°CICERO Shades of Green

Arendals Fossekompani ASA
Green Bond Second Opinion

February 8, 2021

Arendals Fossekompani ASA ("AFK") is a holding company that has been involved in production of renewable hydropower for more than 100 years. Furthermore, the company owns a portfolio of energy- and technology-related companies which enable the transition to a green economy. AFK is the majority owner of companies with more than 2,200 employees in 27 countries. The company was established in 1896 and is headquartered in Arendal, Norway and listed at the Oslo Stock Exchange.

The green bond framework of AFK covers the two categories Renewable energy, and Eco-efficient and/or circular economy adapted products, production technologies and processes. More than 90% of the proceeds will go to the Renewable energy category. Renewable energy covers hydropower, solar energy and green hydrogen and ammonia. Eligible technologies in the second category is related to batteries and supporting technologies. General investment criteria for AFK require contribution to at least one of the six environmental objectives in the proposed EU Taxonomy, as well fulfilling the do-no-significant-harm principle.

In total, approximately NOK 410 million of the proceeds will be used towards refinancing of the existing bond AFK01 PRO, including a related swap currently with negative value that was put in place in 2011 for currency risk management purposes. The previous bond was used to finance green energy investments in hydropower, solar wafer production and tidal energy production. AFK expects approximately 80% of the net proceeds of the green bond to go to refinancing, mainly covering hydropower investments in Norway. While most of the activities within AFK are environmentally benign, some of the companies owned by AFK are involved in activities related to use of fossil fuels. These activities will not be financed by green bonds.

AFK is at an early stage when it comes to formulating quantitative environmental targets. They have high ambitions and will work extensively on this in 2021 with external guidance. They have carried out a climate stress test of the company and is considered to be quite resilience. The biggest risks are related to extreme precipitation and flooding of hydro power dams. AFK will seek to align the reporting with the Oslo Stock exchange's guideline for ESG reporting and has chosen to apply GRI (Global Reporting Initiative) and TCFD (Task Force on Climate-related Financial Disclosures) for its reporting format. The sustainability report for 2020 is expected to be published in April 2021 and will be available in English.

Based on the overall assessment of the eligible green assets under this framework and governance and transparency considerations, AFK's green bond framework receives a **CICERO Dark Green** shading and a governance score of **Good**. To improve the framework, AFK could provide life cycle information on the impacts of the technology investments.

SHADES OF GREEN

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

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

GREEN BOND PRINCIPLES

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

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Contents

1 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's framework dated January 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 AFK's green bond framework and related policies

Arendals Fossekompani ASA ("AFK") is a holding company that has been involved in production of renewable hydropower for more than 100 years. Furthermore, the company owns a portfolio of energy- and technology-related companies which enable the transition to a green economy. AFK is the majority owner of companies with more than 2,200 employees in 27 countries. The company was established in 1896 and is headquartered in Arendal, Norway and listed on the Oslo Stock Exchange.

The AFK investment portfolio is focused on five main investment categories: Digitalization, Electrification & Material, Green power, Property, and Growth Capital.

Green power and Property have a clear link to AFK's origin. The hydropower production consists of approximately 500 GWh annual power production from three hydropower stations: Bøylefoss (65.0 MW), Flatenfoss 2 (5.5 MW) and Flatenfoss 3 (7.1 MW). AFK sees further investment opportunities within the hydropower segment including upgrades of existing facilities and investment into new production capacity. The hydropower stations are located close to Arendal and have a clear regional profile in the south of Norway. The Green power category also contains Cogen, a Spanish cogeneration plant. Among the Property companies we find Arendal Airport, Gullknapp. This is a general aviation airport situated 15 km outside Arendal, Norway.

The Digitalization category mainly consists of a group of green technology oriented companies. For instance, Volue is a leading supplier of software and technology solutions for the energy, power grid and infrastructure markets.

