



TrønderEnergi AS

Green Finance Second Opinion

11 February 2021

TrønderEnergi is a Norwegian renewable energy producer and developer of energy solutions. The Group generates annual sales of approximately NOK 1 billion and employs around 250 staff. The main focus of TrønderEnergi is renewable energy production (mainly hydro- and wind-power) and energy related business. TrønderEnergi is owned by 18 municipalities in Trøndelag county and KLP (Kommunal Landspensjonskasse mutual insurance company).

The eligible green project categories in TrønderEnergi's green finance framework are Renewable energy and Energy efficiency/electrification.

Expected shares of proceeds going to the two categories are approximately 50/50 and a minor share to R&D projects into solar power and hydrogen. Net proceeds from green finance instruments can be used for financing new assets and projects, as well as for refinancing purposes. Initially, a little more than 50% will be for new assets and projects with an emphasis on wind power projects. Refinancing of eligible projects will have a look-back period of no longer than 3 years from the time of issuance.

TrønderEnergi has been in local conflicts over wind power projects (e.g., Frøya) and will continue to face difficulties and challenges in this regard.

Evidence suggests that this has been a learning process for the issuer and that sound routines and processes has been put in place to take local concerns seriously into consideration when selecting new eligible projects for green finance. Refinancing projects with previous local conflicts may nevertheless be part of the eligible projects under the framework.

TrønderEnergi is at an early stage in formulating quantitative climate goals and reporting greenhouse gas emissions.

They have started collecting emission data for 2019 and are awaiting the development of a broader sustainability plan for the company to put these numbers in context. The plan is to start reporting all scopes of own 2020 GHG emission in 2021. Physical climate risk and transitional risk on a company level are routinely reported to the board, and technical assessments to assure climate resilience are carried out on all larger projects. However, scenario analysis according to the TCFD guidelines are not yet carried out, but TrønderEnergi plan to implement the TCFD recommendations.

Based on the overall assessment of the eligible green assets and governance and transparency considerations, TrønderEnergi's green finance framework receives a **CICERO Dark Green** shading and a governance score of **Good**. Better climate reporting, qualitative climate targets and a clear roadmap towards those targets would strengthen the governance structure supporting the framework.

SHADES OF GREEN

Based on our review, we rate the TrønderEnergi's green finance framework **CICERO Dark Green**.

Included in the overall shading is an assessment of the governance structure of the green finance framework. CICERO Shades of Green finds the governance procedures in TrønderEnergi'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 February 2021. 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:

SHADES OF GREEN	EXAMPLES
 Dark green is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future.	 Wind energy projects with a strong governance structure
 Medium green is allocated to projects and solutions that represent steps towards the long-term vision, but are not quite there yet.	 Green buildings with a high level of certification and energy efficiency
 Light green is allocated to projects and solutions that are environmentally friendly but do not by themselves represent or contribute to the long-term vision.	 Substantially more efficient manufacturing of fossil fuel intensive materials

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 finance 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 finance 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.



2 Brief description of TrønderEnergi's green finance framework and related policies

TrønderEnergi AS is the Norwegian parent company of a number of subsidiaries covering renewable energy production, trading, transmission and various energy related services in Norway. TrønderEnergi is owned by 18 municipalities in Trøndelag county and KLP (Kommunal Landspensjonskasse mutual insurance company). The Group generates annual sales of approximately NOK 1 billion and employs around 250 staff.

TrønderEnergi produced 2.2 TWh of renewable energy in 2020, with a mean annual production of 1.8 TWh. In addition, by 2021 and 2022 TrønderEnergi's share of production is expected to grow with 600 GWh. At the same time the level of operatorship is increased by 1.7 TWh. In addition, the newly founded business area of energy management will manage 600 GWh. In total TrønderEnergi expects to have renewable energy under management of approximately 5.7 TWh. The growth stems mainly from the completion of wind farms under construction and the handover of the operatorship in Roan Vindpark. By 2022 the company is wholly or partly owner of 18 hydropower plants (1.8 TWh), 14 fully operating wind farms (733 GWh), all in mid-Norway.

