to the bond investors should be made of the use of bond proceeds and that quantitative and/or qualitative performance indicators should be used, where feasible.



IV. Work Undertaken

Our work constituted a comprehensive review of the available information, based on the understanding that this information was provided to us by the issuer in good faith. We have not performed an audit or other tests to check the veracity of the information provided to us. The work undertaken to form our opinion included:

i. Pre-funding assessment (ANNEX - Second Party Opinion)

- Assessment of additional documentary evidence provided by JR East on the BOND and supplemented assessment by a comprehensive desktop research. These checks refer to current assessment best practice and standards methodologies;
- Discussions with JR East, and review of relevant documentation;
- Documentation of findings against each element of the criteria to be additionally assessed.

ii. Post-funding assessment (periodic review) (not included in this report*)**

- Interviews with fundraiser managers and review of relevant documentation.
- Site surveys and inspections (if required).
- Documentation of post-issuance assessment results.



V. Findings and DNV's Opinion

DNV's findings and opinion are as described below.

Please see Schedule-1 and Schedule-2 for details.

GBP/GBGLs-1. Use of Proceeds

JR East has defined the criteria applied eligible project to green projects which are categorized in GBP/GBGLs and EU taxonomy.

The proceeds of the BOND will be used for the nominated 2 projects. Please see Schedule-1 and following assessment results for details.

The amount of proceeds of the BOND will be disclosed in future documents relating to the BOND issuance. DNV confirmed at the time of this assessment that the proceeds will be allocated mainly to new investments and partly for refinancing. The actual allocation results will be reported on an annual basis in accordance with GBP/GBGLs-4.Reporting.

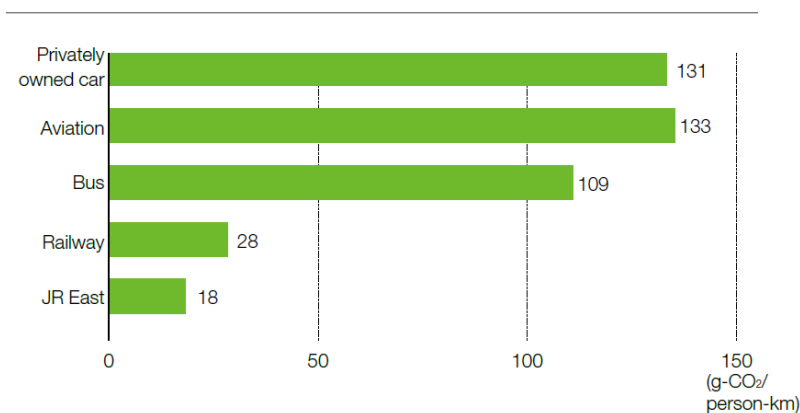
Project-01: Train cars (Shinkansen Series E7 train)

- Train cars (Shinkansen Series E7 train) is a project categorized as a “Clean transportation” in GBP 2021 and “Passenger interurban rail transport” in EU taxonomy Activity number 6.1.
- Specifically, DNV confirmed that the nominated project is direct zero emission trains which meets climate mitigation criteria of EU taxonomy described above. It has been widely recognized and demonstrated by JR East that zero-emission trains realize substantial contribution of CO₂ emission reduction compared to competitive transportation media such as Privately owned car, Aviation, and Bus, etc. ^{ref)}
- Use of proceeds from the BOND will be allocated to manufacturing trains and purchasing of equipment of Shinkansen Series E7 train (the newest series improved safety and comfortability), which will be operated at Joetsu and Hokuriku Shinkansen line (from Tokyo to Niigata (Joetsu), and to Kanazawa (Hokuriku)).
- Environmental benefits from the Project-01 are CO₂ emissions stemming from E7 trains operation (estimation) and record of introducing E7 train cars (actual) by annum.



Project-01 Train cars (Shinkansen Series E7 train)

Ref. JR East website



Source: Adapted from the website of the Ministry of Land, Infrastructure, Transport and Tourism

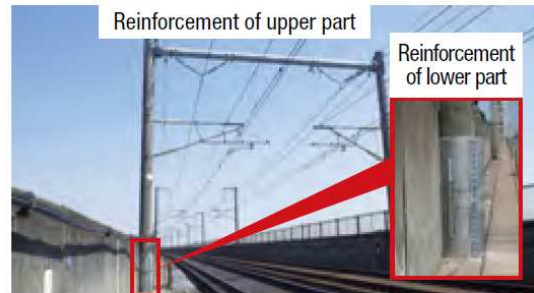
Ref) CO₂ emission per Transport Volume (Passenger Transportation), FY2021

Project-02: Railway facilities (to increase and maintain the resilience of railway)

- Railway facilities is a project categorized as “Clean transportation” and part of “Climate change adaptation” in GBP 2021 and “Infrastructure for rail transport” in EU taxonomy Activity number 6.14.
- Specifically, DNV confirmed that the nominated project is essential to economic activity which increases (reinforces) and maintains the resilience against natural disaster from direct zero emission trains operation area covered by JR East, which meets climate mitigation and adaptation criteria of EU taxonomy described above.
- Use of proceeds from the BOND will be allocated to the work of civil engineering, construction work, and purchasing of equipment of the railway of Shinkansen.
- Environmental benefit of the Project-02 is its contribution to enhance clean transportation operation opportunities (green economic activities). Therefore, project progress will be reported in the annual reporting contents.



