

Second-Party Opinion

Telia Company Green Bond

Evaluation Summary

Sustainalytics is of the opinion that the Telia Company Green Bond Framework is credible and impactful and aligns with the four core components of the Green Bond Principles 2018. This assessment is based on the following:



USE OF PROCEEDS The eligible categories for the use of proceeds are aligned with those recognized by the Green Bond Principles. Sustainalytics considers the financing of Renewable Energy, Green Digital Solutions, Energy Efficiency, and Green Buildings to lead to positive environmental impacts and advance the UN Sustainable Development Goals (7) Affordable and Clean Energy; (9) Industry, Innovation and Infrastructure and; (11) Sustainable Cities and Communities.



PROJECT EVALUATION / SELECTION Telia Company's internal process in evaluating and selecting projects is aligned with market practice. Telia Company has established a Green Bond Committee (GBC) to manage the project evaluation and selection process. The GBC is comprised of representatives from Telia Company's Treasury, Strategy, Technology and Sustainability teams and will meet at least annually to ensure the ongoing eligibility of selected Green Bond projects throughout the life of all Green Bonds.



MANAGEMENT OF PROCEEDS Telia Company's processes for the management of proceeds are handled by the Treasury department. An amount equal to the net proceeds raised through green financing instruments will be allocated to eligible projects. Allocation will be tracked through the Treasury management system. Pending full allocation, an amount equal to the unallocated balance will be maintained in cash, cash equivalents and/or short-term liquid assets.



REPORTING Telia Company intends to report on the allocation of proceeds on an annual basis, the report will be made available on the Company's website. Allocation reporting will include total allocation to eligible project categories, a list of corresponding eligible projects and the amount of unallocated proceeds. The Company will employ an independent party to provide an examination of a management assertion on the allocation reporting, a strong practice. In addition, Telia Company is committed to reporting on relevant impact metrics. Sustainalytics views Telia Company's allocation and impact reporting as aligned with market practice.

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Introduction

Headquartered in Stockholm, Telia Company (“Telia” or the “Company”) is a Swedish information and communications technology (ICT) company that is most present in the Nordic and Baltic regions. The Company has approximately 24 million subscribers and 20,400 employees.

Telia has developed the Telia Company Green Bond Framework (the “Framework”) under which it intends to issue multiple Green Bonds and use the proceeds to finance/refinance, in whole or in part, existing/future projects that aim to promote improved energy efficiency and reduce GHG emissions within its operations, while also enabling clients to improve their own environmental performance through specialized products and services and access to modern telecommunications networks. The Framework defines eligibility criteria in the following areas:

1. Renewable Energy
2. Green Digital Solutions
3. Energy Efficiency
4. Green Buildings

Telia engaged Sustainalytics to review the Telia Company Green Bond Framework, dated July 2019 and provide a second-party opinion on the Framework’s environmental credentials and its alignment with the Green Bond Principles 2018 (GBP).¹ This Framework has been published in a separate document.²

As part of this engagement, Sustainalytics held conversations with various members of Telia’s Treasury and Sustainability teams to understand the sustainability impacts of their business processes and planned use of proceeds, as well as management of proceeds and reporting aspects of Telia’s Green Bonds. Sustainalytics also reviewed relevant public documents and non-public information.

This document contains Sustainalytics’ opinion of the Telia Company Green Bond Framework and should be read in conjunction with that Framework.

¹ The Green Bond Principles are administered by the International Capital Market Association and are available at <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

² The Telia Company Green Bond Framework is available on Telia’s website at: <https://www.teliacompany.com/en/investors/>

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Telia Company Green Bond Framework

Sustainalytics is of the opinion that the Telia Company Green Bond Framework is credible and impactful and aligns with the four core components of the Green Bond Principles 2018. Sustainalytics highlights the following elements of Telia's Framework:

