°CICERO Shades of Green

Haugaland Kraft
Green Finance Second Opinion

March 15, 2021

The Haugaland Kraft Group (Haugaland Kraft) is a Norwegian utility company headquartered in Haugesund Norway and is owned by seven municipalities as well as power companies in the Rogaland county in the western part of Norway. Haugaland Kraft's business areas are transmission and distribution of electricity, renewable energy generation with a focus on hydropower, and telecommunication networks, all within Norway.

Projects financed under this framework will contribute to an increased generation of renewable energy, and an increased electrification and digitalisation. Eligible green project categories include renewable energy (hydropower, solar PV and green hydrogen), energy efficiency and clean transportation. The majority of proceeds are expected to be directed towards increased hydropower generation, transmission networks and fibre optic cables.

Haugland Kraft seems to comply with most of the applicable mitigation and Do-No-Significant-Harm (DNSH)-criteria for relevant categories in the EU taxonomy. Norwegian hydropower and solar PV generate electricity with CO_2-emissions significantly lower than the given taxonomy criteria, and Norwegian transmission and distribution infrastructure is the interconnected European system. For generation of hydrogen, Haugland Kraft is likely aligned, but CICERO Green has in-sufficient information to conclude on alignment. Some of the relevant DNSH-criteria are likely only partly aligned, such as fish passes or turbines that prevent fish kill for old hydropower stations and systematic climate risks assessments. The fibre-optic networks are considered an enabling technology for climate mitigation and adaptation. However, there are trade-offs between emissions and energy use from increasing demand for data processing capacity and emissions reduction in other sectors applying the networks. Specific thresholds for fibre-optic networks are not yet included in the EU-taxonomy. Haugaland Kraft has several measures aiming at fulfilling the minimum social safeguards of the EU Taxonomy, however, there seems to be room for improvement related to mapping and follow up of human rights risks related to i.a. sub-contractors.

Haugaland Kraft is lacking overarching targets related to climate change and the environment. The issuer has a strong Code of Conduct, including relevant environmental and social issues. The procurement process could be strengthened by including Life Cycle Assessment of major purchases and projects. The issuer does not report on scope 3 emissions, including emissions from their subsidiaries and their activities where the majority of emissions are generated. Haugaland Kraft has not implemented the TCFD-recommendations, but is as part of their operation aware of the physical climate risks they are exposed to.

Based on the overall assessment of the eligible green assets under this framework and governance and transparency considerations, Haugland Kraft's green finance framework receives a **CICERO Dark Green** shading and a governance score of **Good**. To improve the framework, Haugland Kraft could systematise processes around climate risk and life cycle assessments. Better climate reporting, quantitative climate targets and a clear roadmap towards those targets would also further strengthen the governance structure supporting the framework.

SHADES OF GREEN

Based on our review, we rate the Haugaland Kraft'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 Haugaland Kraft's framework to be **Good**.

GREEN BOND AND GREEN LOAN PRINCIPLES

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

°CICERO Dark Green

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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:

CICERO 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. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Ideally, exposure to transitional and physical climate risk is considered or mitigated.	Wind energy projects with a strong governance structure that integrates environmental concerns
Medium green is allocated to projects and solutions that represent steps towards the long-term vision, but are not quite there yet. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Physical and transition climate risks might be considered.	Bridging technologies such as plug-in hybrid buses
Light green is allocated to projects and solutions that are climate friendly but do not represent or contribute to the long-term vision. These represent necessary and potentially significant short-term GHG emission reductions, but need to be managed to avoid extension of equipment lifetime that can lock-in fossil fuel elements. Projects may be exposed to the physical and transitional climate risk without appropriate strategies in place to protect them.	Efficiency investments for fossil fuel technologies where clean alternatives are not available

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

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

The Haugaland Kraft Group (Haugaland Kraft) is a Norwegian utility company headquartered in Haugesund Norway and is owned by seven municipalities as well as power companies in the Rogaland county in the western part of Norway. Haugaland Kraft is focusing on transmission and distribution of electricity, renewable energy generation, and telecommunication networks, all within Norway.

Haugaland Kraft Group was founded in 1988 when the Haugesund Energi (established in 1909) and the Karmsund Kraftlag (established in 1922) was merged to Haugaland Kraft. The company includes the wholly owned subsidiaries Haugland Kraft Energi AS, Haugland Kraft Nett AS and Haugaland Kraft Fiber AS as well as the majority owned Sunnhordland Kraftlag AS (SKL) and Afiber AS.

Haugaland Kraft Energi AS is a regional provider of electricity, solar panel installation and solutions for electrical vehicles charging. The company is providing battery-free cloud-based storage of solar energy, where clients can store surplus power in the cloud, which can later be extracted when the electricity price is higher. Haugland Kraft Nett AS owns and operates regional transmission and distribution networks across the south western parts of Norway and transmitted 2,493 GWh in the regional grid and 1,968 GWh in the distribution network in 2019. Haugland Kraft Fiber AS is providing high-speed internet services via fibre-optic solutions, including products produced by Altibox. Sunnhordland Kraftlag AS is a hydropower producer, with facilities mainly located in the Vestland county of Norway. The company owns and operates twenty-four hydropower stations with an annual average energy production of 2.0 TWh. When adding ownership interests in other hydropower plants in the region, SKL's total annual average electricity production is 2.7 TWh. SKL has informed us that they currently do not have any active assets in onshore wind, offshore wind or green hydrogen, but that they are expecting realisation of investments in green hydrogen and offshore within the coming years.

Environmental Strategies and Policies

Haugaland Kraft aims to contribute to a low-carbon future through the generation of renewable energy. The company has been certified according to the Eco-Lighthouse certification (Miljøfyrtårn) scheme since 2012. This requires the company to have a comprehensive Health, Safety and Environment (HSE) Management system, with internal systems related to energy consumption, transport, waste, and emissions. The issuer does not have concrete overarching targets related to environment or climate change.

