



Norske
tog

Impact and allocation report 2021




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Introduction




Øystein Risan
CEO

On the right track for the green transition

As we conclude 2021, it is clear that the green transition is gathering pace. Norway has announced plans to reduce its greenhouse gas emissions by 50–55% by 2030. Owned by the Norwegian state, Norske tog is actively working to ensure that this goal is achieved. We contribute to this by making train travel a more attractive alternative than driving by car or taking the bus. To achieve this train services must have adequate capacity, be safe, punctual, user friendly and comfortable, and meet both local and regional travel requirements.

Norske tog's goal is to actively use green bond loans to finance and refinance investments in both new and existing electric trains. In the autumn of 2021, Norske tog raised NOK 2 billion by issuing two green bond loans financing new electric trains for our local and regional services. We are also pleased to note that there was significant interest in these issuances among 'green' investors, both in Norway and abroad. This interest was a contributing factor in securing Norske tog financing on favorable terms.

Going forward, Norske tog will adapt our Green Bond Framework to align with that of the new EU Green Bond Standard. Over the next few years, Norske tog will acquire 17 new, long- distance trains, as well as the new local and regional trains. Our goal is for a number of these acquisitions to be funded through the issuance of green bonds.

Norske tog's work within green financing should also be understood in a wider context. In 2019, the EU launched the European Green Deal – an ambitious plan laying out how Europe will become a net zero-emission region by 2050.

To achieve this, our energy systems, transport systems and consumption patterns must undergo a major restructuring. Fossil fuels must be replaced by renewable energy, and we must strive towards a circular economy where materials are used and recycled in a much more efficient way.

In 2020, the European Commission reinforced the EU Green Deal through the introduction of a larger legislative package called '**Fit for 55**'. The goal of this series of legislation is to, by 2030, reduce the EU's CO₂ emissions by 55% compared to what they were in 1990.

The European Green Deal also facilitates gigantic investments in more green and sustainable activities. Enormous amounts of renewable energy must be developed using solar, wind and water. A number of sectors, including transport, must adapt to these sources of energy. Public financing is not sufficient to achieve these ambitious plans and thus it is important to also stimulate private capital. The EU has therefore adopted a number of regulations that aim to achieve clearer definitions of sustainable activities, and better reporting of these activities to financial markets. One of the key regulations introduced is the **EU taxonomy**.

The taxonomy functions as a classification system that sets criteria for sustainable activities. This will help the finance sector, the public sector and individual companies in gaining a common understanding of what actually constitutes a sustainable activity. In the autumn of 2021, activities contributing to two of the taxonomy's six environmental and climate objectives were defined; Climate change mitigation and climate change adaptation.

Initial reporting on these activities will begin in Annual reports for 2021. The transport sector was included in these activities, however to be defined as sustainable, transport must have zero direct emissions by 2025.

In this respect, Norske tog is particularly well-positioned. Around 90% of Norske tog's trains are already electric. In addition to this, we actively contribute to this goal through our procurements and within our own operations, and in everything we do, we seek to help create a sustainable society and working life.

We hope that our Impact Report for 2021 will provide valuable information regarding how our green bonds are contributing to a greener and more sustainable future, and we look forward to continuing this work in 2022.

Norske tog's Vision: Contributing to the Green Transition

Norske tog AS is wholly owned by the Norwegian Ministry of Transportation and Communications. The role of Norske tog is to procure, manage and lease out passenger train rolling stock to train operators in Norway. Our vision states that the company shall be a leading, forward-looking and solid company whose objective it is to deliver safe, reliable and modern passenger train equipment to the Norwegian market. In doing this, we aim to make train travel in Norway popular and therefore to contribute actively to the "Green Transition".

For many years, we have sought to increase our positive impact on climate and the environment, through the acquirement of new or upgrading existing rolling stock, as well as improving material consumption and recycling rates related to the trains. We expect the materials used to be energy efficient and recyclable and have an estimated recycling rate of approximately 90% for scrapping of the Class 75 and 74 trainsets. We also expect vendors to meet a wide range of environmental standards, including a Life Cycle Assessment (LCA) to be provided for tender evaluations. In addition to the environment focus through the acquirement processes, Norske tog has also initiated studies and research related to battery technology and the development of smaller and lighter components.

The Green Bonds issued under our Green Bond Framework, aim to actively contribute to the 'Green Transition', by making railways even more climate friendly. The Eligible Projects selected are projects dedicated to new or renewed electric trains and renovation or improvements of the existing electric rolling stock. These projects are a part of the significant investments made in expanding and upgrading the rail network in Norway.

Clean Transportation: Enabling a more Sustainable Economy

As a form of transportation, trains constitute a key component within 'Clean transportation.' Trains are a low carbon alternative with low energy intensity in comparison to different modes of passenger transportation. The Norwegian government has set a goal to halve emissions from the transport sector by 2030 compared with the 2005 baseline, a goal that we are committed to support.

Transportation has both direct and indirect impacts on various UN Global Sustainable Development Goals (SDGs) and indicators. Based on Norske tog's Materiality Assessment, we have identified Sustainable Development Goals 8, 9, 11, 12 and 13 as relevant for our activities. The eligible projects defined in the Green Bond Framework target are specifically Goal 13: Climate Action, Goal 9: Industry, Innovation and Infrastructure and Goal 11: Sustainable Cities and Communities. These goals are also recognized among the SDGs as relevant for the transportation sector by the UN.

On Track with Norske tog's Green Bonds

To ensure that Norske tog's Green Bonds are aligned with its vision and goals, four impact indicators have been selected and reported. The impact indicators measure avoided CO₂ emissions, number of electric trains deployed, added passenger capacity and added passenger kilometres. The development of Norske tog's impact reporting, measuring the environmental contribution of the Green Bonds issued, will continue in 2022 and beyond.