Seismic reinforcement of elevated railway tracks



Structural reinforcement of utility poles

Project-02 Railway facilities
 (to increase and maintain the resilience of railway)
 (ref. JR East Group Report, Integrated report 2022)

Common (Project-01, Project-02): DNSH (Do No Significant Harm) criteria

JR East demonstrated that negative impacts due to the projects and related activities are identified and measures are taken.

Specifically, DNSH criteria (Climate adaptation, Water, Circular economy, Pollution prevention and Biodiversity) and Minimum safeguards are considered with the principle of EU taxonomy 2.1.6, which describes that;

“locally relevant standards may be applied in countries outside the EU”

According to the EU taxonomy principle, DNV confirmed most criteria are appropriately satisfied with relevant Japanese laws and ordinances by JR East.

DNV also confirmed that JR East has been taking measures to improve and respond to Japanese laws and ordinances as per admonition from related ministries and local municipality in a timely manner.

GBP/GBGLs-4. Reporting

DNV has confirmed that JR East will report specific information related to sustainability finance required by the GBP, GBGLs in its website once a year.

Annual reports will be made on the allocation status of proceeds and the social and environmental benefits, as described below, until the proceeds are fully allocated. In addition, a part or all of the following items related to social and environmental benefits are planned to be disclosed on a project basis, within the limits of confidentiality as far as reasonably practicable. Estimated indicator values and the progress of the project will be disclosed until the commencement of the project. It is also planned to disclose any material changes in the projects during the redemption or repayment period in a timely manner.

<Allocation Status>

- Allocated amount on a project basis
- Unallocated amount of proceeds
- Amount of proceeds allocated as refinancing

<Environmental Benefits>

- **Green Category** : Clean transportation (EU taxonomy 6, Transportation)
- **Eligible Projects** : Overall rail transportation

#	Reporting content on environmental benefits
1	<Train cars> <ul style="list-style-type: none"> • CO₂ emissions stemming from railway operations (g-CO₂/person-km) • Record of introducing train cars
2	<Railway facilities> <ul style="list-style-type: none"> • Details of investment in disaster countermeasure for the railway facility

VI. Assessment Conclusion

On the basis of the information provided by JR East and the work undertaken, it is DNV's opinion that the BOND mostly meets the criteria established in the Protocol, and that it is aligned with the following stated definition or purpose of the bonds that specify the use of proceeds within the GBP/GBGLs:

"enable capital-raising and investment for new and existing projects with environmental benefits"

DNV Business Assurance Japan K.K.

15 February 2023



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About DNV

Driven by our purpose of safeguarding life, property and the environment, DNV enables organisations to advance the safety and sustainability of their business. Combining leading technical and operational expertise, risk methodology and in-depth industry knowledge, we empower our customers' decisions and actions with trust and confidence. We continuously invest in research and collaborative innovation to provide customers and society with operational and technological foresight. With our origins stretching back to 1864, our reach today is global. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping customers make the world safer, smarter and greener.

Disclaimer

Responsibilities of the Management of the Fundraiser and the Second-Party Opinion Providers, DNV: The management of Fundraiser has provided the information and data used by DNV during the delivery of this review. Our statement represents an independent opinion and is intended to inform the Fundraiser management and other interested stakeholders in the Bond as to whether the established criteria have been met, based on the information provided to us. In our work we have relied on the information and the facts presented to us by the Fundraiser. DNV is not responsible for any aspect of the nominated assets referred to in this opinion and cannot be held liable if estimates, findings, opinions, or conclusions are incorrect. Thus, DNV shall not be held liable if any of the information or data provided by the Fundraiser's management and used as a basis for this assessment were not correct or complete.



Schedule-1 Green Bond Nominated Projects

No.	Green Eligible Project		Project Overview	
	Category	Sub Category		
1	Clean transportation	Overall rail transportation	Project-01: Train cars	
			EU taxonomy (Sector 6, Transport)	<ul style="list-style-type: none"> • Train cars (Shinkansen Series E7 train) is direct zero emission trains which meets climate mitigation criteria of “Passenger interurban rail transport” in EU Taxonomy 6.1. • Use of proceeds will be allocated to manufacturing trains and purchasing of equipment of Shinkansen Series E7 train (the newest series improved safety and comfortability), which will be operated at Joetsu and Hokuriku Shinkansen line (from Tokyo to Niigata (Joetsu), and to Kanazawa (Hokuriku)).
2	Clean transportation	Overall rail transportation	Project-02: Railway facilities	
			EU taxonomy (Sector 6, Transport)	<ul style="list-style-type: none"> • Railway facilities is essential economic activity to increase(reinforce) and maintain the resilience against natural disaster from direct zero emission trains operation area covered by JR East, which meets climate mitigation criteria of “Infrastructure for rail transport” in EU taxonomy 6.14. • Use of proceeds will be allocated to the work of civil engineering, construction work, and purchasing of equipment of railway of Shinkansen.
			6.1 “Passenger interurban rail transport”	
			6.14 “Infrastructure for rail transport”	