



Norske tog

Green Finance Second Opinion

22 November 2019

Norske tog AS was founded in 2016, and bought the rolling stock of trains from NSB AS, following the implementation of the railway reform. It is wholly owned by the Norwegian Ministry of Transportation and Communications. Norske tog aims to be a leading innovative company and shall contribute to “the green shift” by a sustainable increase in train traffic in Norway.

The green finance framework of Norske tog is well aligned with the Green Bond and Green Loan Principles (2018). The eligible category – **Clean transportation** – is well defined and aligned with a low carbon future. The criterion for eligible projects emphasizes new or renewed electric train sets, and renovation/improvements of the existing electric rolling stock.

The governance procedure of Norske tog’s green financial framework is Good. Norske tog emphasizes responsible purchasing and procurement of new trains. Procurement choices are based on economy, energy efficiency and environmental assessments, also in a life cycle perspective, as well as passenger comfort, with considerations of improved resilience of trains to anticipated climate change impacts. The company supports the UN Sustainable Development goals on climate action, sustainable cities and communities, and industry, innovation and infrastructure. Norske tog has a sound selection process and a good plan for impact reporting, but there is room for improved reporting according to the TCFD methodology. Better reporting of how improvements to the electric running stock of trains will affect carbon dioxide emissions would be interesting for potential investors. The selection committee on eligible projects would benefit from more environmental competence.

Based on the overall assessment of the project category in this framework of Norske tog, governance and transparency considerations, the green finance framework receives an overall **Dark Green** shading.

SHADES OF GREEN

Based on our review, we rate the Norske tog’s green bond framework **CICERO Dark Green**.

Included in the overall shading is an assessment of the governance structure of the green bond framework. CICERO Shades of Green finds the governance procedures in Norske tog’s framework to be **Good**.



GREEN BOND and GREEN LOAN PRINCIPLES

Based on this review, this Framework is found in alignment with the principles.





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1 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's framework dated November 2019. 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.

Expressing concerns with 'shades of green'

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:

CICERO Shades of Green



Dark green is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Ideally, exposure to transitional and physical climate risk is considered or mitigated.



Medium green is allocated to projects and solutions that represent steps towards the long-term vision, but are not quite there yet. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Physical and transition climate risks might be considered.



Light green is allocated to projects and solutions that are climate friendly but do not represent or contribute to the long-term vision. These represent necessary and potentially significant short-term GHG emission reductions, but need to be managed to avoid extension of equipment lifetime that can lock-in fossil fuel elements. Projects may be exposed to the physical and transitional climate risk without appropriate strategies in place to protect them.



Brown is allocated to projects and solutions that are in opposition to the long-term vision of a low carbon and climate resilient future.

Examples



Wind energy projects with a strong governance structure that integrates environmental concerns



Bridging technologies such as plug-in hybrid buses



Efficiency investments for fossil fuel technologies where clean alternatives are not available



New infrastructure for coal

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, the governance aspects are carefully considered and reflected in the overall shading of the green bond framework. 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.



2 Brief description of Norske tog's green bond framework and related policies

Norske tog AS is wholly owned by the Norwegian Ministry of Transportation and Communications, founded in 2016 following the implementation of the railway reform where the rolling stock owned by NSB AS was spun off and transferred to Norske tog. Norske tog aims to be a leading innovative company and shall contribute to “the green shift” by a sustainable increase in train traffic in Norway. Norske tog's mandate is to procure, manage and lease out passenger train rolling stock to train operators in Norway to ensure low barriers to entry and competition on equal terms. The company shall have a high level of expertise within the area of procurement and management of passenger train rolling stock. The aim is to have sufficient high-quality, up-to-date rolling stock at appropriate cost. Norske tog currently owns and manages 255 train sets (226 electric/29 diesel), 135 passenger coaches and 22 locomotives (17 electric/5 diesel). In addition to acquire new train sets, modifications and midlife upgrades are important investments in order to ensure sufficient capacity of the rolling stock in Norway and to meet the passengers increasing levels of expectations to travel comfort.

The International Capital Markets Association (ICMA) Green Bond Principles are a set of voluntary guidelines that recommend transparency and disclosure, and promote integrity in the development of the green bond market by clarifying the approach for issuing a green bond. Norske tog's Green Bond Framework is based on the 2018 version of Green Bond Principles. It is Norske tog's intention to follow best practices in the market as the standards develop and as such the framework may be updated from time to time.

