



Ficolo Oy

Green Bond Second Opinion

September 06, 2019

Ficolo Oy (“Ficolo”) is a **Finish cloud delivery service provider company and founded in 2011**. The company operates three colocation datacenters and a connectivity hub point in Finland. In addition to colocation services, Ficolo also provides cloud connectivity, managed cloud and cloud assurance services.

Ficolo’s green bond framework allows for data center investments, including construction and acquisition of data centers (or companies operating data centers). Ficolo evaluates data centers eligibility based on its potential for energy efficiency improvements. After the acquisition, data centers energy efficiency is improved and converted to 100% renewable energy usage mostly by purchasing certificates of origin while the Finish grid has a share of around one third based on fossil fuels. In addition, Ficolo excludes crypto currency mining companies as potential customers and encourages customers to reduce energy consumption via transparency measures and cost incentives. Ficolo actively aims to utilize brownfield land (previously developed infrastructure that is not currently in use) and will implement heat recycling from IT equipment for district heating purposes. Ficolo makes active use of its location in the Finland reducing the need of electrically powered cooling.

Investors should be aware that sustainability of data centers also depend on the large amount of computer equipment needed – supply chain and recycling in addition to equipment’s energy efficiency are therefore crucial aspects of overall sustainability. Ficolo requires suppliers to have sustainable supply chain policies and recycling partners to have environmental standards in place, but has no specific requirements to guarantee low-carbon supply chains of equipment and climate friendly recycling.

After an overall assessment of all project categories as well as governance, Ficolo’s green bond framework receives a **CICERO Dark Green** shading and a governance score of **Fair**. The framework would benefit from more rigorous selection processes including specific thresholds as well as specific supply chain and recycling requirements. In addition, Ficolo could systematically address climate risks and implement climate targets. Ficolo could include additional metrics on impact reporting and include external parties in selection and reporting processes.

SHADES OF GREEN

Based on our review, we rate the Ficolo’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 Ficolo’s framework to be **Fair**.



GREEN BOND PRINCIPLES

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





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1 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's framework dated August 28, 2019. This second opinion remains relevant to all green bonds and/or loans issued under this framework for the duration of three years from publication of this second opinion, as long as the framework remains unchanged. Any amendments or updates to the framework require a revised second opinion. CICERO Green encourages the client to make this second opinion publicly available. If any part of the second opinion is quoted, the full report must be made available.

The second opinion is based on a review of the framework and documentation of the client's policies and processes, as well as information gathered during meetings, teleconferences and email correspondence.

Expressing concerns with 'shades of green'

CICERO Green second opinions are graded dark green, medium green or light green, reflecting a broad, qualitative review of the climate and environmental risks and ambitions. The shading methodology aims to provide transparency to investors that seek to understand and act upon potential exposure to climate risks and impacts. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The shades are intended to communicate the following:

CICERO Shades of Green



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



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



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



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

Examples



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



Bridging technologies such as plug-in hybrid buses



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



New infrastructure for coal

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, the governance aspects are carefully considered and reflected in the overall shading of the green bond framework. CICERO Green considers four factors in its review of the client's governance processes: 1) the policies and goals of relevance to the green bond framework; 2) the selection process used to identify and approve eligible projects under the framework, 3) the management of proceeds and 4) the reporting on the projects to investors. Based on these factors, we assign an overall governance grade: Fair, Good or Excellent.



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

Ficolo Oy ("Ficolo") is a Finish cloud delivery service provider company and founded in 2011. The company operates three colocation datacenters and a connectivity hub point in Finland. In addition to colocation services, Ficolo also provides cloud connectivity, managed cloud and cloud assurance services.

Currently, Ficolo is expanding its Helsinki Datacenter through a EUR 50 million investment until 2020. The issuer's aim is to become the largest independent colocation datacenter operation in Finland.

Environmental Strategies and Policies

Ficolo has in place comprehensive environmental policies that were introduced together with the founding of the company in 2011. These policies include 100% use of renewable energy in powering the data centers as well as Ficolo's two offices. The green energy is purchased either through direct purchase agreements of wind energy through a local energy company or through a local energy company with subsequent purchase of guarantees of origin. With a capacity of ca. 11MW, Ficolo estimates annual CO₂-savings of 3.5kt compared to the Finnish energy mix. Ficolo also plans to construct a 0.5MW solar park for data centers' cooling demand. In addition, Ficolo implements several measures to constantly improve its power usage effectiveness ratio (PUE, ratio of total data center energy consumption to IT equipment's consumption) which is currently between 1.05 and 1.3 compared to Google's overall average of 1.12. Measures include smart lighting, diesel emergency generator supported uninterruptible power supply (UPS) equipment selected based on energy efficiency and eco-friendliness criteria including corresponding life cycle assessments and 10 minutes interval temperature and cooling control and optimization. Ficolo also recovers waste heat in two of its data centers to either heat the facility itself or provide the heat to the municipality or local energy company. The issuer aims to expand this practice to other data centers when the data centers are large enough to provide sufficient heat.