Standards and Guidelines

Norske tog follows the International Capital Markets Association's Green Bond Principles

Norske tog's Green Bond Framework is based on the Green Bond Principles (GBP's)¹ (2021 version) issued by the International Capital Markets Association (ICMA). ICMA's Green Bond Principles are a set of voluntary guidelines that recommend transparency and promote integrity in the development of the green bond market by clarifying the approach for issuing a green bond.

The 2021 edition of the GBP's recommends heightened transparency by recommending that issuers appoint an external review provider in addition to summarizing relevant information within the context of the issuer's overarching sustainability strategy. Issuers are also encouraged to disclose any taxonomies, green standards or certifications referenced in project selection.

Our intention is to follow best practices in the market as the standards develop and as such the Green Bond Framework may be updated going forward.

Nordic Public Sector Issuer's (NPSI) Position Paper on Green Bond Impact Reporting

This Green Bond Impact Report has followed guidance from the Nordic Public Sector Issuer's (NPSI) Position Paper on Green Bond Impact Reporting². The NPSI's Position Paper has been developed as a practical guide on impact reporting for Nordic public sector green bond issuers.

¹ <https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Green-Bond-Principles-June-2021-140621.pdf>
<https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

² <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Resource-Centre/NPSIPositionpaper2019final-120219.pdf>

EU Green Bond Standard

Norske tog has followed the development of the EU Green Bond Standard (EU GBS)³ over the last year. An updated version was published on July 6th 2021 as a proposed regulation for the European green bonds.

In the proposed version, the EU GBS is recommended as a voluntary set of guidelines and is likely to remain so in the future. The standard is based on ICMA's Green Bond Principles but has also integrated recommendations from the Technical Expert Group (TEG) on Sustainable Finance report. The main differences between the EU Green Bond Standard and the Green Bond Principles are as follows:

- 1) **Use of income:** Issuers are required to allocate income to economic activities that meet the EU taxonomy criteria. Activities that fall outside of the EU taxonomy criteria are therefore not eligible for financing under the new standard
- 2) **Framework:** Before a bond is issued, a 'Green Bond Framework' must be completed by the issuer, which must be verified before issuing by an external provider. The 'Green Bond Framework' should include the concrete funding goals and environmental objectives of the bond
- 3) **Reporting:** Both allocation and impact reporting are required, where the final allocation report is required for review by an external provider after full allocation of funds
- 4) **Implementation of the EU taxonomy:** EU GBS proposes that the issuer uses the technical screening criterion that is relevant at issuance and reports on potential/ actual compliance with the criteria. In effect this means that Green Bond projects must not only meet environmental criteria specific to the activity, but also social standards based on OECD guidelines

Going forward, Norske tog is committed to improving its impact reporting and will follow the development of the EU GBS to determine its relevance and opportunities for Norske tog. Over time we will work to close the gap between the current reporting according to ICMA and EU GBS.

³ https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/european-green-bond-standard_en

Allocation Report: 2020 issuance

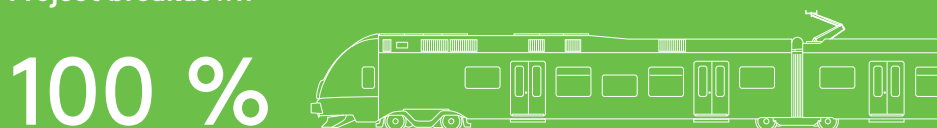
Outstanding Green Bonds

Coupon	ISIN	Amount	Maturity
3mN+54 (FRN)	NO0010870009	400 MNOK	11.03.2025
2.55% (Fixed)	NO0010870017	900 MNOK	11.12.2029

Basic information

Green Bond Framework initiated	November 2019
Reporting Period	Nov 2020 to Nov 2021
Reporting frequency	Annual
Reference frameworks	<ul style="list-style-type: none"> Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting International Capital Markets Association's Green Bond principles
2 nd opinion provider and result	Cicero, Dark Green classification
Project Category	Clean Transportation: New electric trains

Project breakdown



Proceeds raised from Green Bond issuances under the Norske tog Green Bond framework have been used 100 % to finance and re-finance the purchase of 17 Class 74 Electric Trains selected as Eligible Projects

1,300 MNOK

Outstanding Green Bonds
allocated to Eligible Projects

96%

Outstanding Green Bonds
share of total investment

Allocation Report: 2021 issuance

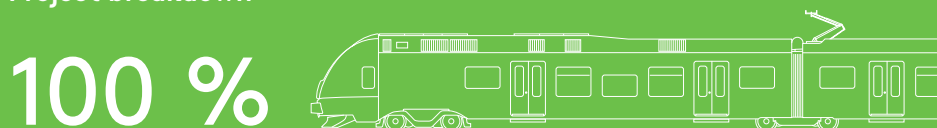
Outstanding Green Bonds

Coupon	ISIN	Amount	Maturity
2,375% (Fixed)	NO0011115487	1250 MNOK	05.10.2030

Basic information

Green Bond Framework Initiated	September 2021
Reporting Period	Sep 2021 to Sep 2022
Reporting frequency	Annual
Reference frameworks	<ul style="list-style-type: none"> Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting International Capital Markets Association's Green Bond principles
2 nd opinion provider and result	Cicero, Dark Green classification
Project type	Clean Transportation: Electric trains

Project breakdown



Proceeds raised from Green Bond issuances under the Norske tog Green Bond framework have been used to finance and re-finance the purchase of 17 Class 74 Electric Trains selected as Eligible Projects

1,250 MNOK

Outstanding Green Bonds
allocated to Eligible Projects

91%

Outstanding Green Bonds
share of total investment

Future allocation: 2021 issuance

Outstanding Green Bonds not allocated

Coupon	ISIN	Amount	Maturity
3mN+43 (FRN)	NO0011115495	750 MNOK	05.10.2026

Norske tog is in the process of acquiring 30 new commuter trains with an option to release up to 170 additional train sets. These Class 77 train sets are aimed for delivery by mid-2025 and will replace Class 69 which are the current commuter train sets.