The issuer informs us that sustainable procurement including environmental and social issues is embedded in their procurement processes and formalised in the company's Supplier Code of Conduct (CoC) that is now beeing translated to English. The CoC will be annexed to relevant future contracts. The CoC mirrors the company's requirements on ethical behavior towards the sub-contractors and entrepreneurs to similar requirements for their own employees. The CoC is valid for all Haugaland Kraft's fully owned subsidiaries, with an ambition to introduce this also for the partly owned subsidiaries. Furthermore, the issuer is subject to the Public Procurement Act (lov om offentlige anskaffelser and the forsyningsforskriften) where they are obligated to focus on a minimisation of the environmental impact of the procurement, to promote climate friendly solutions and to use environmentally friendly specifications at all steps of the procurement process where this is found relevant and provided that is has a relevant connection to the delivery. This is particularly relevant for Haugaland Kraft Nett AS. One example of inclusion of environmental concerns has been to include type of fuel applied as a highly weighted (30%) award

criteria in a tender for award of contracts related to installation of smart meters. This means that the competitor which offered use of electric or hydrogen-fueled cars when carrying out the installations would have an advantage. In one contract the winner of a tender guaranteed that 75% of all deliveries will take place using an electric car.

Haugaland Kraft has conducted a materiality assessment, and identified a safe and stable electricity generation, increased electrification, health and safety and reduction of biodiversity losses as the issues most material to their operation. The issuer has informed us that, to minimise negative impacts on the surrounding environment, they will update their sustainability strategy, with the aim to finalise the work during the first half of 2021. This will include a survey of plastic waste generated, considering electrification of the car park where possible, the installation of solar panels on the roof of the main office garage, and the installation of charging infrastructure for electric vehicles in the main office area.

Haugland Kraft has informed us that they are in the process of mapping human rights risks and how to handle such risks in their different business relationships. The company further informed that they have internal ethical guidelines that mirror the ones applicable for suppliers. Contractual provisions related to sub-contractors and entrepreneurs include workers' rights and human rights and these issues will be included in the update of the company's sustainability strategy.

Haugaland Kraft has not yet systematically included requirements or considerations on environmental issues towards their suppliers, for example based on Life Cycle Assessments, to identify the alternatives with the lowest environmental and climate footprint. The issuer informs us that they intend to start by including requirements towards environmental issues in biggest agreements first, and gradually also towards smaller and local suppliers.

As a part of the Eco-Lighthouse certification, the company establishes annual targets for the main office. For 2020 the targets were e.g.;
- to have an energy use of 300 kWh/sqm, from 318 kWh/sqm in 2019.
- to have 15 environmentally certified suppliers, from 9 in 2019 (Miljøfyrtårn, ISO 14001, EMAS or similar).
- to achieve a 93% sorting of waste, from 92% in 2019. The issuer does not have targets or information related to the recycling and reuse of waste.

The company also intends to certify all department offices according to the Eco-Lighthouse scheme but has no clear timeline for when this will be finalised.

The company's impact reporting is limited to scope 1 and scope 2 emissions, and totaled 1,345 tons of CO_2 in 2019, an increase of 7% from 2018. The issuer has informed us that this is due to the inclusion of more units in the main office, and a change in the calculations of emissions from air travel. Haugaland Kraft does not report on scope 3 emissions, including emissions from their subsidiaries and their activities where the main volume of emissions is generated.

Haugaland Kraft has not implemented the TCFD-recommendations, but the company is aware of the physical climate risks they are exposed to. They are among others continuously monitoring the water levels in all water reservoirs and potential consequences related to flooding. All dams have been evaluated according to the Norwegian dam safety regulations ("dammsikkerhets-forskriften") and has resulted in some dams being reinforces. However, the issuer does not have a systematic approach to climate risk assessment related to all activities.

According to the issuer, Haugaland Kraft is contributing to six of the UN Sustainability Development Goals; Affordable and clean energy (SDG 7), Industry, innovation and infrastructure (SDG 9), Sustainable cities and communities (SDG 11), Climate action (SDG 13) and Life on land (SDG 15).

Construction, operation and maintenance of hydropower plants have an impact on the natural environment. The effects are mainly local and related to physical interventions in nature and the impact on biodiversity through changes in water flow and water temperature. Haugaland Kraft is completing environmental impact assessments

for their projects and is implementing the recommendations from the assessments to ensure minimal impacts throughout the asset's life cycle. During operation, the company claims to take necessary mitigation measures, such as mapping of fish habitats, and monitoring of minimum waterflows.

Use of proceeds

The net proceeds issued under Haugaland Kraft's green finance framework will be used in whole or in part to finance investments to promote the transition towards low-carbon and climate-resilient development. This includes investments and related expenditures in green projects as well as acquisition of such projects. Green financing can be used for both financing and refinancing of assets and projects, with approximately 50% split between finance and re-finance. New assets and projects are defined as ongoing green projects and projects that started operation less than 12 months prior to the issuance of a green finance instrument.

Green projects include renewable energy projects (including hydropower and solar PV), renewable energy infrastructure, production of green hydrogen, infrastructure for clean transportation and telecommunication networks. Haugaland Kraft and SKL will split the proceeds approximately 50/50. SKL will focus the use of proceeds on hydropower. Haugaland Kraft will use the main parts of the proceeds on transmission lines and fibre cables, and possible minor investments related to solar PV.

Green bonds will not be used to finance investments linked to fossil energy generation, nuclear energy generation, research and/or development within weapons and defense, potentially environmentally negative resource extraction, gambling, or tobacco.

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.

To ensure the transparency and accountability around the selection of green projects, Haugaland Kraft has established an internal Green Finance Committee (GFC) that will be responsible for the evaluation and the selection process. The GFC consists of members from the finance, development, and sustainability teams in Haugaland Kraft, and all decisions will be made in consensus. For investments in SKL, a dedicated member of the SKL finance team will be a part of the GFC.

Only assets and projects that comply with the list of green projects given in table 1 below will be eligible to be financed with green finance instruments. The GFC will keep a register of all green projects. To ensure traceability, all decisions made by the committee will be documented and filed.

According to the issuer, they do not yet have clear procedures on how the GFC will work when selecting projects for the green portfolio. However, SLK has a policy not to start projects without full support from local stakeholders. Life Cycle Assessments or considerations related to rebound effects are not included in the selection process.

The GFC holds the right to exclude any green projects already funded by green finance instruments, which is further described below under Management of Proceeds.

Management of proceeds

CICERO Green finds the management of proceeds of Haugaland Kraft to be in accordance with the Green Bond and Green Loan Principles.