TrønderEnergi has in the past two years also built and installed 18,600 electrical vehicles (EV) charging stations for parking lots in and around housing communities. In addition, TrønderEnergi has taken a major stake in a venture called Ohmia Retail. Their main goal is to take a leading position in the retail segment by providing efficient energy consumption through sophisticated service concepts.

TrønderEnergi mainly contribute to a greener future by providing more hydro- and wind power, and better connectivity to renewable energy sources through innovative and energy related solutions. Furthermore, to enable these solutions TrønderEnergi is involved in exciting research and development projects (R&D), guides student theses and encourage (sustainable) entrepreneurship. Two of the most interesting R&D-projects are the EU projects Positive CityxChange and REMOTE. The former is a large international project aiming at creating the sustainable cities of the future, producing more energy than they consume. And the latter aimed at creating a micro grid capable of sustaining a large farm with renewable energy, without being connected to the grid.

Environmental Strategies and Policies

TrønderEnergi has as its main goal to increase the hydropower production, become a leading player in the Nordic windfarm market and create more growth within electrification. All of TrønderEnergi's energy production is renewable and TrønderEnergi will continue to be an advocate for further development of green energy and preservation of wildlife and ecosystems. TrønderEnergi acknowledge that building wind- and hydro-power plants and expanding connectivity will affect the surrounding environment. But as society needs more renewable power, this simply entails that one must be vigilant in trying to minimize the undesirable effects of the decisions and balance the pros and cons so as to maximize sustainability. The focus going forward is to increase the value of the current hydropower stations through digitalization, energy management and operational excellence. Throughout operations TrønderEnergi has as goals to recycle production equipment and ensure only renewable electricity consumption with guarantees of origin.

TrønderEnergi established the first greenhouse gas (GHG) accounts for 2019 in 2020. During this time TrønderEnergi has been involved in a larger sustainability strategy process and has therefore not published the results in lack of the broader context it belongs in. By using the GHG account tool Klimakost developed by Asplan



Viak, the results are founded on ISO 14064 (ISO 2006) and the corporate value chain GHG-protocol, which covers Scope 1, 2 and 3 emissions from own activities. Thus, emissions from material use, sub-contractors and other external activities are currently excluded. The plan is to further develop the sustainability context in TrønderEnergi, and to publish the GHG accounts for 2020 in 2021. As of 2019 the total emissions are 840.2 tCO_{2e} with 27% in Scope 1, 10% in Scope 2 and 63% in Scope 3. The biggest emission contributors are Purchase of goods and Buildings, contributing with 230.47 and 257.35 tCO_{2e}, respectively. There is a plan to implement TCFD recommendations, in addition to follow the development related to the EU Taxonomy.

TrønderEnergi has adopted as a guidance for own goals, the official Norwegian emission mitigation targets for 2030, i.e., to reduce emissions with at least 50 percent, and up to 55 percent, compared to 1990 levels. This aspiration falls into a larger ongoing process for developing goals for TrønderEnergi, that include but is not limited to, sustainability. Currently, TrønderEnergi has not decided on quantitative targets when it comes to greenhouse gas emissions.

All hydro- and wind power projects in Norway are subject to an environmental impact assessment (EIA) or environmental planning developed by professional actors. The EIA/environmental plans are assessed by relevant authorities, often through a public hearing. Biodiversity and ecosystems are central topics and is followed up during the construction and operational phase through regular inspections. Any ambiguities are discussed with relevant authorities, like NVE.

Climate resilience is a natural part of all hydropower projects, whether it is developing new or upgrading existing ones. It is taken into consideration both when it comes to construction, but also energy management. Climate risk is also assessed more broadly at the company level and regularly reported to the board.

Based on TrønderEnergi's priority sustainability goals, the company sets requirements for all procurements, including buildings, but have not a specific quantitative set of criteria. Thus, they will set requirements for climate emissions at suppliers and partners that are related to the specific work to be carried out and materials chosen should, where possible, be short-distance and recyclable. Typical criteria would be: Equipment emissions/emission classes, recyclability, materials selections, work execution with respect to minimizing environmental impacts, expected lifespan, reparability/serviceability, social responsibility requirements and ethics requirements.