An amount of 750 MNOK is allocated to the first pre-payment of the 30 Class 77 electric local trains, but the final allocation is pending until the contract is awarded to a supplier and signed. The reason for this is to be able to report more accurately on the specific trains and their relevant impact. The first payment is estimated to be executed in the beginning of 2022 and the 30 Class 77 train sets will be included in the Impact reporting from 2022 and onwards. The funds are held in accordance with the Green Bond Framework until the funds are transferred to the vendor.

Class 77 Electric trains: Production and Key Features

These new commuter trains will provide better capacity, comfort and onboard mobile coverage to make trains a better, easier and more attractive transportation alternative for commuters.

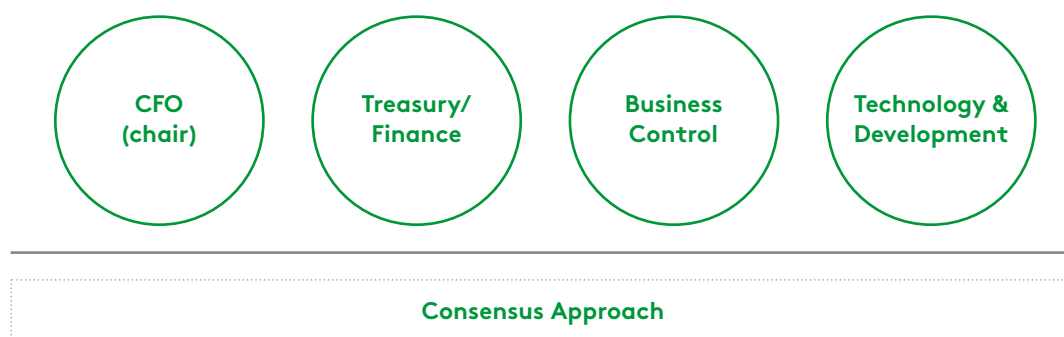
The Class 77 trains will have a maximum train length of 110 meters, 33 meters longer than the current commuter trains operating the line (L2 Stabekk–Oslo–Ski). With several areas for standing passengers, Norske tog estimates the total capacity of the new commuter trains to be 700–800 or more passengers in each train set, compared to the current capacity of approximately 570 standing and seated passengers.

The price, opportunities for shorter station stops, high acceleration capabilities and retardation are also being emphasized in the current competition.

Governance of the Green Bond Framework

To ensure that the Green Bond Framework delivers on its goals, we have established a comprehensive Governance structure. The Governance Structure is described in detail in the Governance Policy for Norske tog's Green Bond Framework which may be downloaded [here](#). The policy has been approved by the board of Norske tog.

The main internal body with responsibility for overseeing and developing the Green Bond Framework, is the Climate Committee. The Committee reports directly to the CEO and is responsible for managing potential future updates to our Green Bond Framework. It meets on a quarterly basis to review the outstanding Green Bond portfolio, identify and describe potential case studies and to approve potential 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 Green Bonds. It is the Climate Committee's responsibility to keep the Green Bond Register updated to enable correct impact reporting.

To ensure a high level of transparency and to reinforce confidence in its' Green Bond Framework, we will publish an annual Impact and Allocation Report. The report shall among other things include a detailed description of how Green Bond proceeds have been utilized, including a breakdown of eligible projects funded. In addition, we will develop Impact measurements to quantify the environmental effects of the Green Bonds issued.

Climate committee meetings

During reporting year 2021 the Committee have met four times, in February, June, September and November respectively. One of the main focus areas of the committee throughout 2021 has been to further develop competency on climate and environmental issues relevant Norske tog's

operations and to the Green Bond Framework. During the September and November meetings, the Committee received a presentation from KPMG Pure Sustainability to increase overall competency on the EU taxonomy and its implications for Norske tog, and the EU GBS, GBP's and how to close the gap between these impact reporting guidelines, respectively.

Third-Party Review (post-issuance)

Norske tog has appointed PWC as 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 Bonds, to ensure that such processes and allocations are in accordance with the Norske tog Green Bond framework.

Case Studies

In September 2008 NSB ordered 50 new electric multiple unit FLIRTs from the Swiss manufacturer Stadler with an option for one hundred more. A total of 136 new electric train sets of Class 75 and 74 have been ordered, in addition to 14 Class 76 bimodal trains. The final option was triggered in 2018, and the last trainset is expected to be delivered to Norske tog by December 2022. The majority of the trains, Class 75, are electric trains used for suburban rail transport in the Oslo and Bergen area and are specifically designed to make journeys of up to 40 minutes. The other electric vehicles, Class 74, are designed to make longer journeys up to 3 hours, in addition to the Bi-mode multiple units that can run on both electricity and diesel.

Selected Eligible Projects

The selected Eligible Projects are 17 Class 75 and 17 Class 74 electric trainsets, that represent sub-series of the FLIRTs.

All the selected vehicles operate on intercity routes in Eastern Norway. The trains have been acquired to maintain passenger growth on selected routes. All the trains have been or will be delivered to Norske tog in the period between 2017 to 2022 and within the look-back period of 3 years from the time of issuance of outstanding Green Bonds.



Class 75



Class 74

Class 75 and 74 Electric trains: Production and Key Features

Class 75



 83  200 km/h  295

Class 74



 40  200 km/h  240

Norske Tog's Class 75 and 74 trains are both single-decker electric motor vehicle sets, that consist of five coaches with traction on three of the coaches. The trains can travel at up to 200 km/h.