An amount equal to the net proceeds from issued green finance instruments will be earmarked for financing and refinancing of green projects as defined in the issuers' green finance framework. The finance department of Haugaland Kraft will be responsible to ensure that the value of green projects at all times exceed the total amount of green finance instruments outstanding.

According to the issuer, if a green project already funded by green finance instruments is sold, or for other reasons loses its eligibility towards the criteria in Haugaland Kraft's green finance framework, the project will be replaced by another qualifying green project.

Net proceeds from green finance instruments awaiting allocation to green projects will be managed according to Haugaland Kraft's overall liquidity management policy and may be invested in short term money market instruments or held as cash. If possible, Haugland Kraft will avoid investments in companies associated with fossil fuels as much as possible, but cannot guarantee that unallocated proceeds are not invested short term in funds that have stakes in stock-listed companies involved in e.g. oil and gas activities.

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.

Haugaland Kraft and SKL will jointly establish a green finance report to inform investors, lenders, and other stakeholders on the development of green projects funded by the green finance instruments. The green finance report will include an allocation and an impact report and be published annually as long as there is green finance outstanding. The GFC will be responsible for the reporting, and the report will be available on the companies' websites.

The allocation report will include information related to amounts invested in each of the green project categories, the share of new finance versus refinance, examples of green projects that have been funded, the amount of green finance outstanding and the amount of net proceeds awaiting allocation to green projects (if any).

The impact report will aim to disclose the environmental impacts of the green projects financed under the green finance framework. Impact reporting will be aggregated and depending on data availability, calculations will be made on a best intention basis. The impact assessment may, where applicable, be based on the metrics listed below. Identified impact indicators are:

Renewable Energy and Renewable Energy Infrastructure

- Annual energy generation capacity from renewable energy sources (MW)
- Actual annual energy generation from renewable energy sources (MWh)
- Annual increase in energy transmission and distribution capacity (MW)
- Annual reduction and/or avoidance of GHG emissions (tonnes of CO2e)

Green Hydrogen

- Installed hydrogen production capacity (tonnes per year)
- Annual manufacturing of hydrogen (tonnes)

Infrastructure for Clean Transportation

- Number of charging stations for electric vehicles

Telecommunication Networks

- Annual increase in installed fibre optic network (km)

- Annual increase in number of fibre optic network customers (thousands)

According to the issuer, the company's auditor will audit the allocation report. The impact report will not be externally verified. The company further informs us they will use the NVE[1]'s grid emissions-factor for the impact calculations, and that they will be transparent in dislcosing this in their reporting.

[1] Norwegian Water Resources and Energy Directorate.

3 Assessment of Haugaland Kraft's green finance framework and policies

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

Eligible projects under the Haugaland Kraft'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 bonds aim to provide investors with certainty that their investments deliver environmental returns as well as financial returns. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed and that the selection process should be "well defined".

Category	Eligible project types	Green Shading and some concerns
Renewable energy	**Renewable energy projects** • This category includes investments, and related expenditures, that promote the green energy transition including development, construction, installation, improvement, operation, repair and maintenance of renewable energy projects including hydropower, and solar power.	**Dark Green** ✓ Hydropower is a clean, renewable energy source, which contributes to Norway's low grid emissions factor, but large hydropower facilities and associated construction/renovation projects can have negative impacts on the surrounding environment and biodiversity. ✓ According to the SKL refurbishment and expansion of existing hydropower, as well as new hydropower developments will be funded. ✓ Haugaland Kraft/SKL have informed CICERO Green that they are following national laws and regulations and obtain licenses for their operations where required.

		✓ Some of SKL's hydropower-stations are close to or partly within National Parks or protected areas[2]. The parks/protected areas were established after the power stations had been finalised. ✓ According to the issuer, SKL is focusing on having a good dialogue with all relevant stakeholders in the development of new projects, including civil society. The dialogue with affected stakeholders provides SKL with information that is used to construct the facilities in the least harmful way for the surrounding environment. ✓ The issuer informs that they offer roof-based solar PV installations, and ancillary technical equipment such as batteries and smart controls.
Renewable Energy **Energy Efficiency**	**Renewable Energy Infrastructure** • This category includes investments, and related expenditures, directed towards construction, installation, improvement, operation, repair and maintenance of infrastructure related to the renewable energy sources listed above such as, but not limited to, power grids for transmission and distribution of electricity, smart grid solutions and smart meters as well as other monitoring systems aimed at enabling reduction of energy consumption.	**Dark Green** ✓ Construction of new over- and underground power grids can be funded. Construction will be limited to Norway. ✓ According to the issuer, power grids are a part of the national grid and can be transporting energy generated from fossil fuels. Haugaland Kraft is located in an area with a high density of fossil fuel companies, and the company is legally obliged to offer grid connections to all clients. Electricity can therefore be supplied to companies associated with fossil fuels. However, the company has specified that any network extensions to oil and gas companies will not be financed under the framework.
Renewable Energy	**Green Hydrogen** • This category includes investments, and related expenditures, directed towards the production of green hydrogen, including the necessary infrastructure.	**Dark Green** ✓ According to the issuer, they do not currently have any concrete hydrogen projects, but is expecting realisation of projects within the coming years. SKL will only develop green hydrogen using electrolysis. The company informs that they intend to use the potentially generated hydrogen to replace coal in industrial processes or as fuel in vessels.
Clean Transportation	**Infrastructure for Clean Transportation** • This category includes investments, and related	**Dark Green** ✓ Operational expenses as well as expenses related to installations of the charging stations can be supported.

[2] Folgefonna national park is close to parts of SKL's Blåfalli-facilities in Kvinnherad and Etne. The national park was established in 2005, after SKL's power stations. A small part of the Folgefanna glacier is within SKL's water reservoir (Inste Møsevatnet). The power stations in Litledalen, Etne were established in the period 1916-1960 (Litledalen og Hardeland kraftverk), and the watercourse was protected towards further developments in 1993.

	expenditures, necessary for zero direct emission transport, including infrastructure for electric vehicles, such as charging stations.	
Energy Efficiency	**Telecommunication networks** • This category includes investments, and related expenditures, directed towards construction, installation, improvement, operation, repair and maintenance of fibre-optic telecommunication networks to enable energy efficient, digitalised and electrified solutions for smart cities.	**Medium to Dark Green** ✓ According to the issuer, installation of on-land and underground fibre-optic cables can be funded. Sea-cables will not be funded. ✓ According to the issuer, investments have so far been related to building a stable fibre network infrastructure with high uptime performance, which is important to smart cities and societies. ✓ Digital solutions are expected to be an important enabling technology for climate mitigation and adaptation strategies. However, we note that there are trade-offs on emissions and energy use from increasing demand for i.a. data centers, while reducing emissions in other sectors. The extent of material climate benefits from digitalisation and expanding networks is still disputed. ✓ According to the issuer, installation of the fibre optic networks carries minimal impact on the surrounding environment since fibre optic cables are often installed together with already established power grid. ✓ The production of cables, and datacenters will not be funded.