- Use of Proceeds:
 - The use of proceeds categories (i) Renewable Energy; (ii) Green Digital Solutions; (iii) Energy Efficiency; and (iv) Green Buildings are recognized as credible and impactful by the GBP 2018.
 - Regarding Renewable Energy, Telia will finance the development, construction, maintenance and/or operation of facilities, equipment or systems that generate or transmit wind and/or solar energy for its operations in the Nordic and Baltic regions, which will have clear environmental benefits.
 - Within the area of Green Digital Solutions, several relevant activities and projects will be financed and/or refinanced, including the research, development and deployment of physical and digital infrastructure (including Internet of Things [IoT], 5G, and other high-speed mobile networks³) that create an enabling environment for the deployment of IoT technologies and other network solutions (including cloud computing and data analytics). These technologies can facilitate increased energy/resource efficiency and/or a mitigation of GHG emissions. Refer to Section 3 for further discussion of the impacts of these technologies.
 - Within the area of Energy Efficiency, Telia will finance and/or refinance investments to increase the energy efficiency of its own operations, in particular related to its mobile networks, fixed networks and data centers. For example, the Company will replace and/or upgrade network equipment and technology including the integration of fiber and high-speed mobile networks to replace copper-based phone line infrastructure and install more energy-efficient network equipment and/or cooling solutions.⁴ Regarding the replacement of copper-based phone line infrastructure with high-speed mobile networks and fiber optics, Sustainalytics recognizes the overall importance of upgrading infrastructure and the role that fiber optics can play in making network infrastructure more energy efficient,⁵ but notes that Telia has not been able to quantify the estimated energy efficiency gains from these activities. Sustainalytics encourages Telia to prioritize projects with substantial energy efficiency gains and report on the quantitative impacts.
 - Additionally, Telia will consolidate technical sites or other network infrastructure in order to further increase energy efficiency, reduce fossil-fueled back-up power and reduce the overall physical network footprint. Similar to the statement above, Sustainalytics notes that the goal of consolidating and optimizing technical sites for the purpose of increasing energy efficiency are important activities. However, Telia has not been able to estimate the quantitative impact of these activities. Sustainalytics encourages Telia to track and report on the energy efficiency savings gained from these activities.
 - Proceeds will be used to finance development, acquisition and/or leasing, renovation of completed properties that have achieved a green building certification level of BREEAM Excellent, LEED Gold or national/international standards of an equivalent scope level. Sustainalytics has assessed these certification schemes and has found them to be robust, credible and impactful, for further information please refer to Appendix 1.
 - Sustainalytics acknowledges that ICT and IoT applications specifically, are expected to play an important role in driving energy efficiency and overall reduced negative environmental impacts through a range of industrial and societal applications. However, Sustainalytics also recognizes that high-speed telecommunications networks and IoT technology as described in Telia's Framework carry two primary risks/limitations in terms of impact:
 1. High-speed telecommunications networks and IoT technologies have a broad impact and can drive energy efficiency and resource efficiency gains in a variety of industries,

³ Telia Company acknowledges that 5G technology is still in its early stages and the Company is still investing into 3G and 4G infrastructure as well.

⁴ Izadi, R. & El Azzi, C., "The Green Room: A Giant Leap in Development of Energy-Efficient Cooling Solutions for Datacenters", (2012), at: https://link.springer.com/chapter/10.1007/978-3-642-36645-1_67

⁵ Cabling, Installation & Maintenance, "How fiber can help make your network "greener"", (2013), at: <https://www.cablinginstall.com/cable/fiber/article/16465844/how-fiber-can-help-make-your-network-greener>

including those with high emissions intensities and other significant environmental impacts.⁶ Telia has disclosed to Sustainalytics that the Company does not intend to develop any applications specifically for the fossil-fuel industry, however, Sustainalytics notes the Framework does not exclude the possibility.