To reduce the footprint in the operation of buildings, TrønderEnergi will increase the use of home offices to reduce space requirements, energy requirements and the need for transport to and from work. Approximately a quarter of the vehicle fleet is currently zero emission vehicles. All new cars must use renewable drivelines. Exceptions should only be granted where there are no appropriate solutions within renewable drivelines.

Use of proceeds

The net proceeds of the green bonds issued or green loans obtained by TrønderEnergi will be used to finance or re-finance eligible projects that have been evaluated and selected by TrønderEnergi in accordance with the criteria in table 1 below. Initially, approximately 53% will be refinancing. Refinancing of eligible projects will have a look-back period of no longer than 3 years from the time of issuance. Eligible projects fall into two categories: Renewable energy and Energy efficiency/electrification. Initially, the shares of the two categories will be approximately 50/50. Wind power will be dominant in the renewable category, while investments in Ohmia Charging will dominate the energy efficiency/electrification category. TrønderEnergi's eligible projects are currently located in Norway. However, TrønderEnergi aims to become a leading Nordic wind operator and as such future projects might be in the Nordic region.



Green bonds and loans net proceeds will not be allocated to projects for which the purpose of the project is fossil energy production or nuclear energy generation.

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.

TrønderEnergi has established a Green Finance Committee (GFC) to evaluate and select assets that are in line with the criteria set out in table 1. The committee meets at least on an annual basis or when needed. The Green Finance Committee is comprised of representatives from treasury, group sustainability and internal audit, where the group sustainability representative has veto. The Green Finance Committee is also responsible for replacing investments that no longer meet the eligibility criteria (e.g., following divestment, liquidation, concerns regarding alignment of underlying activity with eligibility criteria). Finally, the Green Finance Committee should, on a best effort basis, review and update the content of the green finance framework and manage any future updates of that document to reflect relevant changes in the company's corporate strategy, technology and market developments.

TrønderEnergi performs risk assessments in line with ISO31000:2018¹. Methods for carrying out risk assessments are described in TrønderEnergi's Risk Management Framework, which is a governing document included in the company's quality management system. The Risk Management Framework comprises all types of risk evaluations, including ESG risk evaluation.

When it comes to controversial projects, e.g., on-shore wind power, TrønderEnergi has over the last 20 years developed wind projects in close collaboration with local authorities and will continue to do so in the future. Local support both from the authorities and amongst the local public is one of the go/no-go criteria when screening new wind and other development projects.

Management of proceeds

CICERO Green finds the management of proceeds of TrønderEnergi to be in accordance with the 2018 Green Bond and Green Finance Principles.

TrønderEnergi will establish a Green Financing Register with the purpose to monitor eligible projects financed by the green bonds and loans as well as provide an overview of the allocation of the net proceeds from the green bonds and loans to the respective eligible projects. Proceeds will be allocated towards a portfolio of eligible projects. The value of the eligible projects detailed in the Green Financing Register will at least equal the aggregate net proceeds of all outstanding TrønderEnergi green bonds and loans. There may be periods when the total outstanding net proceeds of green bonds and loans exceed the value of the eligible projects in the Green Financing Register. Proceeds yet to be allocated towards eligible projects will be held in accordance with TrønderEnergi liquidity management policy and excess liquidity is placed in money market funds/bank deposits. The portfolio balance of unallocated proceeds will be disclosed. The Green Financing Register will form the basis for the impact reporting.

¹ ISO 31000, Risk management – Guidelines, provides principles, a framework and a process for managing risk. It can be used by any organization regardless of its size, activity or sector. <https://www.iso.org/standard/65694.html>



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.