Table 1. Eligible project categories

Background

In 2019, global renewable electricity generation rose 6%, with wind and solar PV technologies together accounting for 64% of this increase. Although the share of renewables in global electricity generation reached almost 27% in 2019, renewable power still needs to expand significantly to meet the IEA's Sustainable Development Scenario (SDS) share of 50% of the generation by 2030[3]. 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 2030[4].

In February 2020, Norway released updated targets for 2030 to cut emissions by 50-55% from 1990 levels[5]. Norway is projected to miss its 2020 emissions reductions target by around 4.5 million tCO_2e and needs fast action to reach the new 2030 goal. The government has outlined necessary steps to achieve this through the 'Klimakur 2030' analysis[6]. The analysis covers 60 emissions reductions measures in multiple sectors including energy,

[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.miljodirektoratet.no/globalassets/publikasjoner/m1625/m1625.pdf

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.

Norwegian power demand is estimated to increase by 5.8 TWh to account for the electrification of many sectors towards 2030. In 2018, Norway produced 147 TWh of electricity and total consumption amongst all sectors was 136 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 offshore wind power. Electrification measures will also require rapid extension of grid and charging infrastructure. This additional renewable energy capacity contributes to greater grid decentralisation and localisation, which enhances grid flexibility and resilience.

On a global level, the IEA Sustainable Development Scenario estimates a required energy efficiency improvement rate of 3.2% per year through 2040, which is double the rate in the period 2000-2016, in order to be in line with the SDS scenario [7]. Energy efficiency investments, such as smart technology aimed at reducing energy consumption, are key to reducing emissions. Smart grids and grid upgrades are necessary to manage and increase the share of intermittent and decentralised renewable energy. Starting in January 2019, all Norwegian buildings were required by law to switch to digital electricity meters/smart meters that collect consumption data and deliver it to the centralised system run by Statnett. This contributes to a more efficient energy market and help customers to gain information about when energy prices are lower and shift their energy consumption accordingly.

Fibre-optic cables have been largely found to reduce environmental impacts, compared to conventional alternatives and is an enabling technology for digitalisation which is a key part of the low carbon transition. There are however trade-offs on emissions and energy use from increasing energy demand for i.a. data centers, while reducing emissions in other sectors. The extent of material climate benefits from digitalisation and expanding networks is still disputed.

Developing low-carbon hydrogen production is critical for hydrogen to aid in the clean energy transition. Most hydrogen is currently produced through emissions-intensive natural gas reforming and coal gasification. One of the main low-carbon production routes is through water electrolysis (green hydrogen), producing hydrogen from low-carbon electricity and water. In recent years, the number and size of projects and installed capacity have expanded considerably, from less than 1 MW in 2010 to more than 25 MW in 2019[8]. According to the Government of Norway's hydrogen strategy[9], the government wishes to prioritise efforts in areas where Norway, Norwegian enterprises and technology clusters may influence the development of hydrogen related technologies, and where there are opportunities for increased value creation and green growth.

EU Taxonomy assessment

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 developed to make sure that progress towards some objectives is not made at the expense of others and recognises the relationships between different environmental objectives [10]. In November 2020, EU published its draft

[7] https://www.iea.org/reports/energy-efficiency-2019
[8] https://www.iea.org/reports/hydrogen
[9] https://www.regjeringen.no/en/aktuelt/the-norwegian-hydrogen-strategy/id2704774/
[10] 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

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 July 2020[11].

We have assessed eligible projects in Haugaland Kraft's green finance framework against the mitigation thresholds and the DNSH criteria in the draft delegated acts published in November 2020[12]. CICERO Green has conducted a light touch assessment of the minimum safeguards (social aspects) of the EU Taxonomy.

Relevant EU-Taxonomy activities are electricity generation from hydropower and solar PV, transmission and distribution of electricity, manufacture of hydrogen, infrastructure for enabling low-carbon road transport, and information and communication.

Comments on alignment are given under Strengths and Pitfalls, and detailed thresholds, NACE-codes and likely alignment with DNSH criteria are given in Appendix 2.

Governance Assessment

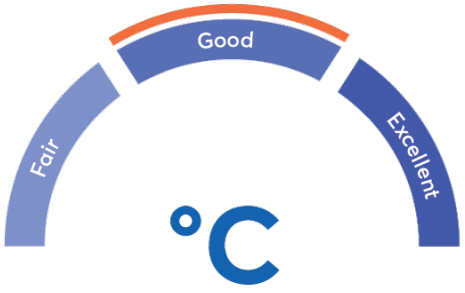
Four aspects are studied when assessing the Haugaland Kraft's governance procedures: 1) the policies and goals of relevance to the green finance framework; 2) the selection process used to identify eligible projects under the framework; 3) the management of proceeds; and 4) the reporting on the projects 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.

Haugaland Kraft aims to contribute to a low-carbon future through the generation of renewable energy. They establish relevant annual targets for the main office as a part of the Eco-Lighthouse certification scheme, but do not have overarching environmental targets for the Haugaland Group.

Haugaland Kraft has conducted a materiality assessment, and they inform us that they are in a process of updating their sustainability strategy. The issuer does not report on scope 3 emissions, including emissions from their subsidiaries and their activities where the main volume of emissions is generated.

Haugaland Kraft has not implemented the TCFD-recommendations but is aware of the physical climate risks they are exposed to. The issuer has informed us that they are continuously monitoring the water levels in all dams and potential consequenses related to flooding, but they do not have a systematic approach to climate risk assessment related to all activities, nor use climate scenarios.