The differences between Class 75 and 74 trains are mainly related to the internal configuration, where Class 75 are configured for longer local train routes and Class 74 are configured for shorter regional routes. This has specific consequences for the allocation between seating places, comfort seating places and standing places. Class 75 are local trains and have a capacity of 561 passengers (295 seating places and 266 standing places (4 persons per m²)). Class 74 are regional trains and carry up to 368 passengers (240 seating places and 128 standing places (2 persons per m²)). Included in the seating capacity for Class 74 trains are 44 comfort seating places.

Adapted to the Climate

The Class 75 and 74 trains are used as local and regional trains in Norway and are adapted to the harsh Nordic winter conditions. Much of the technical equipment is located on the roof or inside to counteract winter problems and to provide easier maintenance access. There is a snow-plough which allows travel to continue when there is snow on the line.

Comfort for Passengers and Personnel

The Class 75 and 74 trains are quiet in normal traffic, and at speeds of up to 200 km/h. They are passenger friendly with 70 % of low floors and spacious areas that can be utilized when there is a need for high capacity. There is also good spacing around catering areas. For personnel, the trains have an ergonomically designed working environment to prevent driver fatigue.

To increase comfort for both passengers and personnel the trains have increased thermal insulation and high-performance HVAC⁴ systems for the carriages and control cabs.

Reliability Accessibility and Safety

The Class 75 and 74 trains have a clear layout of passenger compartments for passenger orientation and safety. Colors and contrasts make it easier for visually impaired passengers to find their way around. The trains are fully compliant with EU accessibility regulations for people with disabilities and reduced mobility. Wheelchair elevators, and barrier-free compartments enable wheelchair access to the train. The train also fulfils requirements regarding standards for crashworthiness (EN 15227⁵) and car body strength (EN 12663⁶).

⁴ Heating, Ventilation, and Air Conditioning. Refers to the different systems used for moving air around, along with heating and cooling

⁵ DIN EN 15227 Standard: Crashworthiness requirements for rail vehicles

⁶ DIN EN 12663 Railway applications - Structural requirements of railway vehicle bodies - Part 1: Locomotives and passenger rolling stock

Impact:

Methodology, Baselines, Assumptions

In reporting on the Impact indicators contained in this report, the following methodology, baselines and assumptions have been adopted:

- A high level of transparency around the data sources used for calculations.
- The Eligible Projects have been acquired to cover passenger growth, providing new capacity to existing intercity routes in Eastern Norway (Class 75), in addition to maintaining the current train services by replacing older trainsets (Class 70) with new trainsets (Class 74).
- Indicators that use CO₂ emissions calculations to measure impact are reported as avoided emissions. In order to calculate “avoided emissions”, a comparison is made between estimated train emissions and the emissions from a baseline/alternative transport scenario. The avoided emissions are emissions from the alternative transport scenario, if the train project was not financed.
- Baseline: The “baseline” for impact assessment purposes in this report is the “alternative means of transportation”. For Indicator 4, the baseline is for emissions from cars and buses that would need to be used by travelers if the new electric trains were not in operation.
- We have sought to establish baselines on as representative a selection as possible. This means that when for example establishing a baseline for car emissions for Indicator 4, the distribution of vehicles per fuel type was taken from an SSB report for on the same region that the electric trains operate in.
- In cases where data for the required selection is not available, we have used estimates from the closest possible selection.
- When calculating Scope 2 CO₂ emissions for trains in Indicator 4, we consider the origin of the electricity purchased by Bane NOR for the operation of all trains in Norway (Market based method). Bane NOR purchases Guarantees of Origin (GoO) that ensure that the electricity bought comes from 100% renewable sources. When making these calculations, we also compared figures for Scope 2 emissions from the Nordic Energy Mix for 2019 (Location based method). As the standard practice for Guarantees of Origin is to report 0 emissions for Scope 2, and the difference in result between this figure and the Location based figure was insignificant, only the Market based estimate is reported here.
- When calculating the impact of Class 74 trainsets, we have used data from 2019 for the relevant routes in order to get more accurate calculations of the future effect. The rationale for this is that the year 2020 was an abnormal year due to Covid-19, and we assume that these figures will not be representative of the actual effect in the future. Only four out of 17 Class 74 trainsets have been deployed during 2020 and therefore most of the impact will materialize during the next year. See further explanation behind this rationale under Conclusion.

Impact indicators

Class 75 - Total impact attributable to Green Bond investors: 96%

Impact indicators	Type of calculation	Data points utilised	Data source	Result
1. Number of electric trains financed	Actual number	Total number of new electric trains financed and deployed	Norske tog	17 trains
2. Added passenger capacity provided by new electric trains financed	Actual number	Total new seating places and standing room places added for new electric trains	Norske tog	9,537 sitting and standing room places
3. Estimated added passenger-kilometres for new electric trains	Post ante Impacts measured after actual operations	Total passenger numbers for relevant routes for Class 75 electric trains for year 2020	Train operator	123,028,507 passenger km
		Number of total Class 75 electric trains deployed on relevant routes for year 2020	Train operator	
4. Estimated annual CO₂ emissions avoided measured in tons of CO ₂ compared to alternative transport car/bus and based on estimated added passenger km/year	Post ante Impacts measured after actual operations	Estimated added passenger km (indicator 3)	• Indicator 3	10,830 tonnes CO ₂ avoided
		CO ₂ emissions pr. passenger km for added	• Norske tog • Bane Nor	
		• Scope 1: Tank-to-Wheel (TtW) values		
		• Scope 2: Emissions from electricity production. Guarantee of Origin		
		Baseline for alternative transport – car/bus	• The Norwegian Public Roads Administration	
		• Distribution in passenger/km car/bus for Oslo/Akershus		
		• Distribution of cars by fuel type (petrol, diesel, gas, electric) for Østfold, Vestfold, Akershus, Oslo 2020	• SSB	
		• Kg CO ₂ /km for cars by fuel type	• SSB	
		• Average kWh/km for electric cars in Norway	• The Norwegian EV Association	
		• Kg CO ₂ for buses by fuel type	• DEFRA Coach (UK) 2020	

