

Norske tog AS Green Bond Second Opinion

7 December 2022

Executive Summary

Norske tog AS, founded in 2016, is a company wholly owned by the Norwegian Ministry of Transportation and Communications. Norske tog's mandate is to procure, manage, and lease out passenger train rolling stock to train operators in Norway.

Norske tog's green bond framework, dated December 2022, is an update of a framework from 2018. The use of proceeds is entirely for investments in new or renewed electric train sets and renovation or improvements of the existing electric rolling stock. The majority of the proceeds will be for new financing.

We rate the framework CICERO Dark Green and give it a governance score of Good. Operation, or in the case of Norske tog managing and leasing, of electric trains is mostly a 'pure play' activity, which in most aspects is unproblematic with regard to the green and climate-friendly transition of societies. Norske tog provides some reporting on strategy, governance, and targets and metrics, in line with TCFD recommendations, but none on greenhouse gas emissions. Even though Norske tog is not responsible for climate change issues (greenhouse gas emissions and physical risks from climate change) related to operation of the trains and railway infrastructure, they say they are in close dialog with other stakeholders in the railway industry to influence and put green considerations, like increased likelihood of flooding and other physical risks from climate change, on the agenda for future decisions.

Key Strengths

Norske tog emphasizes responsible purchasing and procurement of new trains. Norske tog has recently implemented a process related to the new Norwegian Transparency Act¹ where the OECD due diligence guidelines for responsible business conduct are followed. Climate risk assessments are a part the process now implemented for large projects, defined as projects larger than 1 billion NOK.

Norske tog will continue to develop the processes for performing assessments and having dialogue with suppliers on environmental and social risks. Norske tog has also developed a risk tool that will help to do the assessment. Thus, in the tendering processes in 2021, Norske tog included requirements relating to: Energy consumption, noise reduction, weight and passenger capacity; qualities associated with materials and equipment including recyclability; documentation in the form of life cycle analyses and documentation of CO₂ emissions from the manufacturing processes to safeguard these rights being in line with Norske tog's requirements. The ISO14040 (Environmental management and life cycle assessment) standard is an integrated part of the procurement evaluation.



¹ https://lovdata.no/dokument/NLE/lov/2021-06-18-99

Key Pitfalls

Even if Norske tog is responsible for the rolling stock only and not the railroad, which is the responsibility of Bane Nord SF, physical impacts of climate change may affect the rolling train stock. This may call for measures to improve resilience of the rolling stock. Norske tog considers climate and weather conditions in order for the trains to be robust for a period of at least 30 years. Climate change can lead to, among others, new wind conditions, where side wind requirements for construction and procurement of new trains are an issue. Materials and construction, windows, doors, etc., must be robust to be able to cope with the harsh climate in Norway that potentially could become more challenging in the future.

There is room for improved reporting according to the TCFD guidelines. We suggest that Norske tog starts reporting on emissions from operation of their trains, since this directly reflects the outcome of their efforts to responsibly procure and manage the trainsets. Better reporting of how improvements to the electric running stock of trains will affect carbon dioxide emissions would be interesting for potential investors. Norske tog has considered this, but currently they do not have access to the necessary data.



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1 Norske tog's environmental management and green bond framework

Company description

Norske tog AS is a company wholly owned by the Norwegian Ministry of Transportation and Communications and was founded in 2016. Norske tog's mandate is to procure, manage, and lease out passenger train rolling stock to train operators in Norway. Norske tog has increased the number of trains it owns and manages to 279 train sets (236 electric/29 diesel/14 bimodal), compared to 255 train sets in 2019 (226 electric/29 diesel), and has the same number of passengers coaches and one electric locomotive fewer than in 2019, with a total of 135 passenger coaches and 21 locomotives (16 electric/5 diesel) as of December 2022.

Since the previous framework dated 2019, Norske tog has secured NOK 3.3 billion through green financing in 2019 and 2021 to finance the procurement of new electric train sets. According to the issuer, the electric trains contribute to savings in greenhouse gas emissions compared to alternative transport if passengers choose to travel by train rather than by car or bus.

Governance assessment

Norske tog has quite general and qualitative goals when it comes to climate and environmental issues. Greenhouse gas emissions (all scopes) are not reported. It is therefore difficult to assess progress towards these goals. The selection process for identifying eligible projects under the framework is good, as is the management of proceeds. Reporting is comprehensive. However, impact reporting is not independently verified.