2. The expansion of IoT and high-speed telecommunications networks may result in additional overall energy demands.⁶ Although Telia does not currently track customers' enabled energy savings compared to the energy consumption of delivering these services, based on industry-wide trends Sustainalytics is of the opinion that the overall impacts should be positive, and as such does not consider this to be a major limitation. For additional information, please refer to Section 3.
 - Eligible projects will be focused primarily on CAPEX, though the Company may also finance OPEX related to Green Digital Solutions and Green Buildings. Specifically, these OPEX expenditures will be related to research and development activities. Sustainalytics notes that the Green Bond Principles prefer project-based investments. Nevertheless, it is also acknowledged that research and development activities which will further advance Green Digital Solutions financed by Telia's Green Bonds will support green activities and projects and are considered to be credible and impactful. In order to ensure transparency, Sustainalytics encourages Telia to report on OPEX on a project-by-project basis.
 - Sustainalytics notes that the Company has established a two-year look back period for any potential refinancing of projects that may have taken place prior to the issuance of each Green Bond. This is aligned with market practice.
- Project Evaluation and Selection:
 - The Project Evaluation and Selection process is carried out by the GBC, which is comprised of representatives from Telia's Treasury, Strategy, Technology and Sustainability teams. Projects are selected based on compliance with the eligibility criteria outlined in the Framework. The GBC will meet at least annually to ensure the ongoing eligibility of selected Green Bond projects throughout the life of all Green Bonds. Sustainalytics considers this to be aligned with market practice and notes that the committee includes representation from departments with key competencies related to the use of proceeds categories, specifically the Technology and Sustainability teams.
- Management of Proceeds:
 - Telia's Treasury department will be responsible for the allocation of net proceeds to finance existing and/or future projects. To ensure full transparency, proceeds will be tracked via the Treasury's internal management system. Until full allocation, the Company will strive to ensure that an amount equal to the net proceeds from the issuance have been allocated to eligible projects. If projects fall out of eligibility, they will be replaced with eligible assets as soon as possible. Unallocated proceeds will be held in temporary cash, cash equivalents and/or other short-term liquid instruments.
- Reporting:
 - On an annual basis, until full allocation of proceeds, Telia will publish a report on their website with information on the allocation of Green Bond proceeds. The report will be made available to investors and will be based on the Company's financing share of the total investment and will contain the following information: allocation to each eligible category; a list of eligible green projects with a short description; and the total amount of unallocated proceeds. Telia's management will also release an assertion regarding the allocation of proceeds, which will be accompanied by a report from an independent party, providing an examination management's statements. Sustainalytics considers this to be a strong practice, facilitating transparency.
 - Regarding impact reporting, Telia will strive to provide environmental impact data related to the projects financed/refinanced via the Green Bonds. The impact report will, where reliable quantitative data is available, disclose progress towards Key Performance Indicators (KPIs). The report will also – to the extent possible – include case studies that highlight positive environmental and social qualitative and quantitative impacts. Telia Company acknowledges that, at the point of publishing the Framework, no company-specific impact reporting KPIs related to energy efficiency or GHG emissions abatement of customers exist. Sustainalytics notes that, Telia is currently working towards developing quantitative time-bound targets, however at the time of writing this opinion, the Company does not have quantitative, time-bound targets established. The Company has identified a list of potential KPI's for each green project category, please refer to Appendix 2.

⁶ Wang, K. et al., "Green industrial Internet of Things architecture: An energy-efficient perspective", (2016), at: <https://ieeexplore.ieee.org/abstract/document/7785890/>

Alignment with the Green Bond Principles 2018

Sustainalytics has determined that the Telia Company Green Bond Framework aligns to the four core components of the Green Bond Principles 2018. For detailed information please refer to Appendix 2: Green Bond/Green Bond Programme External Review Form.

Section 2: Sustainability Performance of Telia

Contribution of Framework to Telia's sustainability goals

"Digital Impact" is Telia's stakeholder-driven sustainability approach and is underpinned by its alignment with the UN Sustainable Development Goals (SDGs). The Company acknowledges the role that digitalization plays in facilitating positive societal impact and sustainable economic growth. Moreover, the Company acknowledges its responsibility for managing the negative impacts of digitalization. Telia's strategy is characterized by two elements: 1) shared value creation, which addresses societal and environmental challenges while doing business, and 2) responsible business, which focuses on managing risk, minimizing negative impact and being a responsible and ethical business actor.⁷

Telia demonstrates its commitment to its sustainability approach by being transparent about the Company's environmental goals, progress and targets. Some of the 2018 progress includes:

- Reducing kWh per subscription equivalent to 29.0, down from 29.9 in the previous year;
- 1.0kg CO₂e emissions per subscription equivalent, down from 1.6kg in the previous year;
- 938GWh of renewable energy was used, up from 822 in the previous year and representing 93% of electricity consumption in core markets, up from 87% in the previous year.

In both overall energy consumption and GHG emissions, Telia has demonstrated its ability to consistently reduce its impact from year to year. The Company has also made a commitment to develop science-based targets, including the tracking of Scope 3 GHG emissions.

By 2022, the Company aims to reduce energy consumption and lower CO₂e per subscription equivalent by 5% compared to a 2018 baseline. The Company also aims to actively participate in research, public policy and further contribute to the debate on the positive environmental impacts of digitalization. For the year 2019, the Company aims to develop a group-wide energy strategy and provide all employees with training on sustainable business travel.