Impact indicators

Class 74 - Total impact attributable to Green Bond investors: 91 %

Impact indicators	Type of calculation	Data points utilised	Data source	Result
1. Number of electric trains financed	Actual number	Total number of new electric trains financed and deployed	Norske tog	17 trains
2. Maintained passenger capacity provided by new electric trains financed	Actual number	Total new seating places and standing room places added for new electric trains	Norske tog	6,205 sitting and standing room places
3. Estimated maintained passenger-kilometres for new electric trains	Ex ante Estimated impacts measured before actual operations, based on assumptions	Total passenger numbers for relevant routes for Class 74 electric trains for year 2019	Train operator	304,658,543 passenger km
		Number of total Class 74 electric trains deployed on relevant routes	Train operator	
4. Estimated annual CO₂ emissions avoided measured in tons of CO ₂ compared to alternative transport car/bus and based on estimated added passenger km/year	Ex ante Estimated impacts measured before actual operations, based on assumptions	Estimated added passenger km (indicator 3)	• Indicator 3	26,819 tonnes CO ₂ avoided
		CO ₂ emissions pr. passenger km for added	• Norske tog • Bane Nor	
		• Scope 1: Tank-to-Wheel (TtW) values		
		• Scope 2: Emissions from electricity production. Guarantee of Origin		
		Baseline for alternative transport – car/bus	• The Norwegian Public Roads Administration	
		• Distribution in passenger/km car/bus for Oslo/Akershus		
		• Distribution of cars by fuel type (petrol, diesel, gas, electric) for Østfold, Vestfold, Akershus, Oslo 2020	• SSB	
		• Kg CO ₂ /km for cars by fuel type	• SSB	
		• Average kWh/km for electric cars in Norway	• The Norwegian EV Association	
		• Kg CO ₂ for buses by fuel type	• DEFRA Coach (UK) 2020	

Conclusion

Data used in the impact calculations for Class 75 trainsets is based on 2020 figures. During this period the global community was affected by the Covid-19 pandemic which also had, and still has, great impact on the Norwegian society. It is reasonable to assume that figures for 2020 are negatively impacted by Covid-19 as the majority of commuting workers worked from home from March 2020 (¾ of the year). Other travel purposes also declined as people were ordered by the government to stay at home and travel restrictions were implemented. Thus, it is reasonable to assume that this affected the total train demand and passenger km/year negatively in the year of 2020 compared to 2019 and we expect the positive impact to be greater in the next years as society returns to normal.

For the same reason, we have used total passenger numbers from 2019 when calculating the estimated impact of Class 74 trainsets. As only four out of 17 Class 74 trainsets have been deployed during 2020, most of the effect will materialize during the next year. Therefore, we assume that the estimated impact and number of passengers will be closer to the impact and figures in 2019, prior to Covid-19.

Qualitative impact analysis for Class 74 vs Class 70

As an important step in improving Norske tog's impact reporting, we have included a qualitative assessment of sustainability impacts and data for the train sets life cycle in comparison to the trainsets replaced. We believe this addition to the impact report will strengthen the impact analysis of Class 74 train sets as these are purchased for replacement in contrast to Class 75 which are purchased to add passenger capacity. Going forward, we will elaborate this part of the reporting, to provide information on the impacts of the trains we purchase across several stages of its life cycle, including both environmental and climate impacts. In addition, we would like to highlight the social benefits from upgrading the trainsets, as this is an important aspect in the procurement of trains.

In this report we have gathered information on Class 70 and Class 74 trainsets and attempted to describe the most significant changes related their respective environmental impacts. For the Class 74 trainsets, we have a Life Cycle Analysis (LCA) describing the emissions and environmental impact of the production, transport and use phases. For the Class 70 trainsets, an LCA is not available, as these trainsets were produced in Norway from 1992-1996. We have therefore extracted knowledge of the trainsets from the documentation we have and internal knowledge from the technical department of Norske tog. Qualitative assessments of changes and improvements are based on relevant available data for the purpose of this assessment, for more details see Appendix 1.

Comparisons and implications

Production phase (place of production, materials, recyclability)

- Increased possibility of reuse of Class 74 trainsets and components due to technological developments and included manual for areas of reuse with 90 % or more potential recyclability rate depending on the type of components
- Foam used in seats instead of feathers to create more durable seats
- Regardless of place of production, Norske tog sets environmental and social requirements for the company's suppliers. Every supplier must comply with international conventions and arrange for inspections by Norske tog or authorities of working conditions throughout the supply chain. In addition, the supplier must have certifications in accordance with the quality and environmental system standards ISO 9001: 2015 and ISO 14001: 2015, or equivalent. In case of any changes of production site and/ or place of production, Norske tog must give approval and carry out an audit prior to the move

Use phase (energy efficiency, stability of operations, safety, access for disabled, comfort)

- Class 74 trainsets have slightly lower average energy consumptions at 1,43 compared to 1,48⁷ for Class 70 trainsets. Also, Class 74 have better isolation which reduces energy consumption, less heat loss, and more energy efficient components due to technological development
- Class 74 regenerates 25,3 % of electricity from braking compared to only 9,6 %⁸ for Class 70 trainsets
- Class 74 have 3 times more acceleration performance than the Class 70 trainsets due to the increase from 1,7 MW to 4,5 MW. This leads to a higher acceleration ability, maximum speed, and the ability to recover more braking energy
- Class 70 trainsets require longer stays at the stations (takes longer to embark/disembark passengers and accelerates slower) which may result in delays in operations. Replacement with Class 74 trainsets provides better operational stability and may lead fewer people choosing other means of transport if delays are minimized
- Class 74 trainsets have increased accessibility for disabled passengers with varying degrees of functionality resulting in more inclusive trains, including automatic passenger information system (PIS) and 70% low-floor for barrier-free wheelchair access.
- Class 74 trainsets use water for cooling instead of fossil, mineral based oils
- Significantly improved safety in collisions for Class 74 which provides less dangerous collisions for both driver and passengers, including modular front section and reinforced side panels for impact protection in the case of collisions with moose and deer.
- Increased comfort in Class 74 due to lower noise levels and 44 comfort seating places. Increased thermal insulation and high-performance HVAC systems⁹ are likely to make trains more attractive as a means of transport during both summer and winter
- Ergonomically and comfortably designed working environment to prevent driver fatigue and improve the working environment for the Class 74 trains compared to Class 70