Within Electrification & Material, Tekna is a leading company within ICP Plasma Systems and a manufacturer of advanced metal powders which enables design and production of complex metal parts that are lighter, more efficient and more environmentally friendly than conventionally manufactured parts. One of Tekna's business segments relates to the production of Silicon Nanopowder which has a significant potential to improve the current technology for Li-Ion batteries. AFK also recently invested in Beyonder, a Norwegian company that develops and produces the next step battery cells needed in battery technology.

The Growth Capital category consists of investments where AFK typically owns from 5% to 20% of the companies and have a board position in the respective companies.

Some of the companies in AFK's investment portfolio are involved in activities related to use of fossil fuels, notably Cogen with its cogeneration plants, and Gullknappen – Arendal Airport. Of these, we mention in particular Cogen's cogeneration power plants which exploit surplus heat from natural gas-based electricity production to generate heat, steam or cooling for industrial partners located nearby.

Environmental Strategies and Policies

In 2020 all the portfolio companies in AFK have performed market reviews, value chain analysis and stakeholder assessments of their ESG-impacts, to help identify and prioritize the most important ESG aspects of their business. These materiality analysis have resulted in a new reporting structure and implementation strategy for the AFK

group to be implemented from 2020[1]. The methodology that has been used in this strategy project is in accordance with GRI (Global Reporting Initiative). The most material and strategic ESG topics for the AFK group will be: 1) Ethical business conduct; 2) A great place to work, and; 3) Climate impact. The KPIs that will be published in the sustainability report for 2020 will be chosen according to the materiality analysis performed for the group and each portfolio company. This will be the first published climate impact analysis for AFK. AFK will start reporting greenhouse gas (GHG) emissions across the whole portfolio in the 2021 sustainability report. Other KPIs identified in the materiality analysis will be reported in the 2020 sustainability report.

AFKs portfolio has in 2020 also been assessed for climate risk and opportunities. The risks identified in the analysis, have been integrated in the overall strategy process in AFK. AFK Hydropower will have GHG reduction targets for 2021. All other subsidiaries will have GHG reduction targets from 2022.

In November 2020, AFK joined UN Global Compact. In the climate risk analysis in 2020 AFK used three scenarios[2] to identify risks and opportunities. The climate resilience of the various investment that are anticipated in AFK portfolio were tested against the physical changes excpected in these scenarios. Supply chain consideration will be performed according to the yearly update of materiality analysis. AFK is considering life cycle analysis according to requirements to disclose EU Taxonomy alignment for AFK for 2021.

As an investment company, AFK is constantly looking for new investments and mergers and acquisition (M&A) opportunities in technology related companies. The relevant industries are: IoT (Internet of things), monitoring and sensor technology; Digitalization and big data; Materials technology; and Energy and energy efficiency. The scope of the investments is mainly Scandinavia and Europe. However, AFK has operations in 27 countries so it could be in some cases that investments will take place in other parts of the world. Eligible projects that may be financed out of the green bond proceeds will also need to comply with AFKs green investment scope and screening process. The ESG criteria in M&A transactions as defined by AFK are based on the EU Taxonomy:

1. The M&A candidate should contribute to one of six environmental objectives from the EU Taxonomy (Climate change mitigation, climate change adaptation, sustainable protection of water and marine resources, transition to a circular economy, pollution prevention and control, protection and restoration of biodiversity and ecosystems).
2. Do no significant harm (DNSH) on the other five (if relevant).
3. Meet minimum safeguards (AFKs code of conduct and OECD Guideline on Multinational Enterprises).

Use of proceeds

An amount equal to the net proceeds of the green bonds will finance or refinance, in whole or in part, investments undertaken by AFK or its subsidiaries that promote the transition towards a low-carbon and environmentally sustainable society. Initially, AFK expects approximately 80% to be refinancing. In total approximately NOK 410 million will be used towards refinancing of the existing bond AFK01 PRO, including a related swap that was put in place in 2011 according to AFK's hedging policies for currency risk management purposes related to the bond. Given the development in currencies and interest rate since 2011, the swap currently has a negative value which will be required to be repaid in full when refinanced with the proceeds from this green bond. AFK is required to report any positive/negative values on its hedging instruments. The previous bond was used to finance green energy investments in hydropower, solar wafer production and tidal energy production.