To enable investors to follow the development and to provide insight to prioritized areas, TrønderEnergi will provide a Green Financing Investor Letter on an annual basis. The first Investor Letter will be published in 2022. The treasury/finance department will be responsible for the reporting, and final reporting will be verified by an external auditor. The report will include a complete list of all outstanding green bonds and loans. TrønderEnergi intends to report on quantitative impact indicators where feasible and relevant data information is available. The Green Financing Investor Report will include the two following reports:

Allocation Reporting:

1. A description of the portfolio of eligible assets;
2. Type of financing instruments utilized and respective outstanding amounts;
3. Information on the split between new financing and re-financing;
4. A list of all eligible projects including the amounts allocated, and allocated and disbursed amounts per category and geographical distribution.

Impact Reporting:

The impact reporting aims to disclose the environmental impact of the eligible projects financed under the framework, based on TrønderEnergi financing share of each project. As TrønderEnergi can finance large and small eligible projects in the same project category, impact reporting will, to some extent, be aggregated.

The impact assessment is provided with the reservation that not all related data can be covered and that calculations therefore will be on a best effort basis. E.g., if a wind farm is under construction but not yet operational, TrønderEnergi will provide best estimates of future energy generation. The impact assessment will, if applicable, be based on the key performance indicators (KPIs) as follows:

Renewable energy: Amount of renewable energy generated (MWh), and amount of CO_{2e} avoided (tonnes).

Energy efficiency/electrification: List of electrification projects financed by green finance and why these initiatives are sustainable (quantitative figures where feasible), list of R&D projects financed by green financing and why these are sustainable.

When it comes to estimating avoided CO₂ emissions as well as own emissions from electricity use, TrønderEnergi will use a common grid factor of 16g CO₂/kWh with reference to the Norwegian electricity mix. References will be disclosed as footnotes in the investor letter.

TrønderEnergi has appointed an external independent auditor to annually assure that the selection process for the financing of eligible projects and that the allocation of the net proceeds of the green financing are done in accordance with TrønderEnergi green finance framework.

The green finance framework, the second party opinion, the third-party review, and the Green Financing Investor Letter will be publicly available on TrønderEnergi's website: <https://tronderenergi.no>



3 Assessment of TrønderEnergi's green finance framework and policies


The framework and procedures for TrønderEnergi's green finance 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 TrønderEnergi 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 TrønderEnergi's green finance framework, we rate the framework **CICERO Dark Green**.

Eligible projects under the TrønderEnergi's green finance 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 finances 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
Renewable energy 	<ul style="list-style-type: none">Construction, reconstruction and upgrading of renewable energy and related infrastructure. Renewable energy sources will include hydropower plants and windfarms. Related infrastructure could include access roads, dams and grid connection.	Dark Green <ul style="list-style-type: none">✓ This category will initially cover approximately 60% of total proceeds.✓ About 44% of renewable energy investments will be for wind power with close to 30% for new wind power projects. Hydro power comes next, and a smaller part will be for research and development of solar power and hydrogen.✓ Large hydropower facilities and wind farms and associated construction/renovation projects will have impacts on the surrounding environment and biodiversity. This can create local conflicts. Biodiversity and ecosystem integrity is also a main concern with hydro- and wind power projects. New access roads and mass depositions are examples that will need special scrutiny.



- ✓ Some of the hydropower facilities are in or in the vicinity of nature conservation areas. All of the activities/facilities have been conducted in accordance with concessions given by The Norwegian Water Resources and Energy Directorate (NVE) and follow requirements for mitigating measures to safeguard the environmental values given by the administrative authority. Close contact with the relevant environmental authority in these matters is crucial.
- ✓ TrønderEnergi has specified that they emphasize maintaining good dialogue with all stakeholders, and use local suppliers to reduce transport and maximize local value creation.

Energy efficiency



- Projects that promote the electrification of cities, grocery stores and society in whole. This could for example include development of charging infrastructure or sophisticated concepts/solutions for energy consumption such as, but not limited to, “Ohmia Charging” and “Ohmia Retail”
- R&D that promotes new innovative solutions that has a clear target of reducing energy loss or increasing the utilisation of renewable energy such as, but not limited to, “CityxChange” and “REMOTE”.