The issuer has a strong Code of Conduct for suppliers, including relevant environmental and social issues, but could improve the systematic follow up of the performance of their suppliers by e.g. identifying the most severe social risks. The procurement process could be further strengthened by including Life Cycle Assessment of major purchases and projects. The issuer lacks a clear process on how to map and follow up human rights risks in their different business relationships, but they inform us that they have started a process addressing this.



[11] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12302-Climate-change-mitigation-and-adaptation-taxonomy#ISC_WORKFLOW
[12] EU Taxonomy: Annex to the Commission Delegated Regulation, supplementing Regulation (EU) 2020/852, November 2020. https://ec.europa.eu/finance/docs/level-2-measures/taxonomy-regulation-da-2020-annex-1_en.pdf

Management of Proceeds is well described, but the issuer has informed us that they do not yet have clear procedures on how the GFC will work when selecting projects for the green portfolio. Climate risk assessments or considerations related to rebound effects are not included in the selection process.

The overall assessment of Haugland Kraft's governance structure and processes gives it a rating of **Good.**

Strengths

It is a clear strength that Haugland Kraft's green framework focuses exclusively on low-carbon. Under the renewable energy category, proceeds will partially be used to upgrade existing hydropower assets. This 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.

Based on information presented by the issuer, projects to be financed under the framework are well within the EU taxonomy mitigation thresholds listed for hydropower, solar PV, transmission lines and installation of charging infrastructure.

- Norwegian hydropower is assumed to generate electricity with life cycle emissions (including emissions from inundation of land) of 3.3g CO_2e/kWh, far lower than the given thresholds in the EU taxonomy (100g CO_2e/kWh). Although the calculation method used in the study differs from the taxonomy, it is not likely that actual emissions are close to the given threshold.
- Production of electricity from solar PV is considered to contribute substantially to climate change mitigation without any further threshold screening in the EU taxonomy.
- Charging infrastructure will be dedicated to electrical vehicles, which is likely aligned with the taxonomy mitigation criteria ement.
- Norwegian transmission and distribution infrastructure is the interconnected European system, and generation of electricity in Norway is mainly from renewable sources.

It is the Norwegian Water and Energy Resources Directorate (NVE) who is managing the water and energy resources in Norway. In accordance with the Energy and/or Water Course Acts, the construction of energy production facilities larger than 1 MW need a license from the NVE. Old hydropower plants (established before 1917 when the "Water resource Act" was introduced) will normally not possess a license but will be subject to the same laws as plants with licenses. Relevant authorities conduct audits to monitor compliance of the licenses they issue.

The company has informed us that they are following national laws and regulations and obtain licenses for their operations where required, and that they are regularly audited by relevant competent authority. This comprises completion of EIAs and alignment with the EU water framework directive (WFD), as well as adherence to requirements related to impacts on biodiversity and habitats. To receive a license for hydropower production, the project needs to undergo an Environmental Impact Assessment (EIA) in line with the EU EIA-directive (2014/52/EU). In practical terms there are EIA requirements for all new hydro projects above 10 MW, and many of the smaller ones. Manufacture of Hydrogen will require a lisence from the Directorate for Civil Protection and Emergency Planning (DSB).

By adhering to the legal regime relevant to their operations, Haugland Kraft is likely to be aligned with the main DNSH-criteria related to circular economy, pollution, and ecosystems for hydropower, solar PV, manufacture of hydrogen, transmission lines and clean transportation. DNSH-criteria where the issuer is likely to be only partly aligned are presented under pitfalls.

Weaknesses

We find no material weaknesses in Haugland Kraft's green finance framework.

Pitfalls

While renewable energy projects generally are considered to have positive climate mitigation impacts, there are nevertheless emissions associated with the construction process. CICERO Green encourages Haugland Kraft to conduct Life Cycle Assessments (LCAs) of major projects. LCAs 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.

Haguland Kraft is aware of the main physical climate risk related to their activity, and is monitoring the water level in all water reservoirs, as well as evaluate the dams reinforce them where needed. However, the company has not implemented TCFD-reporting and is lacking a more systematic approach to physical climate change risks. To be fully aligned with the DNSH-criteria "Climate change adaptation" Haugland Kraft needs to identify physical climate risks for their activities by performing a climate risk and vulnerability assessment, and by using climate scenarios.

If the company obtains and complies with the licenses issued by the relevant authorities, it is our interpretation that they are likely to be aligned with several of the requirements in the EU taxonomy DNSH-criteria related to sustainable water management and biodiversity considerations. It is however unclear to what extent the Norwegian hydropower regulation fully takes into account the EU taxonomy DNSH criteria, in particular related to sustainable water management. According to the EU-taxonomy hydropower plants in operation should i.a. ensure minimal water flow and have fish passes and turbines to prevent fish kill. This is also the case for the requirement related to minimal water flow. Norwegian regulation includes a requirement for installation of fish passes and ensure minimal water flow for existing hydropower. However, there is no requirement to fence out fishes in old hydropower plants, as well as no requirements for turbines that prevent fish kill or to ensure of minimal water flow.

According to the issuer, the company will produce green hydrogen. Manufacture of hydrogen needs to comply with the life cycle GHG emissions savings of 80 % relative to a fossil fuel comparator of 2.256 tCO_2eq/tH_2. When using a Norwegian energy mix (17g CO_2/kWh in 2019[13]) it is likely that the issuer will be within the threshold given. However, the issuer has not yet established a concrete project and therefore does not have sufficient information for CICERO Green to conclude on alignment with the mitigation criteria.

Digital solutions are expected to be an important enabling technology for climate mitigation and adaptation strategies. However, we note that there are trade-offs on emissions and energy use from increasing demand for i.a. data centers, while reducing emissions in other sectors. The extent of material climate benefits from digitalisation and expanding networks is still disputed. Specific thresholds for fibre-optic networks and other ICT solutions are not yet included in the EU-taxonomy. In the draft delegated act published in November 2020, the technical screening criteria, as well as the DNSH-criteria related to Informaiton and Communication are centered around data centers.

Haugland Kraft is likely not fully aligned with the DNSH-requirement related to waste handling for solar PV installations (Infrastructure for enabling low-carbon road transport) due to lack of quantitative requirements of recycled materials.