⁷ Numbers calculated for route Skien-Eidsvoll

⁸ Numbers are calculated for route Oslo-Skien during January 2021

⁹ Heating, Ventilation, and Air Conditioning

Conclusions

Class 74 trainsets which replaces Class 70 trainsets are superior especially in the use phase due to increased energy efficiency, more operational stability which may reduce loss of passengers to other means of transportation, increased passenger and personnel comfort and accessibility for people with varying forms and degrees of functionality. Also, safety in collisions is significantly improved following the latest standards, adapted to Nordic winter conditions. The trainsets also have impact protection in case of collisions with moose and deer.

Both trainsets have a high degree of recyclability, but Class 74 have increased reuse value of electronics compared to Class 70 due to technology improvements in addition to a manual which points out areas of reuse for approximately 90 % or more of the train depending on the type of components.

Contribution to UN Sustainable Development Goals (SDG's)

Through the Eligible Projects defined in the Green Bond Framework we have identified positive impact on three SDG's. Goal 13: Climate Action, Goal 9: Industry, Innovation and Infrastructure and Goal 11: Sustainable Cities and Communities. Where relevant, specific UN targets related to the relevant goals that the framework positively impacts are highlighted below:



- “SDG Target 9.1. Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all”
- “SDG Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons”
- “SDG Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management”



Contribution to Goal 13: Climate Action

The deployment of modern, electric trains provides travelers with the ability to commute to work or to other activities with a low carbon footprint. Impact Indicator 4 provides an estimate of the emissions avoided by these journeys over a period of one year. The emissions are significant, and thus these trains are a positive contribution to a low emissions economy.



Contribution to Goal 11: Sustainable Cities and Communities

Impact Indicators 1,2 and 3 in this report demonstrate how the electric trains purchased under the Green Bond framework contribute positively to Sustainable Development Goal 11, in particular targets 11.2 and 11.6. Efficient rail transport is particularly important heading into urban centers and in densely populated areas. By developing solutions that can accommodate expected traffic growth, Norske tog contributes to efficient and environmentally friendly transport. This in turn provides an important foundation for developing good residential environments and local communities. Extra passenger capacity provided by these trains not only avoids CO₂ emissions, as reported in Impact indicator 4, but contributes to better air quality by reducing the need for diesel and petrol driven cars and buses.



Contribution to Goal 9: Industry, Innovation and Infrastructure

The underlying SDG target 9.1 refers to the development and maintenance of infrastructure including transport infrastructure. The deployment of new electric trains in and around the Oslo greater Metropolitan region contributes to expanding a system of public transport to meet the clean transport needs of the general public, including those with special needs. By renewing and upgrading the rolling stock, and adapting the trains to a new, digital future, Norske tog plays a part in renewing the rail network and ensuring Norway has a train service adapted to the needs of tomorrow. Increased train capacity also reduces the infrastructure needs of road transport, potentially freeing up public land for other community uses.

Contribution to EU Environmental Objectives

The EU Sustainable Finance Action Plan is a broad swathe of legislation designed to increase capital flows in the EU into more sustainable activities. One of the most important pieces of legislation in the Sustainable Finance Plan is the EU Taxonomy, a classification system for sustainable activities. The Taxonomy defines 6 environmental objectives as follows

Goal 1

Climate Change Mitigation

Goal 4

Transition to a Circular Economy

Goal 2

Climate Change Adaptation

Goal 5

Pollution Prevention and Control

Goal 3

Sustainable and Protection of water and Marine Resources

Goal 6

Protection and Restoration of biodiversity and ecosystems

To be “taxonomy aligned” an activity must make a significant contribution to one of these objectives while doing No Significant Harm (DNSH) to the other objectives. In addition, the company or entity behind the activity must comply with Social Safeguards.

Contribution to Goal 1: Climate Change Mitigation

The deployment of electric trains is an activity that contributes positively to Climate Change Mitigation and may potentially be aligned with the EU Taxonomy criteria. Under **Category 6.1 Passenger Rail Transport (interurban)**¹⁰ there are strict environmental thresholds for positive contribution to mitigation.

Substantial contribution criteria

The activity complies with one of the following criteria:

- a) **Zero direct emissions trains are eligible**
- b) **Other trains are eligible if direct emissions (TTW) are below 50g CO₂e emissions per passenger kilometer (gCO₂e/pkm) until 2025 (non-eligible thereafter)**

The electric Class 75 and 74 trains deployed by Norske tog, meet the environmental technical screening thresholds. However, to be able to report and verify positive contribution and alignment with the EU Taxonomy, the DNSH criteria and social safeguards must also be met.

The relevant criteria under DNSH applies to Climate change adaptation, Circular economy and Pollution prevention. Under DNSH the electric trains for example must reduce all material physical climate risks to the extent possible and on a best effort basis by performing a robust climate risk and vulnerability assessment, manage waste in accordance with the waste hierarchy, in particular during maintenance, and comply with emissions limits set out for engines.

Norske tog has relevant policies in place to ensure compliance with minimum social safeguards based on UN Guiding Principles and OECD guidelines.

Going forward and over time Norske tog will conduct a full taxonomy screening in order to assess the actual taxonomy alignment for Class 75 and 74 trains. Based on Norske tog's initial analysis we expect a high probability of alignment with the EU Taxonomy criteria for Goal 1.