Dark Green

- ✓ This category will initially cover approximately 40% of total proceeds.
- ✓ Ohmia Retail’s main goal is to assist retail with efficient energy consumption through sophisticated service concepts.
- ✓ Ohmia Charging’s concept is to take the cost of shared charging systems in housing companies and associations with individual payment by users. This will allow for a larger share of electric vehicles in these types of housings. Be aware of potential rebound effects of electrification and their climate impacts.
- ✓ CityxChange is a large international research project aiming at creating the sustainable cities of the future, producing more energy than they consume. REMOTE aims at creating a micro grid capable of sustaining a large farm with renewable energy, without being connected to the grid.
- ✓ R&D projects should carefully avoid promoting lock-in of fossil fuel technologies.

Table 1. Eligible project categories



Background

According to IEA², in 2020 global renewable electricity generation rose 5%, with wind and solar PV technologies together accounting for more than half of this increase. Although the share of renewables in global electricity generation reached 28% in the first quarter of 2020, renewable power still needs to expand significantly to meet the IEA's Sustainable Development Scenario (SDS) share of 50% of the generation by 2030³. The EU has committed itself to a clean energy transition, which will contribute to fulfilling the goals of the Paris Agreement on climate change and provide clean energy to all. To deliver on this commitment, the EU has set binding targets, e.g., to increase the share of renewable energy to at least 32% of EU by 2030⁴.

In February 2020, Norway released updated targets for 2030 to cut emissions by 50-55% from 1990 levels⁵, and a White paper was published on this in January 2021⁶. Norway is projected to miss its previous 2020 emissions reductions target by around 4.5 million tCO₂e and needs fast action to reach the new 2030 goal. The government has outlined necessary steps to achieve this through the 'Klimakur 2030' analysis⁷. The analysis covers 60 emissions reductions measures in multiple sectors including energy, transport and industrials that will lead to a 50% emissions reduction by 2030. The implementation of electrification measures will make up 34% of total emissions reductions between 2021-2030 in Norway.

At the beginning of 2021, the power supply in Norway had a total installed production capacity of 37,680 MW and a total normal annual production of 153 TWh. In 2020, Norway set a new production record with a total power production of 154.2 TWh, which is about 10 TWh more than the average over the last 5 years. Norway currently has more than 800 reservoirs, with a storage capacity equivalent to around 87 TWh. This represents around half of Europe's total reservoir capacity. Large storage capacity and high installed capacity provide the Norwegian hydropower system with significant flexibility. Most of Norway's reservoirs were built before 1990, but upgrades and expansions of power plants have increased reservoir utilisation capacity in recent years. Relatively little growth is expected in hydropower production in Norway in the next few years, as capacity investments in renewable energy are largely being channelled towards solar and wind power.

Norwegian power demand is estimated to increase by 5.8 TWh to account for the electrification of many sectors towards 2030. In 2019, Norway total consumption amongst all sectors was 126 TWh, while in 2030, it is expected consumption will increase to 159 TWh. Considering expansions in generation capacity from wind and hydropower, this will be well within Norway's expected generation capacity of 174 TWh. Electricity generation is expected to increase until 2022 due to investments in wind power.

One of the benefits of hydropower is that only negligible levels of greenhouse gases are emitted after a power plant has been built. Life cycle assessments (LCAs) show the total emissions in a product's life cycle from the extraction of raw materials, to production, distribution, use, reuse, maintenance and recycling – to final disposal, including all transportation involved. Life cycle assessments of various power production techniques show that hydropower has very low emissions. Thus, the Norwegian Institute for Sustainability Research (NORSUS, previously Østfoldforskning) have calculated emissions from several Norwegian hydropower plants through life cycle assessments and the calculations show that the emissions from a typical Norwegian hydropower plant are

² <https://www.iea.org/reports/global-energy-review-2020/renewables>

³ <https://www.iea.org/fuels-and-technologies/renewables>

⁴ https://ec.europa.eu/energy/sites/ener/files/documents/necp_factsheet_pl_final.pdf

⁵ <https://www.regjeringen.no/no/aktuelt/norge-forsterker-klimamalet-for-2030-til-minst-50-prosent-og-opp-mot-55-prosent/id2689679/>

⁶ <https://www.regjeringen.no/no/dokumenter/meld.-st.-13-20202021/id2827405/> (in Norwegian).