Environmental Strategies and Policies

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. Through the eligible projects defined below this framework targets specifically the UN Sustainable Development Goals on Climate action, Sustainable cities and communities, and Industry, innovation and infrastructure.

Norske tog is working to reduce energy consumption and greenhouse gas emissions from its own operations. The aim is climate change mitigation and pollution prevention and control. This involves using technical solutions that reduce energy consumption on existing trains and replacing old rolling stock with new, more energy-efficient and environmentally friendly trains.

In 2018, Norske tog joined forces with the company Feral¹ on a pilot project developing new, retrofittable engine technology for diesel trains, which could potentially help reduce greenhouse gas emissions and consumption of fossil fuels for Norske tog's diesel trains by up to 20%. Norske tog's contribution consists in developing a prototype for the Class 93 trainsets. Norske tog considers that this technology can be deployed on diesel trains in

¹ Maskin AS Feral is a small Norwegian company with a long history of production of supply components for ships, offshore, hydroelectric and industry and develop customized systems for hydraulics and cooling technology. Feral is helping Norske tog with components based on new valve technology that will increase efficiency for diesel engines.
<https://feral.no/historie/>



Northern Norway, and that the technology has global potential, which can also contribute to climate improvements around the world.

Use of proceeds

The net proceeds of the Green Bonds issued by Norske tog will be used to finance or re-finance eligible projects investing in electric trains that have been evaluated and selected by Norske tog in accordance to this Green Bond Framework. Refinancing of eligible projects will have a look-back period of no longer than 3 years from the time of issuance.

Selection

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 governance process.

Norske tog has designed and implemented a process to ensure that only projects aligned with the criteria will be selected as eligible projects for its green bond issuance. Eligible projects are selected and evaluated by a committee consisting of representatives from the management (including the CFO), treasury, business control and technology and development. The CFO is the chair of the committee. There is a consensus approach where any representative can stop a project from being elected if it is not found suitable under the current framework. Eligible projects will be recorded in a green bond register.

New local trains will be evaluated based on life cycle analysis and energy efficiency (including scrapping of trains), and this will be followed up from Norske tog.

Management of proceeds

CICERO Green finds the management of proceeds of Norske tog to be in accordance with the Green Bond Principles.

Norske tog will establish a green bond register in relation to green bonds issued by Norske tog for the purpose of monitoring the eligible projects and the allocation of the net proceeds from green bonds to eligible projects.

Norske tog will over the duration of the outstanding green bonds build up and maintain an aggregate amount of assets and projects in the green bond register that is at least equal to the aggregate net proceeds of all outstanding Norske tog 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 portion will be held in accordance with Norske tog's normal liquidity management policy and managed as such. The green bond register will form the basis for the impact reporting.

Norske tog may appoint 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.

Reporting

Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green finance programs. Procedures for reporting and disclosure of green finance investments are also vital to



build confidence that green finance is contributing towards a sustainable and climate-friendly future, both among investors and in society.

Norske tog will strive to report on the actual environmental impact of the investments financed by their green bonds. If and when actual impact for some reason is not observable, or unreasonably difficult to source, estimated impact will be reported.

Within one year of the first issuance and as long as there are green bonds outstanding, Norske tog will annually publish a report on the allocation and impact of green bonds issued under this framework. Where relevant Norske tog will seek to align the reporting with the latest standards and practices as identified by ICMA and the guidelines in the Nordic public sector issuer's position paper on green bond impact reporting. The impact report will, to the extent feasible, also include a section on methodology, baselines and assumptions used in impact calculations. Relevant impact metrics are: annual GHG emissions reduced/avoided, from cars and other vehicles, due to the investment (by comparison to average emissions by km for alternative transportation); estimated reduction in car use and car kilometres that will be replaced, energy savings (GWh saved/reduced); energy efficiency/CO₂ per passenger for new trains vs. old trains; and increase in the use of renewable energy. In new rental agreements Norske tog will enhance the opportunity to receive more data, and will also work with the Norwegian Railway Directorate and the Ministry of transportation and communication to further discuss sustainability reporting and to receive relevant data from them.

The Green Bond Framework, the second party opinion, the third-party review, allocation report, impact report and other relevant documents will be publicly available on Norske tog's website [www.norsketog.no].

Norske tog will annually publish a report on the allocation and impact of green bonds issued under this framework. Where relevant Norske tog will seek to align the reporting with the latest standards and practices as identified by ICMA and the guidelines in the Nordic public sector issuer's position paper on green bond impact reporting.