In addition, Ficolo has a recycling policy in place and requires ISO 14 000 certificates from its waste disposal partners. Ficolo uses only IT equipment suppliers with sustainable supply chain policy and has certain requirements for electronic waste recycling partners (e.g., on information security and environmental standards).

Ficolo also informs its customers on energy consumption in real time to raise awareness of energy consumption peaks and reaches out to customers with unusually high electricity consumption and offers to automatically limit the electricity consumption in these cases. Ficolo's main customers are IT service providers, software companies and currently does not include oil and gas customers. Ficolo informed us that bitcoin or other crypto currency mining companies are not accepted as customers.

Ficolo currently does not measure or report its emissions from operations or from data center construction and does not implement TCFD recommendations or conduct climate scenario analysis. However, the issuer informed us that it does not expect any major natural hazards, that it assesses physical climate risks before investing and that it consults with local authorities on potential physical risks.

The issuer informed us that it does not publish any sustainability reports or other sustainability data except for the data centers' PUE ratios that will be published on the website in the future.



Use of proceeds

Green bond proceeds will be allocated to finance data center investments, including construction and acquisition of data centers (or companies operating data centers) operated only by renewable energy. All acquired companies and data centers will be subject to Ficolo's environmental policies. According to the issuer, refinancing will be approximately 25% of the use of proceeds.

Ficolo excludes investments into fossil fuel generation projects.

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.

Ficolo's management will propose projects to the board of directors that will make final decisions on project selection. Evaluation of projects is based on energy efficiency and energy efficiency improvement potential in case of acquisition of data centers. The board of directors is also responsible for ensuring the implementation of Ficolo's environmental policy after project selection.

Management of proceeds

CICERO Green finds the management of proceeds of Ficolo to be in accordance with the Green Bond Principles. The net proceeds are allocated to a Green Account that will only be disbursed to eligible projects. The account will be controlled by the CFO and the CEO who will report directly to the board of directors.

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.

Ficolo will report on an annual basis to green bond investors and will be published on Ficolo's website. The board of directors will be responsible for compiling the reporting. Ficolo will make available on its website the power usage effectiveness ratio (PUE) on an individual data center level, Ficolo's environmental policy and confirm 100% renewable energy usage in all of its data centers. In addition, it will provide information on financing and refinancing shares. The reporting will not be externally reviewed.



3 Assessment of Ficolo’s green bond framework and policies

The framework and procedures for Ficolo’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 Ficolo 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 Ficolo’s green bond framework, we rate the framework **CICERO Dark Green**.

Eligible projects under the Ficolo’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
Company or data center acquisitions 	Data center investments, including construction and acquisition of data centers (or companies operating data centers), that after investment by Ficolo are operated in accordance with Ficolo’s Environmental Policy, i.e. operated with 100% green energy and have a high focus on energy efficiency among others.	Dark Green <ul style="list-style-type: none"> ✓ Data centers running on renewable energy only with high levels of energy efficiency are part of a 2050 solution ✓ 100% of purchased renewable energy could be achieved without any direct investments in renewable energy. There is no guarantee that purchases of renewable energy certificates result in more investments in renewable energy. ✓ The issuer informed us that heat recycling will be utilized for heating purposes of buildings ✓ Be aware of rebound effects due to increased energy consumption due to higher data traffic as a result of energy efficiency improvements ✓ Concerns exist regarding sustainability of IT equipment (e.g. supply chain emissions) and recycling processes ✓ Emergency power generators can still run on diesel

Table 1. Eligible project categories



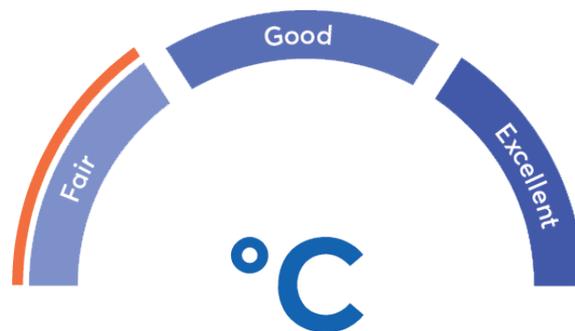
Background

Data centers are building structures dedicated to host computer systems to store data. Data centers mostly consume electricity for the energy demand of the hosted IT equipment, but can also consume large amounts of energy for cooling of equipment.¹ According to the IEA, data centers account for approximately 1% of global electricity demand that is projected to remain flat to 2021 due to the projected efficiency gains.^{2,3} This is in spite the fact that data centers' IP traffic and workloads are expected to double until 2021. According to Ficolo, current electricity consumption of Ficolo's data centers accounts for 5-10% of all Finish data centers that in total make up 1.5% of total Finish energy consumption.^{4,5} In 2017, renewable energy covered 47% of the Finish electricity production, while nuclear power covered around 33% and 19% was based on fossil fuels.⁵

Governance Assessment

Four aspects are studied when assessing the Ficolo'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.