Based on the Company's sustainability strategy, commitments and progress reporting, Sustainalytics is of the opinion that Telia is well positioned to issue Green Bonds and that the activities financed from these bonds will further the Company's sustainability strategy.

Well positioned to address common environmental and social risks associated with the projects

While Sustainalytics recognizes that the proceeds from Telia's Green Bonds will be directed towards eligible projects that are recognized as having positive environmental impacts, Sustainalytics also acknowledges that such projects entail potential environmental and social risks. Some of the key risks include: human rights challenges in the supply chain for raw materials critical to the ICT industry; health and safety risks associated with the construction of infrastructure and maintenance of infrastructure; biodiversity and stakeholder relations risks associated with the construction of new assets; and exposure to data privacy, security and freedom of expression and surveillance privacy risks.

Sustainalytics is of the opinion that Telia has adequate policies and programmes in place to mitigate the main environmental and social risks associated with the use of proceeds, some relevant policies are highlighted:

- Telia has adopted a due diligence process framework for mitigating risks associated with the sourcing of conflict minerals and metals used in the ICT industry, in line with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict Affected and High-Risk Areas.⁸ In the Supplier Code

⁷ Telia, "Sustainability", at <https://www.teliacompany.com/en/sustainability/>.

⁸ Telia, "Telia Company Supplier Code of Conduct", (2018), at: <https://www.teliacompany.com/globalassets/telia-company/documents/about-telia-company/public-policy/2018/supplier-code-of-conduct-20180612.pdf>.

of Conduct, the company commits to responsible sourcing of minerals, performing assessments of its mineral supply chain and supporting responsible sourcing practices. Moreover, Telia commits to respecting human rights through its Human Rights Policy⁹ and to prevent and report on human trafficking, forced labour, child labour and slave labour in its own operations and across the supply chain.¹⁰

- Telia’s occupational health and safety activities are guided by its Group Policy – People¹¹ and the Group Instruction on Occupational Health, Safety and Well-being.¹² Commitments are operationalized through an Occupational Health & Safety programme that includes ongoing risk assessments and monitoring.¹³ Additionally, Telia’s Supplier Code of Conduct requires its suppliers and contractors to respect and follow occupational health and safety requirements.¹⁴ Moreover, Telia has disclosed that towards the end of 2018 most of its operations in the Nordics and Baltics have been certified to OHSAS 18001 which Sustainalytics considers to be a robust standard.
- Telia addresses risks concerning customer privacy, security, freedom of expression and surveillance privacy through the Freedom of Expression and Surveillance Privacy Policy¹⁵ and the Privacy and Data Protection Policy.¹⁶ The Company commits to respecting its users’ data and privacy, online security and freedom of expression, and outlines processes on prevention and mitigation of violations. In 2019, Telia launched its Guiding Principles on Trusted AI Ethics, a document which outlines its commitments for developing AI in a responsible manner.¹⁷ Furthermore, Telia is also a member of the Global Network Initiative (GNI), an international multi-stakeholder organization whose company members are committed to respecting and promoting freedom of expression and privacy rights of customers when facing pressure from national governments to provide user data, remove content or restrict communication.¹⁸
- Telia reports that, at year end 2018, most of its operations were certified to ISO 14001, which Sustainalytics considers to be a robust standard. Moreover, the Company operates in designated countries under the Equator Principles, indicating relatively high regulatory standards addressing environmental and social concerns. Telia has confirmed to Sustainalytics that Environmental Impact Assessments are carried out wherever necessary or required by law and stakeholder consultations are held for any large projects where the company would be legally obliged to do so.

Given the above, Sustainalytics considers Telia to be well positioned to prevent and mitigate the environmental and social risks associated with the use of proceeds.

Section 3: Impact of Use of Proceeds

All four use of proceeds categories are recognized as impactful by the GBP. Sustainalytics discusses below where the impact is relevant.

Greening by IoT applications, cloud computing and data analytics

Telia’s investments in IoT technologies, cloud computing and data analytics have the potential to mitigate substantial amounts of GHG emissions and has a wide variety of industrial application possibilities that can lead to significant positive environmental impacts. For example, a 2015 report from the Carbon Trust

⁹ Telia, “Group Policy – Human Rights”, (2019), at: <https://www.teliacompany.com/globalassets/telia-company/documents/about-telia-company/public-policy/group-policy-2019/group-policy--human-rights.pdf>.