⁷ <https://www.miljodirektoratet.no/globalassets/publikasjoner/m1625/m1625.pdf>



approximately 3.3g CO₂-equivalents per kWh⁸. The net environmental gain from electrifying the energy supply is thus substantial.

In March 2020, a technical expert group (TEG) proposed an EU taxonomy for sustainable finance that specified mitigation thresholds and “do no significant harm” (DNSH) criteria for eligible activities. The DNSH-criteria are to make sure that progress against some objectives is not made at the expense of others and recognizes the relationships between different environmental objectives⁹. In November 2020, EU published its draft delegated act to outline its proposed technical screening criteria for climate adaptation and mitigation objectives, respectively, which it was tasked to develop after it entered into law in July¹⁰. The EU regulation also specifies that certain minimum safeguards (social safeguards) must be followed for an activity to be defined as sustainable.

Governance Assessment

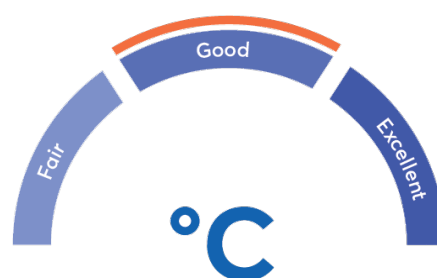
Four aspects are studied when assessing the TrønderEnergi’s governance procedures: 1) the policies and goals of relevance to the green finance framework; 2) the selection process used to identify eligible projects under the framework; 3) the management of proceeds; and 4) the reporting on the projects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

TrønderEnergi is at an early stage in formulating a climate strategy, quantitative climate goals and reporting greenhouse gas emissions. They have started collecting emission data for 2019 and are awaiting the development of a broader sustainability plan for the company to put these numbers in context. The plan is to start reporting all three scopes of own GHG emissions in 2021 in 2022.

Climate resilience (physical climate risk) and transitional risk on a company level are routinely assessed and reported to the board, and technical assessments to assure climate resilience are carried out on all larger projects. However, scenario analysis according to the TCFD guidelines are not carried out. TrønderEnergi plans to implement the TCFD recommendations, in addition to follow the development related to the EU Taxonomy, in the future.

The selection process of eligible projects is good and the eligible projects and assets are mostly well defined. Management of proceeds and reporting are good.

The overall assessment of TrønderEnergi’s governance structure and processes gives it a rating of **Good**.



Strengths

Based on information presented by the issuer, renewable energy projects to be financed under the framework are well within the EU taxonomy mitigation thresholds listed for wind- and hydropower. Norwegian hydropower is assumed (based on detailed analysis of a subset of power plants⁸) to generate electricity with life cycle emissions

⁸ NORSUS report on “The inventory and life cycle data for Norwegian hydroelectricity”, available here: <https://norsus.no/wp-content/uploads/AR-01.19-The-inventory-and-life-cycle-data-for-Norwegian-hydroelectricity.pdf>

⁹ Taxonomy: Final report of the Technical Expert Group on Sustainable Finance, March 2020. https://ec.europa.eu/knowledge4policy/publication/sustainable-finance-teg-final-report-eu-taxonomy_en

¹⁰ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12302-Climate-change-mitigation-and-adaptation-taxonomy#ISC_WORKFLOW



including emissions from inundation of land (3.3g CO₂e/kWh), far lower than the given thresholds in the EU taxonomy (100g CO₂e/kWh).

Under the renewable energy category, proceeds will partially be used for investments in wind power and to upgrade existing hydropower assets. This last contributes to extending the lifetime of hydropower assets and has the potential to deliver increased capacity by improving the efficiency of systems. Restorations and capacity additions to existing sites can be considered positive for the environment and climate as this avoids local impacts and GHG emissions connected with new constructions.

Concerning the energy efficiency/electrification investments, these are clearly necessary and aligned with a low carbon future, and hence a strength of the framework. It is, however, more difficult to assess the R&D projects' life cycle climate impacts although they could be substantial and of a transformative nature.