Ficolo has a comprehensive environmental policy in place that includes climate relevant aspects and conducts some climate resilience screening. In addition, the issuer encourages its customers to reduce energy consumption and excludes bitcoin or other crypto currency mining companies as potential customers. Ficolo currently does not implement TCFD recommendations and does not measure or report its emissions. Projects are selected by the board of directors without involvement of external environmental experts. The issuer will report only on energy efficiency and will not obtain external verification of its impacts. The overall assessment of Ficolo's governance structure and processes gives it a rating of **Fair**.



Strengths

Ficolo evaluates data centers eligibility based on its potential for energy efficiency improvements. After the acquisition, data centers are converted to 100% renewable energy usage mostly via purchase of certificates of origin and efficiency is improved. This can lead to lower costs and enhance competitiveness which effectively can drive the Finish and global market of low-carbon and climate resilient data centers.

It is a strength that Ficolo has transparency measures in place to encourage customers to reduce energy demand. In addition, Ficolo excludes bitcoin and other crypto currency mining companies as potential customers. These mining activities generate significant energy and data demand globally through their computing and verification blockchain processes while uncertainty exists on how long these large capacity will be needed in the future¹.

By focusing strongly on energy efficiency, Ficolo implements best practices regarding cooling processes by aiming to recycle equipment waste heat for district heating purposes for surrounding residential and office buildings. This

¹ <https://www.nature.com/articles/d41586-018-06610-y>

² <https://www.iea.org/tracking/tcep2018/buildings/ict/>

³ <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/global-cloud-index-gci/white-paper-c11-738085.pdf>

⁴ https://www.motiva.fi/files/4828/Energiatehokas_konesali.pdf

⁵ https://www.stat.fi/til/ehk/2017/ehk_2017_2018-12-11_tie_001_en.html



is facilitated by being located in the Nordics where temperatures are comparably low which allows for less cooling demand for IT equipment and increased recycled heat demand from adjacent residential and office buildings.

It is a strength that Ficolo actively aims to utilize brownfield land (previously developed infrastructure that is not currently in use) for potential data center locations and engages with the local administrations on climate risks and potentially controversial reaction of the local population. This ensures long-term sustainability and reduces climate impact both through avoiding new-builds and making use of premises that feature natural benefits for Ficolo's business model.

Weaknesses

There are no apparent weaknesses in the framework.

Pitfalls

The selection process constitutes a clear pitfall. Ficolo's board of directors decides on which projects are selected mainly based on energy efficiency and resilience considerations. While climate resilience considerations constitute a strength, the lack of energy efficiency thresholds, tangible additional selection criteria, external environmental expertise in the selection committee or environmental veto power could substantially increase trust in the environmental integrity of the constructed or acquired data centers. This pitfall is partly mitigated by the fact that data centers are run on 100% renewable energy mostly through purchase of certificates of origin and that energy efficiency is a natural focus of the company. However, 100% of purchased renewable energy could be achieved without any direct investments in renewable energy. There is no guarantee that purchases of renewable energy certificates result in more overall investments in renewable energy in the Finish context.

Ficolo informed us that only the PUE (Power Usage Effectiveness) number will be reported as an impact metric. This number highlights the total power usage compared to how much data the IT equipment uses and is between 1.05 and 1.3 for Ficolo's current data center portfolio compared to, e.g., Google's average of 1.12 for all of its data centers. However, this constitutes a pitfall as the total energy consumption and energy efficiency of the IT equipment is not directly reflected in the PUE and, therefore, lacks transparency of potential climate implications for investors.

While data centers run only on renewable energy mostly via purchase of certificates of origin, emergency power generators are currently still operated with conventional diesel. According to the issuer, these generators are to be replaced with lithium battery or biofuel technology in the near-term future. According to the issuer, diesel generators are used rarely, not even each year. Typically, the diesel generators are run only for maintenance testing to confirm functionality.

In addition, there is concern regarding the supply chain of the IT equipment. Ficolo requires suppliers to have a sustainable supply chain policy in place and encourages customers to require the same. However, this might be insufficient and manifest as a pitfall as IT equipment production can be quite emission intensive and requires large shipping distances from often Asian production facilities in addition to mining and sourcing of materials. The issuer informed us that collaboration and requirements regarding recycling partners are in place, but Ficolo does not have specific requirements to guarantee low climate impact of IT equipment.

The framework would benefit from more rigorous selection processes including specific thresholds as well as specific supply chain and recycling requirements. In addition, Ficolo could systematically address climate risks and implement climate targets. Ficolo could include additional metrics on impact reporting and include external parties in selection and reporting processes.



Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	Ficolo Green Bonds Framework August 28, 2019	
2	https://ficolo.com/ficolo-ltd/news/	Collection of recent news pertaining to Ficolo's business
3	https://ficolo.com/ficolo-ltd/data-centers/	Ficolo's description of data centers in Finland



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).