¹⁰ Technical Expert Group on Sustainable Finance, Final Technical Report March 2020: Technical Annex https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf

Contribution to Goal 2: Climate Change Adaptation

In the EU Taxonomy guidelines, Passenger Rail Transport (interurban) is an activity that is regarded as making a substantial contribution to climate change adaptation¹¹. As in contribution to climate change mitigation, positive contributions to climate change adaptation must also meet DNSH criteria and Social Safeguards.

Under category 6.1 Passenger Rail Transport (interurban) there are strict environmental thresholds for positive contribution to adaptation. These include but are not limited to:

Substantial contribution criteria

- a) **The economic activity must reduce all material physical climate risks to that activity to the extent possible and on a best effort basis**
- b) **The economic activity and its adaptation measures do not adversely affect the adaptation efforts of other people, nature and assets**
- c) **The reduction of physical climate risks can be measured**

As with EU Taxonomy Goal 1, Norske tog will conduct a full taxonomy screening in order to assess the actual taxonomy alignment for Class 75 and 74 trains going forward and over time.

Contribution to Goal 3–6

A first draft of the criteria for goals 3-6 was published on August 3rd 2021 and the hearings lasted until September 24th 2021. A final report with the technical screening criteria for goals 3 - 6 will be finalized by the end of 2021.

When the technical screening criteria are finalized Norske tog will assess the possibilities for alignment for Class 75 and 74 trains and plan to report potential and actual alignment going forward.

¹¹ Technical Expert Group on Sustainable Finance, Final Technical Report March 2020
https://ec.europa.eu/info/publications/sustainable-finance-technical-expert-group_en

Experiences from 2021 and the Road Ahead

Report Development

The reporting year of 2021 is the second full operating year for the Norske tog Green Bond Framework. As with last year, we are still facing some challenges in meeting the goal of precise and comprehensive impact reporting. The main challenge facing us, has undoubtedly been access to reliable data. The Norwegian railways are organized into a number of public companies. This means that different companies are responsible for procurement and operation of trains. Data flow on relevant Environmental Impact data between these companies is an area of development.

The inclusion of a section on Life Cycle assessment (LCA) in this year's report has been an important development. This type of reporting, while mainly qualitative, offers an insight into the total impact of the train sets acquired by Norske tog. It is also important as it places a necessary focus on the types of environmental issues that Norske tog can have the most influence over during the procurement process. Going forward Norske tog will seek to further develop the LCA section of the report to provide more detail and where possible quantitative comparisons.

As also considered in last year's impact reporting, we have assessed the possibility of reporting on potential impact indicators including Resilience to Climate Change, Reduction of Air Pollutants and Energy Consumption avoided. However, we have not chosen to do so because of continued limited data access and quality issues. While these data issues are considerable, they are far from insurmountable. We are committed to improving our Impact reporting over time and are closely following developments in EU GBS and the EU Taxonomy. Norske tog plans to close the gaps between today's reporting standard and report according to EU GBS and the EU Taxonomy over the coming years. In particular, we will work towards implementing the following improvements:

- Expanding the range of indicators to include issues such as Energy Consumption, Resilience to Climate Change and Reduction of Air Pollutants
- Where possible report on actual impacts, measured after operations and based on historical data
- Identifying relevant data sources and work towards efficient data flows (automated where possible)
- Establishing more precise input data to baseline estimates
- Reporting on project alignment with the EU Taxonomy on Climate Change Mitigation and Adaptation
- Closing the gap between today's reporting standard and EU GBS
- Assessing opportunities to align reporting with relevant international frameworks such as the Task Force for Climate Related Financial Disclosures (TCFD)
- Elaborating on the qualitative assessment of sustainability impacts and data for the trainsets' life cycle, including both environmental and climate impacts

Conclusion

We are very pleased to have completed our second year of the Green Bond Framework. The issuance of Green Bonds has proved to be a popular initiative in the financial market and has contributed to the avoidance of CO₂ emissions. As this report has discussed, Impact reporting is complex and under development. We will seek to report in line with common standards, methods, and data sources for the railway sector in Norway. Where possible, we will also share data that helps other railway sector actors to develop their climate and impact reporting.

Since our first year of the Green Bond Framework we have improved our reporting by incorporating a chapter on qualitative sustainability by describing the most significant changes related to environmental impact between Class 74 and Class 70 trains. Looking ahead, 2022 will be a year of continual improvement for Norske tog and the Green Bond Framework where we will begin to close the gap in order to report in alignment with the EU Green Bond Standard and EU Taxonomy Goals 1-2.

Appendix 1

Qualitative impact analysis for Class 74 vs Class 70

Place of production	Class 70 trainsets are produced in Strømmen (Norway). Some of the units were welded and assembled in Germany, due to technical systems for the driver carts. The production of seats was done in Moelven (Norway) and therefore transport to Strømmen is short	Class 74 trainsets were originally produced in Switzerland but production moved to Hungary and then shortly after to Belarus, as a new factory with increased capacity was available there. Assembly is done in Poland and seats are produced in Germany
Materials	<ul style="list-style-type: none"> • Wool used for seats in both Class 70 and 74. • Foam used in Class 74 seats instead of feathers. • Class 74 have 6 gears compared to 4 in the Class 70 trainsets 	
Energy efficiency per pkm	Class 70 <ul style="list-style-type: none"> • Average net energy consumption is 1,48¹² • Regenerates 9,6 % of electricity from braking¹³ • Use of fossil, mineral based oils in gears and for cooling of transformers and traction converter 	Class 74 <ul style="list-style-type: none"> • Average net energy consumption is 1,43¹⁴ • Regenerates 25,3 % of electricity from braking¹⁵ • Lighter materials and better isolation enable reducing the energy consumption for heating • Less heat loss and more energy efficient components and isolation, reducing the loss of electricity • 3 times more acceleration performance than the Class 70 trainsets due to the increase from 1,7 MW to 4,5 MW. This leads to a higher acceleration ability, maximum speed, and the ability to recover more braking energy • Reduced use of oils in cooling the systems by replacing with water (with some chemicals added to the water)
Recyclability and reuse	Class 70 <ul style="list-style-type: none"> • Most materials are recyclable and approximately 90 % of the train materials can be reused depending on the type of components¹⁶. Somewhat limited reuse of electronics due to technological developments 	Class 74 <ul style="list-style-type: none"> • Most materials are recyclable, especially metals, electronics, and components. Trainsets come with a manual which describes how the trainsets can be reused (the manual shows that approximately 90 % or more of the train materials can be reused depending on the type of components) • Uses new materials in production to increase durability and ensure a lifespan of 30 years or more