¹⁰ Telia Corporate Website, “Modern Slavery Act Statement”, at: <https://www.teliacompany.com/en/sustainability/reporting/uk-modern-slavery-act-statement/>.

¹¹ Telia, “Group Policy – People”, (2017), at: <https://www.teliacompany.com/globalassets/telia-company/documents/about-telia-company/public-policy/group-policy--people.pdf>.

¹² Telia, “Group Instruction – Occupational Health, Safety and Well-being”, (2018), at: <https://www.teliacompany.com/globalassets/telia-company/documents/about-telia-company/public-policy/group-instruction--ohs.pdf>.

¹³ Telia, “13 Occupational Health & Safety”, at: <http://dontdothisatwork.teliacompany.com/occupational-health-and-safety.html>.

¹⁴ Telia, “Telia Company Supplier Code of Conduct”, (2018), at: <https://www.teliacompany.com/globalassets/telia-company/documents/about-telia-company/public-policy/2018/supplier-code-of-conduct-20180612.pdf>.

¹⁵ Telia Sonera, “Group Policy – Freedom of Expression and Surveillance Privacy”, (2019), at: <https://www.teliacompany.com/globalassets/telia-company/documents/about-telia-company/public-policy/group-policy-2019/group-policy--freedom-of-expression-and-surveillance-privacy.pdf>.

¹⁶ Telia, “Group Policy - Privacy and Data Protection”, (2019), at: <https://www.teliacompany.com/globalassets/telia-company/documents/about-telia-company/public-policy/group-policy--privacy-and-data-protection.pdf>.

¹⁷ Telia, “Guiding Principles on Trusted AI Ethics”, (2019), at: <https://www.teliacompany.com/globalassets/telia-company/documents/about-telia-company/public-policy/2018/guiding-principles-on-trusted-ai-ethics.pdf>.

¹⁸ Global Network Initiative, “Protecting and Advancing Freedom of Expression and Privacy in the ICT Sector”, at: <https://globalnetworkinitiative.org/>.

estimated that GHG emissions reductions enabled by mobile communications are approximately five times greater than the GHG emissions from mobile networks, and mobile communications technology is currently enabling the reduction of approximately 180 million tonnes of CO₂e per year across the USA and Europe.¹⁹ Mobile network operators, including Telia, are actively driving an energy-efficient network evolution.²⁰ For example, in relation to IoT, Telia will focus on the implementation of Narrowband IoT (NB-IoT), which has been recognized as one of the preferred solutions for IoT.²¹ NB-IoT is considered to be a cost effective technology suitable for a wide range of applications, and any devices that have low energy consumption, low data transfer demands and are geographically dispersed can benefit from its deployment.²² Furthermore, it has been estimated that ICT can enable a 20% reduction of global GHG emissions by 2030 in the Nordic and Baltic regions, holding emissions to the 2015 level.²³

While the application of these technologies is broad, some of the most widely used applications include smart homes, industrial automation, smart healthcare, smart grids and smart cities. For example, an IoT platform has been developed which centralizes performance-related data from wind and solar farms in the cloud, where it runs machine learning and predictive analysis in order to optimize the flow of renewable energy into the grid, thus increase energy efficiency.²⁴ Additionally, research has been conducted on the implementation of low latency micro-sensors and factory-scale networks to improve the manufacturing process for manufactured bladed disks, a key component of jet engines.²⁵ Sustainalytics notes that although these examples of IoT applications may be related to fossil-fuel based activities, these are not lock-ins and remain important for advancing the overall efficiency of the grid and transportation industry, whether based on fossil fuels or renewables. As noted above, the Company has confirmed to Sustainalytics that it does not develop solutions designed specifically for applications related to the fossil fuel industry.