[13] Strømforbruk i Norge har lavt klimagassutslipp - NVE

Appendix 1:
Referenced Documents List

Document Number	Document Name	Description
1	Haugaland Kraft's Green finance framework, dated December 2020.	Haugaland Kraft's green finance framework from December 2020.
2	Annual report 2019, Haugaland Kraft	Annual report from 2019.
3	Annual report 2019 Miljøfyrtårnet, Haugaland Kraft	Climate and environment report, 2019, Eco-Lighthouse
4	Haugland Kraft, Etiske retningslinjer for leverandører, dated 10-01-2021.	Haugland Kraft, Code of Conduct for suppliers.

Appendix 2: EU Taxonomy criteria and alignment

Complete details of the EU taxonomy criteria are given in https://ec.europa.eu/finance/docs/level-2-measures/taxonomy-regulation-da-2020-annex-1_en.pdf.

Electricity generation from hydropower

Framework activity	**Renewable energy**		
Taxonomy activity	**Electricity generation from hydropower (NACE Code D.35.1.1 and F42.22)**		
Taxonomy version	**EU Technical mitigation criteria**	**Comments on alignment**	**Alignment**
Mitigation threshold	The activity complies with either of the following criteria: a) The life cycle GHG emissions from the generation of electricity from hydropower are lower than 100gCO_2e/kWh[14], declining to 0gCO_2e/kWh by 2050. b) The power density of the electricity generation facility is above 5 W/m^2.	• According to the issuer Sunnhordland Kraftlag (SKL) owns and operates eight hydropower stations. Development, construction and maintenance of hydropower stations is included in the framework. • The issuer informed us that SKL has not performed a GHG life cycle assessment on their hydropower facilities but is referring to a study performed in 2019 by the Norwegian Institute for Sustainability Research (NORSUS) on Norwegian hydropower[15], indicating and average emissions of around 3.3g CO2e/kWh from energy generation by Norwegian hydropower. • The life cycle assessment (LCA)-study is performed using the ISO 40040/44/48.	Likely aligned with thresholds, but company specific LCA-studies are not calculated. Method used in study differ from the taxonomy. However, it is not likely that actual emissions are close to the given threshold.
	EU Taxonomy DNSH-criteria	**Comments on alignment**	**Alignment**
Climate change adaptation	• Physical climate risks material to the activity should be identified (chronic and acute, related to temperature, wind, water, and soil) by performing a robust climate risk and vulnerability assessment.	• Haugaland Kraft has not implemented the TCFD-recommendations, but the company is aware of the physical climate risks they are exposed to. They are among others continuously monitoring the water levels in all dams and potential consequenses related to flooding. All dams have been evaluated according to the "dammsikkerhets-forskriften" and has resulted in some dams beeing reinforces. However, the issuer does not	Likely partly aligned.

[14] The life-cycle GHG emissions are calculated using Commission Recommendation 2013/179/EU or, alternatively, using ISO 14067, ISO 14064-1, the G-res tool. Quantified life-cycle GHG emissions are verified by an independent third party.

[15] 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

	• The assessment should be proportionate to the scale of the activity and its expected lifespan.	have a systematic approach to climate risk assessment related to all activities.	
Sustainable use and protection of water and marine resources (water management)	1: Operation of existing hydropower plants, including refurbishment activities to enhance renewable energy or energy storage potential are eligble if: Measures have been implemented to reduce adverse impacts on water and protected habitats. The effectiveness is monitored in an authorisation or permit. The operation of the hydropower plant complies with authorisation or permit issued by the competent authority, and sets out relevant mitigation measures necessary to: • ensure conditions as close as possible to undisturbed continuity in the water body the plant relates to, functional fish passes and turbines preventing fish kill, measures to ensure minimum ecological flow and sediment flow; • reduce the impact of hydropeaking; • protect or enhance habitats for aquatic species; • reduce adverse impacts of eutrophication. 2: Construction of new hydropower plants is eligible if: • The plants are conceived so that no significant deterioration of the status of the water body in the same river basin district is experienced, demonstrated by a cumulative impact assessment. • Where the cumulative impact assessment demonstrates that the envisaged project could deteriorate or compromise the achievement of good status/potential of the specific water body it relates to, a further in-depth cost-	• The construction of energy production facilities larger than 1 MW needs a license from the Norwegian Water Resources and Energy Directorate (NVE) according to the "Energy Act" and the "Water Resources Act". Mitigation of negative environmental impacts as well as impacts on biodiversity, surrounding areas, and cultural heritages are important elements in attaining necessary licenses from NVE. • Companies need to complete an EIA and to demonstrate alignment with the EU Water Framework Directive (WFD). For newer installations, minimum requirements include minimum water flow, functional fish migration pathways as well as safeguards for biodiversity and local ecosystems. • River basin management (RBM) is conducted on a regional level, and hydropower plants need to be incorporated in the existing river basin management plans. This is regulated in the "Vanndirektivet". • Old hydropower plants do not have licenses but must comply with and are subject to the same requirements and the same audit regime as plants with a license. • NVE is carrying out audits to monitor performance. • According to the issuer they are following national laws and regulations and obtain licenses for their operations where required[16]. This comprises incorporation in the relevant RBM-plan, and alignment with the EU WFD. • The issuer further informs that they are obliged to implement mitigation measures related to the water ecology, such as conducting impact assessments on fish and construct two-way water passages, but that there are no requirements for older power to install such passages. This is also the case for the requirement related to minimal water flow. However, according to the issuer, for older hydropower plants, licenses are now being updated and requirements related to minimal may be issued. • The issuer informs us that the risk of eutrophication in SKL's water ways is small, due to i.a. deep lakes with low nutritional and biological values.	Likely partly aligned.