A commitment to impact reporting, even though only on a best effort basis, increases transparency to investors and is a strength.

Weaknesses

We find no material weaknesses in TrønderEnergi's green bond framework.

Pitfalls

While renewable energy projects generally are considered to have positive climate mitigation impacts, there are nevertheless emissions and other environmental impacts associated with the construction process. CICERO Green encourages TrønderEnergi to conduct life cycle assessments of major projects. Life cycle assessments will provide valuable information on the environmental and climate impacts of the projects and point to suppliers that can lead to a reduction in emissions.

The main negative environmental impacts associated with generation of renewable energy include impacts on biodiversity, interference with migration pathways and changes in habitat from construction and operation, and visual pollution of the local environment. Also, renewable energy projects often require construction of new roads with sometimes unintended consequences for the surrounding environment. It may also be potential pitfall that stand-alone power projects may support fossil intensive industries.

Despite regular stakeholder consultations, there are often conflicts associated with watercourse regulations and wind power farms. The development and operation of hydropower plants are of major interest for municipalities, local communities and interested parties. Potential conflicts are mainly related to:

- Effects on fish and fishing in regulated rivers with fluctuating flow of water. Optimal fisheries management.
- Construction activities and impact on neighbours and nature close to construction sites.
- Access and availability to hydropower facilities like dams and connected roads. 3rd party safety.
- Impacts on biodiversity and nature qualities from operation and maintenance of our facilities.
- Effects of damaging floods in regulated watercourses, especially in downstream municipalities.

When it comes to wind power, wind turbines might:

- cause noise
- aesthetic pollution
- affect bird life



- have an impact on reindeer herding.

To meet these challenges, environmental assessments are always part of new hydro- and wind-power projects. Large projects must have a license application and impact assessment in accordance with Norwegian law (Energy Act and the Planning and Building Act). Assessments are most often done by environmental consultants outside TrønderEnergi. If relevant (and most often), landowners are involved. TrønderEnergi has also inhouse environmental competence, which is included in the project management/leader group to secure the following up on these matters. Public consultation with authorities, organizations and private individuals must be carried out before final processing by NVE/OED. The requirements for what are to be studied have changed over the years, and TrønderEnergi follows what applies at the time the project is planned. Once permission has been granted, adjustments will also be made to projects for environmental reasons. A concrete example is the Frøya wind farm where TrønderEnergi moved turbines and roads and reduced the footprint in the nature areas significantly after local protests. Among other things, road construction was reduced by about 10%.

There is close environmental follow-up during the construction and operation phases. In the construction phase, the environment, through follow-up of the MTA plan (environment, transport and construction plan), will be the central part of the project follow-up. The MTA plan (which is approved by NVE) contains all the guidelines that the construction management must follow. In the operational phase, the ordinary environmental inspection of TrønderEnergi will be carried out in accordance with current routines, cf. the provisions of internal control.

TrønderEnergi has two so-called “noise agreements” where noise level guidance is exceeded while economically compensated for in agreement with relevant stakeholders.

Efficiency improvements may lead to rebound effects. When the cost of an activity is reduced there will be incentives to do more of the same activity. From the project categories in table 1, an example is energy efficiency investments in industry processes and buildings which in part may lead to more energy use or a failing to reach the potential reductions.



Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	TrønderEnergi - Draft Green Bond Framework	Green Finance Framework dated January 2021
2	Årsrapport 2019 - TrønderEnergi AS	TrønderEnergi's annual report for 2019 (in Norwegian)
3	TrønderEnergi - Retningslinjer for bærekraft	TrønderEnergi's guidelines for sustainability (in Norwegian)
4	TrønderEnergi - Bærekraft i TrønderEnergi	A document describing sustainability work in TrønderEnergi (in Norwegian)
5	TrønderEnergi GHG Accounts for 2019	Excel sheet showing TrønderEnergi's GHG account for 2019
6	Eksempelbilde Kritikalitetsvurdering Anskaffelser	Example of criteria for procurements
7	Fakta Ohmia Retail	Fact sheet on Ohmia Retail



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).