[1] AFK will estimate and report greenhouse gas (GHG) emissions for a selection of the power producers Cogen and Hydropower for 2020 (scope 1, and partly 3). From 2021, they have committed to estimate and report GHG emissions for all subsidiaries.
[2] IEA WEO-Net zero emissions/IPCC RCP 1.9, IEA WEO-Delayed recovery/IPCC RCP 4.5, and IEA WEO-Stated policies/ IPCC RCP 6.0.

AFK will identify and nominate future projects and assets for new investments within the Green Bond Framework for the two eligible categories Renewable energy and Eco-efficient and/or circular economy adapted products, production technologies and processes. The criteria are further detailed in table 1 below.

Use of proceeds will not be placed in entities with a business plan focused on fossil energy production, nuclear energy generation, weapons and defense, potentially environmentally harmful resource extraction (such as rare-earth elements or fossil fuels), 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.

Representatives from AFK's investment team, the relevant subsidiary (if relevant) and relevant internal or external sustainability experts (if required) shall evaluate potential eligible projects, such projects' compliance with the categories described in table 1, and their environmental benefits according to AFK's investment criteria. The findings and recommendations shall be documented and presented to AFK's investment team and will be used as part of the investment criteria.

The investment decision will be taken in the relevant forum according to AFK's authority and decision matrix. A consensus decision by the relevant decision forum according to the authority matrix is required to approve eligible projects before any allocation of proceeds from the green bond. The investment team will always include the Group CEO, CFO and Head of Sustainability when deciding to invest into new eligible projects. Decisions by the board of director or another relevant decision maker according to the authority matrix will be properly documented.

Management of proceeds

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

AFK will establish an allocation report to track its utilization of the net proceeds from the green bonds to eligible projects. The management of proceeds will be reviewed by an external auditor appointed by AFK.

Unallocated Green Bond net proceeds may temporarily be placed in the liquidity reserve and managed accordingly by AFK. Temporary holdings will not be placed in entities with a business plan focused on fossil energy production, nuclear energy generation, weapons and defense, potentially environmentally harmful resource extraction (such as rare-earth elements or fossil fuels), gambling or tobacco.

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.

AFK will publish an annual sustainability report on its website that will detail the allocation of green bonds net proceeds and the environmental impact of the eligible projects. The sustainability report for 2020 is expected to

be published in April 2021 and will be available in English. The sustainability report will include an allocation report, subsidiary report and performance report (as described below).

AFK will seek to align the reporting with the latest standards and practices. In general AFK will also follow Oslo Stock exchange's guideline for ESG reporting. AFK has chosen to apply GRI (Global Reporting Initiative) and TCFD (Task Force on Climate-related Financial Disclosures) for its reporting format. The Sustainability Director in AFK will be responsible for the reporting and the relevant reports will be approved by the board of AFK.

AFK will provide allocation reporting for each individual project from each eligible project categories in the green bond framework. The report will state the proportion of proceeds allocated to refinancing and the proportion used to finance new investments and the report will state the sum of outstanding green bonds. All data is to be as of the end of the previous year.

The subsidiaries in AFK will report non-financial data to AFK in accordance with their ESG strategy on a quarterly or annual basis. These data will be presented in AFK's annual sustainability report.

The performance reporting will disclose the performance on the relevant indicators. For projects and assets that are not yet operational, AFK will strive to provide estimates of future performance levels. The performance reporting is provided with the reservation that not all related data can be covered and that calculations therefore will be on a best intention basis. The data will be provided in a table format with the following indicators and measurements:

Impact metrics for renewable energy projects: Yearly renewable energy production, potential greenhouse gas emissions related to the project or asset, and potential greenhouse gas emissions avoided by investing in the project or asset.