¹² Calculated for route Skien-Eidsvoll

¹³ Calculating for route Oslo-Skien during January 2021

¹⁴ Calculated for route Skien-Eidsvoll

¹⁵ Calculating for route Oslo-Skien during January 2021

¹⁶ Report from Helliik Teigen AS, 2021

Qualitative impact analysis for Class 74 vs Class 70 (Continued)

Stability of operations	Class 70	Class 74
	<ul style="list-style-type: none"> Challenging to maintain because of significant costs to find spare parts because the technology is based on 1980s design Requires longer stays at the stations (takes longer embark/disembark passenger and accelerates slower) which results in service delays 	<ul style="list-style-type: none"> The Class 74 trainsets are more stable and reliable in operation than the Class 70 trainsets and built in a way that ensures they can still be operative even if the systems have encountered errors or malfunctions. This reduces the consequences of errors and delays in operations Requires a shorter amount of time to embark/disembark passengers
Safety	<ul style="list-style-type: none"> Safety in collisions is significantly improved for Class 74 trainsets. Class 74 trainsets have lightweight car bodies with integral aluminum design in line with the latest standards for crashworthiness (EN 15227) and car body strength (EN 12663). Modular front section and reinforced side panels for impact protection in the case of collisions with moose and deer. 	
Access for disabled	<ul style="list-style-type: none"> Universal design in Class 74 trainsets enables more people with varying degrees of functionality to access and use the trains. The trains have 70% low-floor for barrier-free wheelchair access. Colors and contrasts in Class 74 make it easier for visually impaired passengers to find their way around the trains Automatic passenger information system (PIS) in Class 74 provides information about the train route including a telecoil (for hearing impaired passengers with hearing aids) in all coaches 	
Comfort	<ul style="list-style-type: none"> Class 74 have increased thermal insulation and high-performance HVAC systems for the carriages and control cabs, unlike Class 70 which only have HV¹⁷ systems. The HVAC systems also increase comfort on warmer days Class 74 have lower noise levels for speeds of up to 200 km/h Ergonomically and comfortably designed working environment to prevent driver fatigue in Class 74 trainsets and improve the working environment Class 74 trainsets are improved with 44 comfort seating places 	

¹⁷ Heating, Ventilation



To the Board of Directors of Norske tog AS

Independent Limited Assurance Report

We have been engaged by Norske tog AS (the "Company") to undertake an examination of selected information in Company's Impact and Allocation report 2021, concerning the Company's Green Bond issued in November 2019 and October 2021.

Assurance scope

The scope of our work was limited to assurance over processes and systems for financing of eligible assets and allocating proceeds from the Green Bond to such assets, as described in the "Impact and Allocation report". The reporting criteria against which this information was assessed is based on the Company's "Governance Policy for Green Bond Framework" and relevant parts of the Company's "Green Bond Framework" per November 2019, available on the Company website.

Our assurance does not extend to any other information in the Impact and Allocation report. We have not reviewed and do not provide any assurance over any individual project information reported, including estimates of sustainability impacts.

The Board of Directors and the Managing Director's Responsibility for the Report

The Board of Directors is responsible for ensuring that the Company has implemented appropriate guidelines for Green bond management and Internal Control.

Responsibilities of the Company's management

The management of the Company is responsible for evaluating and selecting eligible assets, for the use and management of bond proceeds, and for preparing an Impact and allocation report that is free of material misstatements, whether due to fraud or error, in accordance with the Company's Green Bond Framework.

Auditor's Responsibilities

Our responsibility is to express a limited assurance conclusion on the selected information specified above in the assurance scope based on the procedures we have performed and the evidence we have obtained.

We conducted our work in accordance with the International Standard on Assurance Engagements ISAE 3000 – "Assurance Engagements Other Than Audits or Reviews of Historical Financial Information". This standard requires us to plan and perform our procedures to obtain limited assurance that the Company has performed the procedures and processes according to the documents defined in the "Assurance scope". A limited assurance engagement consists of making inquiries, primarily of persons responsible for the management of bond proceeds and the process for selection of eligible assets, and

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applying analytical and other limited assurance procedures, including inspection of documentation, and limited sample testing of the selected information. The procedures performed consequently do not enable us to obtain assurance that we would become aware of all significant matters that might be identified in a reasonable assurance engagement.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our Independence and Quality Control

We are independent of the Company as required by laws and regulations, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We apply the International Standard on Quality Control (ISQC 1) and maintain a comprehensive system for quality control including documented policies and procedures that complies with ethical requirements, professional standards and applicable legal and regulatory requirements.

Conclusion

Based on the limited assurance procedures we have performed in accordance to our scope and the evidence we have obtained, nothing has come to our attention that causes us to believe that the selected information disclosed in the Company's Impact and Allocation report 2021 has not been prepared, in all material respects, in accordance with the reporting criteria.

Oslo, 29 November 2021

PricewaterhouseCoopers AS

A handwritten signature in blue ink, appearing to read 'Marius Thorsrud'.

Marius Thorsrud
State Authorised Public Accountant

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