[16] The issuer informs that all hydropower plants have obtained licenses, except for Børtveit kraftverk, which is a small power plant (2,4 MW installed effect) established in the 1920-ies.

	benefit assessment must be performed and show that: the beneficial objectives served by the planned hydropower plant in terms of renewable energy generation and energy storage cannot, for reasons of technical feasibility or disproportionate cost, be achieved by alternative means that would lead to a better environmental outcome; the benefits expected from the planned hydropower plant outweigh the costs from deteriorating the status of water that are accruing to the environment and to society; all technically feasible and ecologically relevant mitigation measures are included in the permit or authorisation and are implemented to reduce the adverse impacts on the status of the water body the planned hydropower plant relates to.	Cumulative impact assessments: • To receive a license for a new hydropower plant, the Water Resource Act (§25) needs to be fulfilled, requiring that the overall consequenses locally, regionally and nationally are investigated. This will be a part of the application to receive a and focus on e.g. the environment, nature and biodiversity. A license will only be issued if the advantages of the development are outweighing the disadvantages. Consequences must be adapted to the expected lifespan of the development.	
Protection and restoration of biodiversity and ecosystems (ecosystems)	• An Environmental Impact Assessment (EIA) or screening should be completed in accordance with national provisions. • Where an EIA has been carried out, the required mitigation and compensation measures for protecting the environment are implemented. • For sites/operations located in or near biodiversity-sensitive areas (including the Natura 2000 network of protected areas, UNESCO World Heritage sites and Key Biodiversity Areas, as well as other protected areas), an appropriate assessment, where applicable, has been conducted and based on its conclusions the necessary mitigation measures are implemented.[17]	• The construction of energy production facilities larger than 1 MW needs a license from the NVE according to the "Energy Act" and the "Water Resources Act". • To receive a license the company needs to complete an EIA, including implementation of mitigative measures. This is also required by the "Energy Act". • According to the issuer they are following national laws and regulations and have completed EIAs for all projects in line with government requirements. Plans are implemented to ensure minimal negative impact throughout the asset's life cycle. The issuer further informs that during operation, necessary mitigation measures such as mapping of fish habitats, monitoring of minimum water flows, analysis of water quality as well as monitoring and analysis of other relevant water parameters are taken.	Likely aligned.

[17] Practical guidance is contained in Commission notice C/2018/2619 'Guidance document on requirements for hydropower in relation to EU nature legislation' (OJ C 213, 18.6.2018, p. 1).

Electricity generation using solar photovoltaic (PV) technology

Framework activity	**Renewable energy**		
Taxonomy activity	**Electricity generation using solar photovoltaic technology (NACE Code D 35.1.1 and F 42.22)**		
Taxonomy version	**EU Technical mitigation criteria**	**Comments on alignment**	**Alignment**
Mitigation criteria	• Substantial contribution to climate change mitigation.	• According to the issuer Haugland Kraft Energi AS is providing solar panel installations for private, corporate and municipal clients. • Solar PV is assumed to contribute substantially to climate change mitigation.	Likely aligned.
	EU Taxonomy DNSH-criteria	**Comments on alignment**	**Alignment**
Climate change adaptation	Please see under Hydropower.		
Transition to a circular economy (circular economy)	• The activity should assess availability of and, where feasible, use equipment and components of high durability and recyclability that are easy to dismantle and refurbish.	• According to the issuer, their impacts on the surroundings are limited. Furthermore, installations are roof-based with easy access.	Likely aligned.
Protection and restoration of biodiversity and ecosystems (ecosystems)	• An Environmental Impact Assessment (EIA) or screening should be completed in accordance with national provisions. • Where an EIA has been carried out, the required mitigation and compensation measures for protecting the environment are implemented. • For sites/operations located in or near biodiversity-sensitive an appropriate assessment, where applicable, has been conducted and based on its conclusions the necessary mitigation measures are implemented.	• Not applicable for roof top solar systems.	Not applicable.

Transmission and distribution of electricity

Framework activity	**Renewable energy and energy efficiency**		
Taxonomy activity	**Transmission and distribution of electricity (NACE Code D.35.12, D.35.13)**		
Taxonomy version	**EU Technical mitigation criteria**	**Comments on alignment**	**Alignment**
Mitigation criteria	• Substantial contribution to climate change mitigation Transmission and distribution infrastructure or equipment meeting any of the following requirements are eligible: • The transmission and distribution infrastructure or equipment in the system is the interconnected European system. • The transmission and distribution infrastructure or equipment is in a system where more than 67% of newly connected generation capacity is below the generation threshold value of 100 gCO_2e/kWh over a rolling five-year period; • An average system grid emission factor is below the threshold value of 100 gCO2e/kWh measured on a life cycle basis over a rolling five-year average period; • The transmission and distribution infrastructure or equipment is not dedicated to creating a direct connection, or expanding an existing direct connection to a power production plant that is more CO_2 intensive than 100 gCO_2e/kWh, measured on a life cycle basis. • A number of activities supporting development, use and integration of renewable energy (e.g. charging stations).	• According to the issuer Haugaland Kraft Nett AS owns and operates regional transmission and distribution networks. • Transmission lines need a license from NVE according to the Energy Act. • Norwegian transmission and distribution infrastructure is the interconnected European system. • In a report published by the NVE, the CO_2-emission factor from Norwegian power generation in 2018 is calculated to 18.9 g/kWh[18]. The generation of electricity in Norway is mainly from renewable sources where hydropower currently stands for almost all of this production[19].	Likely aligned.
	EU Taxonomy DNSH-criteria	**Comments on alignment**	**Alignment**
Climate change adaptation	Please see under Hydropower.		
Transition to a circular economy (circular economy)	• A waste management plan is in place and ensures maximal reuse or recycling at end of life in accordance with the waste hierarchy, including through contractual agreements with waste management partners, reflection in financial projections or official project documentation.	• Waste is regulated in the Waste regulation (avfallsforskriften). • For bigger transmission lines, NVE requires the development of environment-, transport- and construction plan, including waste management.	Likely aligned.

[18] NVE-RME "Electricity disclosure 2018", available here: https://www.nve.no/norwegian-energy-regulatory-authority/retail-market/electricity-disclosure-2018/

[19] faktaark2018_03.pdf (nve.no)

		• According to the issuer they follow national laws and regulations, where environmental impacts as well as impacts on biodiversity and surrounding areas are important requirements for attaining necessary licenses.	
Pollution prevention and control.	Overground high voltage lines are eligble if: • Construction site activities follow the principles of the IFC General Environmental, Health, and Safety Guidelines. • Activities respect applicable norms and regulations to limit impact of electromagnetic radiation on human health. • Activities do not use PCBs poly-chlorinated biphenyls.	• For bigger transmission lines, NVE requires the development of environment-, transport- and construction plan, including waste management and HSE-issues. • Electromagnetic radiation is regulated by the Regulations on Radiation Protection and Use of Radiation (strålevernsforskriften). • PCB is prohibited in transmission lines, and has been phased out since 2010.	Likely aligned.
Protection and restoration of biodiversity and ecosystems	• An Environmental Impact Assessment (EIA) or screening should be completed in accordance with national provisions. • Where an EIA has been carried out, the required mitigation and compensation measures for protecting the environment are implemented. • For sites/operations located in or near biodiversity-sensitive areas (including the Natura 2000 network of protected areas, UNESCO World Heritage sites and Key Biodiversity Areas, as well as other protected areas), an appropriate assessment, where applicable, has been conducted and based on its conclusions the necessary mitigation measures are implemented.	• Transmission lines needs a license from the NVE according to the Energy Act. • To receive a license the company needs to complete an EIA if needed under the Planning and Construction Act, including implementation of mitigative measures.	Likely aligned.