Impact metrics for eco-efficient and/or circular economy adapted products, production technologies and processes: Yearly energy efficiency indicator, potential greenhouse gas emissions related to the project or asset, and potential greenhouse gas emissions avoided by investing in the project or asset.

The method for calculation greenhouse gas emissions and relevant grid factors will be made public in the sustainability report.

AFK may also publish additional data which will be chosen according to the most relevant performance indicators for the projects and assets and may include indicators and measurements from the GRI reporting.

3 Assessment of AFK's green bond framework and policies

The framework and procedures for AFK's green bond investments are assessed and their strengths and weaknesses are discussed in this section. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects; weaknesses are typically areas that are unclear or too general. Pitfalls are also raised in this section to note areas where AFK 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 AFK's green bond framework, we rate the framework **CICERO Dark Green.**

Eligible projects under the AFK's green bond framework

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

Category	Eligible project types	Green Shading and some concerns

Renewable energy	• Hydropower:
	  ○ Investments in hydropower plants or upgrades on existing hydropower plants, including but not limited to grid connections, electric substations, networks or foundations.
	• Solar energy
	  ○ Financing of renewable solar energy projects such as in Norsun. Norsun is a Norwegian solar energy company that manufactures and markets high performance mono-crystalline silicon ingots and high efficiency n-type wafers for the global solar energy industry.
	• Green hydrogen and ammonia
	  ○ Financing of projects for production of green hydrogen or ammonia, such as in relation to hydropower plant facilities.
		Dark Green
		✓ Hydropower is a clean, renewable energy source, which contributes to Norway's low grid emissions factor.
		✓ Typical investment for hydropower production can be the potential new hydropower plants Kilandsfoss and Glomsdam, or upgrade of the Bøylefoss, Flatenfoss and Haugsjå hydropower plants and dams. The share of investment in upgrades or new developments will depend on the development of future power prices and the attractiveness of the relevant investment.
		✓ Large hydropower facilities and associated construction/renovation projects can have impacts on the surrounding environment and biodiversity. However, infrastructure investments related to roads or fossil fuel related infrastructure will be excluded

		and in general the hydro power projects will be developed in Arendal river. The river has been regulated for hydro power purposes for more than a century and infrastructure like roads etc. are already there. ✓ The issuer confirms that they do not have activities in or near conservation or biodiversity sensitive areas like national parks, wet land, or nature reserve. ✓ AFK has specified that they emphasize maintaining good dialogue with stakeholders, and the use of local suppliers to reduce transport and maximize local value creation. ✓ Minimum 90% of the proceeds from the Green Bonds shall be invested in and allocated to this category. All investments will be in Norway.
Eco-efficient and/or circular economy adapted products, production technologies and processes  	• Investments in the company Beyonder • Investments in Silicon Nanopowder production in the company Tekna • Other investments in battery technology or green storage technology.	**Light to Medium Green** ✓ Fossil fuel equipment for production will be excluded from the green bond proceeds. ✓ Established in 2016, Beyonder is a Norwegian company that has developed and produces the next step battery cells needed in battery technology for industry and commercial infrastructure. Beyonder has currently established a smaller production facility in Forus, Norway, but has ambitions to create a full scale battery factories in the future. AFK has today a strategic ownership stake in Beyonder and is prepared to further increase investments to support the ambitions of the company. Beyonder is currently in the start-up and development phase so according to AFK it's deemed too early to implement take-back policies for produced batteries. Take-back policies will be evaluated and concluded at a later stage. ✓ Tekna is a Canada based technology company, specializing in ICP plasma systems and advanced material powders, typically used within additive manufacturing. One of Tekna's business

	segments specializes in production of Silicon Nanopowder. Silicon Nanopowder has multiple applications within Li-Ion batteries and has the potential to increase the battery charge and cycles available, while also reducing weight. In the event proceeds from the Green Bond are allocated to Tekna, it shall only be allocated to the Silicon Nanopowder segment of Tekna.
	✓ A maximum of 10% of the proceeds from the Green Bonds shall invested in and allocated to this category. The investments will be made in Canada and Europe.
	✓ While the technologies covered in this category are in line with a future low carbon world, the category receives a light to medium green shading as information on life cycle climate footprint is lacking, in particular emissions associated with mining of source materials and production.