3 Assessment of Norske tog's green bond framework and policies

The framework and procedures for Norske tog's green bond investments are assessed and their strengths and weaknesses are discussed in this section. 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 in this section to note areas where Norske tog should be aware of potential macro-level impacts of investment projects.

Overall shading

Based on the project category shadings detailed below, and consideration of environmental ambitions and governance structure reflected in Norske tog's green bond framework, we rate the framework **CICERO Dark Green**.

Eligible projects under the Norske tog's green bond framework

At the basic level, the selection of eligible project categories is the primary mechanism to ensure that projects deliver environmental benefits. Through selection of project categories with clear environmental benefits, green bonds aim to provide investors with certainty that their investments deliver environmental returns as well as financial returns. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed and that the selection process should be "well defined".

Category	Eligible project types	Green Shading and some concerns
Clean transportation	Investments into new or renewed electric train sets and renovation or improvements of the existing electric rolling stock.	Dark green Provide access to safe, affordable, accessible and sustainable transport systems for all. Trains running fully or partly on fossil fuels do not qualify under this framework.

Table 1. Eligible project categories

Background

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



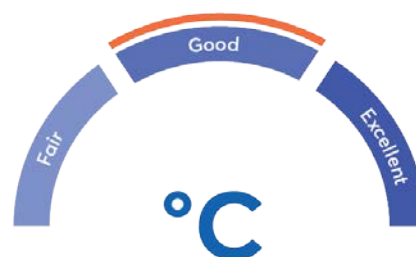
dioxide emissions.² Global transport emissions grew by only 0.6 % in 2018 (compared to 1.7 % annually over the past decade) as efficiency improvements, electrification and biofuels helped limit the growth in energy demand. To meet the UN Sustainable Development Goals, direct global transport emissions 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 transport sector was responsible for approximately 32 % of all GHG emissions in 2018.

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.³ Norske tog has some diesel engines in its stock, where emission per passenger kilometer 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.

Governance Assessment

Four aspects are studied when assessing the Norske tog's governance procedures: 1) the policies and goals of relevance to the green bond framework; 2) the selection process used to identify eligible projects under the framework; 3) the management of proceeds; and 4) the reporting on the projects to investors. Based on these aspects, an overall grading is given on governance strength falling into one of three classes: Fair, Good or Excellent.



The overall assessment of Norske tog's governance structure and processes gives it a rating of Good. There is a room for improvements on reporting of impact on carbon dioxide emissions. The green bond selection committee would benefit from more environmental competence.

Strengths

Operation 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 less on risk management.

Norske tog uses population projections from Statistic Norway and the government's National Transport Plan 2018-2029. The objective of the latter is to reduce greenhouse emissions and other negative environmental impacts.

² <https://www.iea.org/tcep/transport/>

³ 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.



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 new wind conditions, where side wind requirements for construction and procurement of new trains is an issue. Material 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. The ISO14040 (Environmental management and life cycle assessment) standard will be an integrated part of the evaluation. Norske tog is not directly responsible for climate change issues related to infrastructure, parking places, etc., but are in close dialog with other stakeholders in the railway industry to influence and put green considerations on the agenda for future decisions.

Norske tog emphasizes responsible purchasing and procurement of new trains. There will be a life cycle assessment for new local trains, with requirements for environmental follow-up (including recycling of old stock) and reporting of environmental effects. New requirements and passenger comfort (air condition, weight of the train, etc.) will require more energy, but new solutions (feeding electricity back to the network, breaking systems, etc.) will lower the energy consumption. In total, 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). In the procurement contract energy consumption will also be part of the life cycle evaluation.

Weaknesses

There are no significant weaknesses associated with this green bond issuance framework.

Pitfalls

There is room for improved reporting according to the TCFD methodology. Better reporting of how improvements to the electric running stock of trains will affect carbon dioxide emissions would be interesting for potential investors. The selection committee on eligible projects would benefit from more environmental competence.



Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	Norske Tog, Green Bond Framework	Outlines Norske tog's framework for issuing Green Bonds
2	Norske tog, Annual Report 2018	Annual report 2018 in English.
3	Norske tog, Annual report 2017	Annual report 2017 in English.
4	Norske tog, Årsrapport 2017	Annual report 2017 in Norwegian.
5	Norske tog AS, Strategi for Norske tog AS	A description of Norske tog's mandate, vision, and goal.



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 and the International Institute for Sustainable Development (IISD).