Norske tog has very good procedures when it comes to assessing the life cycle environmental impacts of its acquisitions. The new Transparency act in Norway will also improve reporting on social and environmental impacts throughout the value chain. Finally, the recycling rate of scrapped materials is impressive although some of it goes to energy production.

The overall assessment of Norske tog's governance structure and processes gives it a rating of Good. A better score would require reporting of own emissions, and ideally also reporting on emissions from operation of their trains, since this directly reflects the outcome of their efforts to responsibly procure and manage the trainsets, in addition to implementing the TCFD guidelines for climate risk reporting.



Sector risk exposure

Physical climate risks. Physical impacts of climate change may affect the rolling train stock, which may call for measures to improve resilience of the rolling stock. In Norway, the material physical risks are associated with increasing extreme precipitation, particularly during winter, flooding from heavy rainfall and/or snow melting (<u>IPCC_AR6_WGII_SummaryForPolicymakers.pdf</u>). Furthermore, increasing heatwaves in Europe may be of concern for rails and rolling stock. Extreme heat may cause overheating engines, increased fire risks associated with the trains and related infrastructures, and distortion of the steel rails, forcing trains to slow down and cool off more often, potentially delaying schedules (<u>Climate change means warped railroad tracks</u>] <u>Mashable</u>).

Transition risks. Rail is one of the most energy-efficient transport modes, responsible for only 9% of global motorised passenger movement. However, due to the profound changes needed to limit global warming to 2°C, transition risk affects all sectors, and as Norske tog has some diesel engines in its stock, the company is exposed to transition risks from stricter EU emissions policies/ energy efficiency requirement (e.g., zero direct tailpipe CO₂ emissions required from the EU Taxonomy)/changes in consumer behaviour/ falling demand/ etc. Norway is committed to halving emissions from the transport sector by 2030, compared with the 2005 baseline, and investments in the transport sector will have a vital role to play in meeting this target.

Environmental risks. Through the acquisitions, modifications and mid-life upgrades of train sets, waste can be important if the disposed material is not recycled. Thus, Norske tog should have appropriated measures in place to manage waste in accordance with the waste hierarchy. Trains and railway infrastructures can also cause disturbances resulting from noise, resource use, waste dumping and pollution (Source: <u>Rail Transport</u> and Environment: Facts & Figures (cer.be)). Norske tog's extended supply chains for raw materials used in train production, e.g. aluminium and cobalt, may be linked with adverse environmental impacts from mining and processing.

Environmental strategies and policies

Environmental goals and targets at the company level remains the same as described in the previous 2019 framework and in its 2021 Annual report. Basically, Norske tog is aligned with the Norwegian government's National Transport Plan 2018-2029. Its objective for the transport sector to reduce greenhouse gas emissions is consistent with the transition to a low carbon society and to reduce other negative environmental impacts. Norway is committed to halve emissions from the transport sector by 2030 compared with the 2005 baseline and investments in the transport sector will play a vital role in meeting this target.

According to Norske tog, they work continuously to reduce their own emissions across the entire value chain, from train procurement to operation and scrapping. Norske tog's ambition is to become 100% electric, but currently not all lines are electrified. Norske tog is thus buying bi-modal long-distance trains to run on not-electrified lines and gradually replace the diesel trains. Bi-modal trains can run on both electrified and not-electrified lines. Bi-modal trains are not included in Norske togs green bond framework.

Norske tog does not have large own emissions since they do not run the trains but lease them to train operators. Thus, Norske tog does not currently report emissions from the energy consumption and emissions from their own operations but will evaluate doing so. Currently, Norske tog is in the process of updating its sustainability strategy and environmental goals. They aim to have their sustainability report aligned with the GRI standard for the year 2022. However, they inform that a decision on implementing the TCFD recommendations is still pending.

In acquisitions, Norske tog requires their suppliers to provide life cycle analyses for the trains, including calculations of energy consumption, noise, material consumption and the environmental footprint associated with disposal/scrapping². This data is used in the evaluation of bids but is not reported. In addition, Norske tog also require from the tenderers of trains that they deliver their policies and routines for human rights and environmental due diligence.