Table 1. Eligible project categories

Background

According to IEA[3], 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 2030[4]. 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[5].

In February 2020, Norway released updated targets for 2030 to cut GHG emissions by 50-55% from 1990 levels[6]. 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[7]. 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.

[3] https://www.iea.org/reports/global-energy-review-2020/renewables
[4] https://www.iea.org/fuels-and-technologies/renewables
[5] https://ec.europa.eu/energy/sites/ener/files/documents/necp_factsheet_pl_final.pdf
[6] https://www.regjeringen.no/no/aktuelt/norge-forsterker-klimamalet-for-2030-til-minst-50-prosent-og-opp-mot-55-prosent/id2689679/
[7] https://www.miljodirektoratet.no/globalassets/publikasjoner/m1625/m1625.pdf

The Norwegian hydropower system has a normal annual production of around 136 TWh and an aggregate power capacity of 32,700 MW. Norway currently has more than 800 reservoirs, with a storage capacity equivalent to around 87 TWh, 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 produced 135 TWh of electricity and total consumption amongst all sectors was also 135 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.

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 approximately 3.3g CO_2-equivalents per kWh[8].

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 are not made at the expense of others and recognizes the relationships between different environmental objectives[9]. 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 July[10].

We will not here give an assessment of the alignment of AFK's green bond framework with the proposed EU taxonomy.

Governance Assessment

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

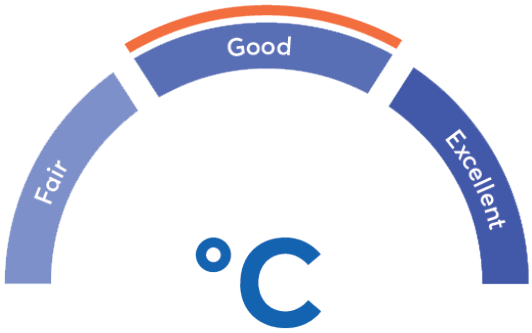
[8] NORSUS report on "The inventory and life cycle data for Norwegian hydroelectricity", available here: https://norsus.no/wp-content/uploads/AR-01.19-The-inventory-and-life-cycle-data-for-Norwegian-hydroelectricity.pdf
[9] Taxonomy: Final report of the Technical Expert Group on Sustainable Finance, 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

AFK is at an early stage in formulating quantitative climate goals. They have started collecting emission data in 2020 and are writing the specifications for a subcontractor to help collecting and estimating GHG data for the total portfolio in AFK. The plan is to start reporting all scopes of GHG emission from 2022.

To help accelerating AFK's competence for climate related policies, AFK has established an ESG team withing AFK advised by competent external experts. A law firm has also been subcontracted for evaluating the policies in AFK related to this area, and Code of Conduct and Suppliers Code of Conduct documents have been updated in 2020.

With help of external consultants, AFK has done a first climate risk analysis of AFK in 2020. Climate resilience (physical climate risk) and transitional risk on a company level have been analysed, using three scenarios. In general the climate resilience of the AFK portfolio is high. Risks are mainly related to hydropower (physical risk related to flooding and extreme weather).

The selection process of eligible projects or assets is good and the eligible projects and assets are mostly well defined. In addition, AFK will follow the EU Taxonomy screening criteria in order to secure that eligible projects do not significant harm the six environmental criteria in the taxonomy. EU has developed an excel screening tool for the first two environmental objectives (climate mitigation and climate adaption) that will be used. When the screening criteria for the next four environmental objectives in EU will be ready during 2021, they will be similarly applied.