Manufacture of hydrogen

Framework activity	Renewable energy		
Taxonomy activity	**Manufacture of hydrogen (NACE Code C20.1.1)**		
Taxonomy version	**EU Technical mitigation criteria**	**Comments on alignment**	**Alignment**
Mitigation criteria	• The activity complies with the life cycle GHG emissions savings requirement of 80 % relative to a fossil fuel comparator of 94g CO_2e/MJ [resulting in 2.256 tCO_2eq/tH_2] • Standards for life-cycle emission calculations are given.	• According to the issuer SKL will develop large-scale liquid green hydrogen using hydropower. • When using a Norwegian energy mix (17g CO_2/kWh in 2019[20]) it is likely that the issuer will be within the threshold given. However, the issuer has not yet established a concrete project and therefore does not have sufficient information for CICERO Green to conclude on alignment with the mitigation criteria.	Not sufficient information.
	EU Taxonomy DNSH-criteria	**Comments on alignment**	**Alignment**
Climate change adaptation	Please see under Hydropower.		
Sustainable use and protection of water and marine resources (water management)	• Environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed, in accordance with a water use and protection management plan. • Implement the EUs Water Framework Directive (WFD).	• Production of electricity from hydrogen is regulated by the Directorate for Civil Protection and Emergency Planning (DSB) and subject to the "Planning and Building Act". • According to the issuer, they follow national laws and regulation, and obtain licenses where required, including aligning with the WFD. • The issuer further informs that they do not operate in areas with water scarcity.	Likely aligned.
Pollution prevention and control (pollution)	• Emissions are within or lower than the emission levels associated with the best BAT ranges set out in the BAT conclusions for the refining of mineral oil and gas.	• According to the issuer, they will produce green hydrogen and electricity will be produced from renewable energy sources. By focusing on green hydrogen production, the risk of pollution is minimised.	Likely aligned.
Protection and restoration of biodiversity and ecosystems (ecosystems)	Please see under Hydropower.		

[20] Strømforbruk i Norge har lavt klimagassutslipp - NVE

Framework activity	**Clean transportation**		
Taxonomy activity	**Infrastructure for enabling low-carbon road transport (NACE Code F42.11, F42.13, F71.20)**		
Taxonomy version	**EU Technical mitigation criteria**	**Comments on alignment**	**Alignment**
Mitigation criteria	• Substantial contribution to climate change mitigation • Infrastructure dedicated to the operation of vehicles with zero tailpipe CO_2 emissions is eligble: E.g., electric charging points, electricity grid connection upgrades.	• According to the issuer Haugaland Kraft Energi AS is providing solutions for charging of electric vehicles.	Likely aligned.
	EU Taxonomy DNSH-criteria	**Comments on alignment**	**Alignment**
Climate change adaptation	Please see under Hydropower.		
Sustainable use and protection of water and marine resources (water management)	• Environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed. • In the EU, fulfill the requirements in the EU WFD or complete an EIA in line with national regulations.	• According to the issuer, investments in infrastructure to support use of electrical vehicles will be in proximity to roads already in place and areas already developed and prepared for parking of vehicles (such as petrol stations, grocery stores and cafes/restaurants). Additional environmental impact is considered to be small and relate to the short construction period.	Not applicable.
Transition to circular economy	• At least 70 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material[21]) generated on the construction site is prepared for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials.	• According to the issuer, the focus has been on sorting waste and deliver waste to certified waste facilities that will handle the recycling. The supplier must comply with relevant national and international environmental standards and to comply with either ISO 14001, EMAS or Eco-Lighthouse. However, explicit requirements related to recycling rates are not systematically given.	Likely partly aligned.
Pollution prevention and control	• Measures are taken to reduce noise, dust and pollutant emissions during construction or maintenance works.	According to the issuer, environmental impact is considered to be small and relate to the short construction period. Measurements on pollution preventions are applied in accordance with national rules and regulations.	Likely aligned.
Protection and restoration of biodiversity and ecosystems	• An Environmental Impact Assessment (EIA) or screening should be completed in accordance with national provisions.	• Not applicable/the projects are very small and therefore do not require an EIA.	Not applicable.

[21] Refer to the European List of Waste established by Commission Decision 2000/532/EC

	• Where an EIA has been carried out, the required mitigation and compensation measures for protecting the environment are implemented. • For sites/operations located in or near biodiversity-sensitive areas additional requirements apply.		

Information and communication

Framework activity: Energy efficiency
NACE code J

Specific thresholds for fibre-optic networks and other ICT solutions are not yet included in the EU-taxonomy, but the TEG included in their final report a recommendation to undertake work on a number of activities within the Information and Communication sector, and among others Telecommunication Network. As part of this recommendation, the EU Taxonomy highlights the importance of energy efficiency measures as the energy demand rises, to ensure a significant contribution to climate change mitigation from e.g. fibre optic networks compared to conventional alternatives. In the draft delegated act published in November 2020, the technical screening criteria, as well as the DNSH-criteria related to Informaiton and Communication are centered around data centers.

Haugaland Kraft offers telecommunication network services based on fibre optics. According to the issuer, they are exploring the possibility for making investments related to the use of sensor technologies and wireless networks (such as WiFi, LoRAWAN, etc.). So far, investments have been related to building a stable fibre network infrastructure with high uptime performance, which is important to smart cities and societies.

According to the issuer, their installation of the fibre optic networks carries minimal impact on the surrounding environment since fibre optic cables are often installed together with already established power grid.

Appendix 3:
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 recognised 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).