In 2021, Norske tog announced that it will invest in 17 new long-distance trains, with the option to order an additional 83 trains. In 2022, Norske tog will buy 30 new commuter trains (all electric), with the option to buy an additional 170 trains, which will increase the capacity by about 40%. Finally, by the end of 2022, Norske tog will have received 150 new FLIRT trains (delivered between 2012 and 2022), which are electric except for 14 new bimodal trains, which can run on both electricity and diesel. Bimodal trains will run on electricity where power is available but will use diesel where the infrastructure is limited and there is no electricity. The bimodal trains are replacing old diesel trains, which are now more than 30 years old. In addition to train acquisitions, modifications and mid-life upgrades are also important investments for Norske tog.

Norske tog has recently started to follow the OECD's Due Diligence Guidance for Responsible Business Conduct³. The company shared that climate risk assessments are a part of the process they now implement for "large" projects⁴. Norske tog will continue to develop the processes for performing assessments and having dialogue with suppliers on environmental and social risks.

Norske tog has not started with climate scenario analysis, but trains are specially adapted to Norwegian climate. The biggest climate risk is probably to the railway tracks which is the responsibility of Bane Nor SF. Bane Nor SF and Norske tog have tested and are exploring plans to install track monitoring systems on trains to warn of damage to the infrastructure.

Norske tog has an ambition for alignment to the EU Green Bond Standard for the next reporting. In Norske tog, the work with this will be coordinated with the general development of sustainability reporting structures in the company.

Green bond framework

Based on this review, this framework is found to be aligned with the Green Bond Principles (2021)⁵. For details on the issuer's framework, please refer to the green bond framework dated December 2022.

Use of proceeds

For a description of the framework's use of proceeds criteria, and an assessment of the categories' environmental benefits, please refer to section 2.

² When older train sets are retired and scrapped (for technical reasons they cannot be sold on), the goal of Norske tog is to reuse and recycle as much of the materials as possible. Through a collaboration with the Norwegian recycling company Hellik Teigen, Norske tog has achieved a material recycling ratio of almost 90% when scrapping old (type 70) train sets. However, this includes some materials going as waste-to-energy. All scrapping takes place in Norway.

³ <u>http://mneguidelines.oecd.org/OECD-Due-Diligence-Guidance-for-Responsible-Business-Conduct.pdf</u>

⁴ Large projects are defined as projects above 1 billion NOK. According to the issuer, smaller projects are mostly with Norwegian suppliers.

⁵ <u>https://www.icmagroup.org/assets/documents/Sustainable-finance/2022-updates/Green-Bond-Principles_June-2022-280622.pdf</u>

Selection

Norske tog has designed and implemented a process to ensure that only projects aligned with the eligibility criteria will be selected as eligible projects for its issuance of green bonds. Eligible projects are selected and evaluated by a committee consisting of representatives from the Management (including the CFO), the Treasury, Business Control, Technology and Development department in Norske tog. A resource with competence in environment and sustainability will also be a part of the team, as well as coordinate the sustainability initiatives in Norske tog. The CFO is the chair of the committee, and the selection is based on a consensus approach. Eligible projects will be recorded in a green bond register.

Management of proceeds

Norske tog has established a green bond register for green bonds issued to monitor the eligible projects and the allocation of the net proceeds from green bonds to eligible projects.

Throughout the duration of the outstanding green bonds, Norske tog will compile and maintain an aggregated amount of assets and projects in the green bond register that is at least equal to the aggregated net proceeds of all outstanding green bonds.

There may be periods when the total outstanding net proceeds of green bonds exceed the value of the eligible projects in the green bond register. Any such excess portion will be held in accordance with Norske tog's normal liquidity management policy and managed as such. The issuer has confirmed that unallocated proceeds cannot be used to invest in fossil fuel related assets such as car/oil and gas company stocks.

Reporting

Within one year of the first issuance, and as long as there are green bonds outstanding, Norske tog annually publishes a report on the allocation and impact of green bonds issued under the framework. Norske tog aligns the reporting with the latest standards and practices as identified by the ICMA and the guidelines in the Nordic Public Sector Issuer's Position Paper on Green Bond Impact Reporting⁶. The impact report also includes a methodology section, and the baselines and assumptions used in impact calculations are disclosed. The framework related documentation and reporting are and will keep being publicly available on the issuer's website. As of today, the allocation and impact reports dated 2020 and 2021 are available on Norske tog's website.

The allocation report includes and will keep including the following:

- A list of all financed eligible projects, including the amounts allocated
- Detailed descriptions and case studies of selected financed Eligible Projects
- Amounts invested in each category, and the relative share of new financing versus refinancing.