Management of proceeds and reporting are good. The overall assessment of AFK's governance structure and processes gives it a rating of **Good**.

Strengths

It is a clear strength that AFK's framework focuses on low-carbon energy related solutions. 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, renewable energy projects to be financed under the framework are well within the EU taxonomy mitigation thresholds listed for hydropower. Norwegian hydropower is assumed (based on detailed analysis of a subset of power plants[11]) to generate electricity with life cycle emissions including emissions from inundation of land (3.3g CO_2e/kWh), far lower than the given thresholds in the EU taxonomy (100g CO_2e/kWh).

The main negative environmental impacts associated with generation of hydropower include impacts on biodiversity, interference with migration pathways and changes in habitat from construction and operation, unsustainable management of water and waste, visual and chemical pollution of the local environment. The impacts will vary widely depending on the solutions chosen and on the location of the activities. There might also be considerable local resistance to construction of new hydropower. By excluding investments in access roads or

[11] 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

fossil fuel related infrastructure, the environmental impacts of green bond financing is considerably reduced. Also it is a strength that the hydro power projects will be developed in Arendal river. The river has been regulated for hydro power purposes for more than a century and infrastructure like roads are already there.

Concerning the technology investments, these are clearly necessary and aligned with a low carbon future, and hence a strength of the framework. It is, however, difficult to assess the life cycle climate impact of the technology investments.

Weaknesses

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

Pitfalls

Some of the companies owned by AFK are involved in activities related to use of fossil fuels, notably Cogen with its cogeneration plants, and Gullknappen – Arendal Airport. None of these are however eligible for green bond financing under the framework.

While renewable energy projects generally are considered to have positive climate mitigation impacts, there are nevertheless emissions associated with the construction and rehabilitation processes.

The eco-efficient criteria ("Eco-efficient and/or circular economy adapted products, production technologies and processes") has several potential pitfalls such as: Potentially higher emissions from some plants; Fossil fuel involvement in production; Possible encouragement of hybrid vehicle/vessel deployment and thereby locking in use of fossil fuels; Deployment to store non-green energy; Potential issues with rare earth sourcing and other associated mining activities; and Need for climate resilience screenings of plant facilities. We note, however, that these pitfalls are somewhat mitigated by the general investment criteria of AFK requiring contribution to at least one of the six environmental objectives in the proposed EU Taxonomy, as well fulfilling the do-no-significant-harm principle.

This eligibility criteria also contains a section saying "Other investments in battery technology or green storage technology". This is a relatively open criteria, and while important for a transition to a low carbon society, it is not possible to foresee the total climate impact of this sub-post. We note, however, that projects under the eco efficiency criteria is a minor part (less than 10%) of the proceeds of the green bond.

AFK has solid plans for reporting by applying GRI (Global Reporting Initiative) and TCFD (Task Force on Climate-related Financial Disclosures) guidelines for its reporting format, but have not reported yet. There also remains to develop more quantitative emission targets (scope 1, 2 and 3).

CICERO Green encourages AFK 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.

While physical and transitional climate risks have been mapped out for AFK, it is unclear whether this also covered risks to major suppliers.

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Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	Green Bond framework - updated from word document - spread - PrintQ	AFK's Green Bond Framework dated January 2021
2	AFK_Annual_Report_2019	AFK1s Annual Report 2019
3	1_AFK_Bærekraftsrapport_FINAL	AFK's Sustainability Report 2019 (in Norwegian)
4	AFK Etiske retningslinjer vedtatt i styret 15.12.2020	AFK's Code of Conduct
5	BAHR DRAFT 2021-01-08_Supplier Code of Conduct (standard)(9564903.4)	Draft Supplier Code of Conduct
6	BAHR DRAFT 2021-01-08_Standard documentation for supplier assessment(9565055.4)	Standard documentation for supplier assessment

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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).