Norske tog is and will keep reporting on the actual environmental impact of the investments financed by their green bonds. The impact metrics selected include annual greenhouse gas emissions reduced/avoided, number of electric trains financed and deployed, added passengers' capacity, etc. and could include in the future energy savings (GWh saved/reduced) as well as increase in the use of renewable energy. Norske tog is currently reporting the impact of what is financed by green bonds versus other types of financing and plans to keep doing so in the future.

Norske tog appointed an external independent auditor to annually assure Norske tog's selection process for the financing of eligible projects and the allocation of the proceeds of Norske tog's green bond, and that such processes and allocations are in accordance with the Norske tog green bond framework. However, the impact reporting is not externally reviewed.

'Second Opinion' on Norske tog's Green Bond Framework

⁶ https://www.kuntarahoitus.fi/app/uploads/sites/2/2020/02/NPSI Position paper 2020 final.pdf



2 Assessment of Norske tog's green bond framework

The eligible projects under Norske tog's green bond framework are shaded based on their environmental benefits and risks, based on the "Shades of Green" methodology.

Shading of eligible projects under Norske tog's green bond framework

- The net proceeds from the green bonds issued by Norske tog will be used to finance or refinance the eligible projects that have been evaluated and selected by Norske tog. The refinancing of eligible projects will have a look-back period of no longer than 15 years from the time of issuance. Norske tog expects most of the proceeds to be for new financing.
- Norske tog issued two green bonds totalling NOK 2 billion during the autumn of 2021 to finance new electric train sets. Together with loans totalling NOK 1.3 billion which were issued during the autumn of 2019, the company has now secured NOK 3.3 billion through green financing. In 2020 and 2021, proceeds raised from green issuances have been 100% used to finance and re-finance the purchase of 34 electric trains selected as eligible projects.750 MNOK will be allocated to new local trains that are not received yet, but the contract is signed, and Norske tog are committed to the contractual payments.
- Norske tog has decided that trains running either fully or partly on fossil fuel do not qualify under the framework.

Category	Eligible project types	Green Shading and considerations
Clean Transportation	• Investments in new or renewed electric train sets and renovation or improvements of the existing electric rolling stock.	 Dark Green ✓ The eligible projects under this project category remain the same as per the previous framework. Proceeds will be allocated to investments in Norway only. ✓ Rail and train transport is generally considered as the most climate and pollution friendly mode of land transportation. ✓ The eligible projects provide access to safe, affordable, accessible, and sustainable transport systems for all. ✓ New local trains will potentially have the same energy consumption as the old ones, but with more passenger capacity the energy used per passenger will be lower (with increased comfort and higher standards). ✓ The electricity that train operators buy from Bane Nor SF have a guarantee of origin that the power comes from renewable sources (hydropower).

Table 1. Eligible project categories

°CICERO Shades of Green

More on land and railway transport

Globally, transportation is responsible for 24% of direct carbon dioxide emissions from fuel combustion. Road vehicles – cars, trucks, buses and two- and three-wheelers – account for nearly three-quarters of transport carbon dioxide emissions.⁷ According to IEA, global transport emissions were 7.2 Gt CO₂ in 2020, down from nearly 8.5 Gt in 2019. Transport demand in 2021 was rebounding, with demand for passenger and cargo transport expected to continue increasing rapidly. To meet the UN Sustainable Development Goals, direct global transport emissions must peak in the early 2020s and then fall by 13.9 % until 2030 to support the IEA's Sustainable Development Scenario. In Norway, the land transport sector was responsible for approximately 18% of all GHG emissions in 2021, 17% above the 1990 level.

Rail transport plays a crucial role in achieving society's environmental and climate goals. Compared to other modes of transport, trains are more energy efficient and makes only a marginal contribution to local air pollution. The Paris Agreement sets a clear course for future, such that global client initiatives and businesses and society will have to adjust to new climate goals. Rail and train transport is generally considered as the most climate and pollution friendly mode of land transportation. With the Norwegian power mix there is a small share of fossil power imported from Northern Europe, but the carbon dioxide content is small.⁸ Norske tog has some diesel engines in its stock, where emission per passenger kilometre is comparable to diesel buses.

There are some not-electrified railroads (Nordlandsbanen, Rørosbanen, Raumabanen) in Norway that are operated with diesel engines. Increasing traffic on these railroads could increase carbon dioxide emissions. There are plans to electrify some stretches on Nordlandsbanen (Trondheim – Stjørdal – Steinkjer). Only train stock running purely on electricity, however, is covered by this green bond framework.

⁷ <u>https://www.iea.org/tcep/transport/</u>

⁸ Using Vy's calculator to compare carbon dioxide emissions per passenger for the fully electrified railroads Oslo-Bergen and Oslo-Trondheim, assuming an average number of passengers, we find that a travel by train amounts to 7-8 kg carbon dioxide, whereas a long-distance bus amounts to 24-26 kg carbon dioxide, a car travel to 49-52 kg carbon dioxide, and a flight to 64-71 kg carbon dioxide. https://www.vy.no/vygruppen/baerekraft-og-samfunnsansvar

3 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's framework dated December 2022. This second opinion remains relevant to all green bonds and/or loans issued under this framework for the duration of three years from publication of this second opinion, as long as the framework remains unchanged. Any amendments or updates to the framework require a revised second opinion. CICERO Green encourages the client to make this second opinion publicly available. If any part of the second opinion is quoted, the full report must be made available.

The second opinion is based on a review of the framework and documentation of the client's policies and processes, as well as information gathered during meetings, teleconferences and email correspondence.

'Shades of Green' methodology

CICERO Green second opinions are graded dark green, medium green or light green, reflecting a broad, qualitative review of the climate and environmental risks and ambitions. The shading methodology aims to provide transparency to investors that seek to understand and act upon potential exposure to climate risks and impacts. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The shades are intended to communicate the following:

	Shading	Examples
°C	Dark Green is allocated to projects and solutions that correspond to the long- term vision of a low-carbon and climate resilient future.	-`O'- Solar power plants
°C	Medium Green is allocated to projects and solutions that represent significant steps towards the long-term vision but are not quite there yet.	Energy efficient buildings
°C	Light Green is allocated to transition activities that do not lock in emissions. These projects reduce emissions or have other environmental benefits in the near term rather than representing low carbon and climate resilient long-term solutions.	For Hybrid road vehicles

The "Shades of Green" methodology considers the strengths, weaknesses and pitfalls of the project categories and their criteria. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects; weaknesses are typically areas that are unclear or too general. Pitfalls are also raised, including potential macro-level impacts of investment projects.

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, key governance aspects that can influence the implementation of the green bond are carefully considered and reflected in the overall shading. CICERO Green considers four factors in its review of the client's governance processes: 1) the policies and goals of relevance to the green bond framework; 2) the selection process used to identify and approve eligible projects under the framework, 3) the management of proceeds and 4) the reporting on the projects to investors. Based on these factors, we assign an overall governance grade: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.

°CICERO Shades of Green

Assessment of alignment with Green Bond Principles

CICERO Green assesses alignment with the International Capital Markets' Association's (ICMA) Green Bond Principles. We review whether the framework is in line with the four core components of the GBP (use of proceeds, selection, management of proceeds and reporting). We assess whether project categories have clear environmental benefits with defined eligibility criteria. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed. The selection process is a key governance factor to consider in CICERO Green's assessment. CICERO Green typically looks at how climate and environmental considerations are considered when evaluating whether projects can qualify for green finance funding. The broader the project categories, the more importance CICERO Green places on the selection process. CICERO Green assesses whether net proceeds or an equivalent amount are tracked by the issuer in an appropriate manner and provides transparency on the intended types of temporary placement for unallocated proceeds. Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green finance programs.



°C

Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	Norske tog Green Bond Framework	Dated December 2022
2	Norske tog Annual report 2021	https://www.norsketog.no/assets/photos/NT_Arsr apport_2021_ENG.pdf
2	Impact and Allocation Report 2020	https://www.norsketog.no/assets/files/Impact- Report-2020.pdf
3	Impact and Allocation Report 2021	https://www.norsketog.no/assets/files/Impact- and-allocation-report-2021.pdf

Appendix 2: About CICERO Shades of Green

CICERO Green is a subsidiary of the climate research institute CICERO. CICERO is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international cooperation. CICERO has garnered attention for its work on the effects of manmade emissions on the climate and has played an active role in the UN's IPCC since 1995. CICERO staff provide quality control and methodological development for CICERO Green.

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green bond investments. CICERO Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO Green is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure. CICERO Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

We work with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions (ENSO). Led by CICERO Green, ENSO contributes expertise to the second opinions, and is comprised of a network of trusted, independent research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University, the International Institute for Sustainable Development (IISD) and the School for Environment and Sustainability (SEAS) at the University of Michigan.