In one use case, Telia has established a partnership with Finnish transport company Pohjolan Liikenne to develop smarter bus traffic. The IoT solution optimizes driving to reduce fuel use and emissions by enabling drivers to monitor real-time data for fuel consumption and electricity usage.²⁶ Similarly, in the area of data analytics, City Vitality Insights uses anonymized and aggregated mobility data from the Company's mobile network to show crowd movement patterns in different parts of a city, allowing cities to quantify the impact of events and enables data-driven and sustainable city development decisions.²⁷ In another example, Telia has partnered with the Nordic utility owner, Ellevio, to install 900,000 connected smart meters.²⁸ The Company offers a number of other products and solutions for the practical application of IoT, ranging from smart irrigation and livestock tracking to monitoring air quality and improving home care efficiency – for more examples, please refer to Telia's website.²⁹

Greening of Telia Company's networks

With the advent of 5G, mobile networks have the potential to provide data over one hundred times faster than current technology.³⁰ These high-speed mobile networks will enable the rapid expansion of the IoT, cloud-based computing and a variety of other existing and new technologies. Mobile networks will connect billions of devices through wireless sensor networks, lead to intelligent management through advanced network capabilities and enable sophisticated learning through real-time data analytics at a rate not yet achieved.³⁰

¹⁹ GeSI, "Mobile Carbon Impact", (2018), at: <https://www.carbontrust.com/media/672238/mobile-carbon-impact-ctc856.pdf>

²⁰ Zhang, S. et al., "Green 5G enabling technologies: an overview", (2015), at: <https://digital-library.theiet.org/content/journals/10.1049/iet-com.2018.5448>

²¹ Chen, M. et al., "Narrow Band Internet of Things", (2017), at: <https://ieeexplore.ieee.org/abstract/document/8038776>

²² Vodafone, "Specialised Narrowband-IoT services", (2019), at: <https://www.vodafone.com/business/iot/managed-iot-connectivity/nb-iot#narrowbandiot-applications-and-solutions>

²³ GeSI, "SMARTer 2030", (2015), at: http://smarter2030.gesi.org/downloads/Full_report.pdf

²⁴ IoT World Today, "IoT Platform for Fighting Climate Change Gains Ground", (2019), at: <https://www.iotworldtoday.com/2019/06/12/iot-platform-for-fighting-climate-change-gains-ground/>

²⁵ This case study of the application of 5G technology to manufactured bladed disks (BLISKs), suggested savings of 360 million metric tons of CO₂e globally was possible, along with creating higher-quality engines which would reduce emissions by a further 2%. <https://www.ericsson.com/en/trends-and-insights/consumerlab/consumer-insights/reports/5g-business-value-to-industry-blisk>

²⁶ Telia, "Telia Company in IoT-Partnership to Develop Smart and Low Emissions Bus Traffic in Helsinki", (2019), at: <https://www.teliacompany.com/en/news/news-articles/2019/iot-bus-helsinki/>

²⁷ Telia, "Company launches crowd movement insights service to boost city life", (2019), at: <https://www.teliacompany.com/en/news/press-releases/2019/3/telia-company-launches-crowd-movement-insights-service-to-boost-city-life/>

²⁸ Telia, "Telia to connect close to one million NB-IoT electricity meters for ONE Nordic", (2019), at: <https://www.teliacompany.com/en/news/news-articles/2019/telia-to-connect-close-to-one-million-nb-iot-electricity-meters-for-one-nordic/>

²⁹ Telia, "Telia IoT Platform", (2019), at: <https://iot.teliacompany.com/platform.html>

³⁰ West, D., "Achieving sustainability in a 5G world", (2016), at: https://www.brookings.edu/wp-content/uploads/2016/11/gs_20161201_smartcities_paper.pdf

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However, as the size and capacity of networks grow, the energy consumption increases, and it becomes increasingly important to ensure that the implementation of new network infrastructure is focused on energy efficiency. In addition to the environmental benefits enabled by Telia's networks, the Company is also investing in improving the energy efficiency of its own infrastructure.

Telia will replace conventional copper-based telephone-based infrastructure with fiber optics and high-speed mobile networks, which will increase speed, improve energy efficiency and reduce transmission losses. Furthermore, as discussed above, Telia's implementation of IoT-enabling infrastructure includes Narrowband IoT, which is recognized to be more energy efficient than other IoT implementations.³¹ Sustainalytics acknowledges the interrelated nature of ICT solutions, and considers these investments to provide both environmental benefits to Telia as well as supporting further benefits from users of its networks.

Additionally, Telia will finance the development of more energy efficient data centers. Data centers are massive consumers of energy and in 2018 accounted for approximately 2% of the global energy consumption.³² The amount of data stored in data centers globally has been projected to increase four-fold between 2016 and 2021.³² As such, it is increasingly important for data centers to be equipped with state-of-the-art energy efficient technology. Telia is focused on increasing the overall energy efficiency of their operational footprint, ranging from the acquisition and development of certified green buildings, more efficient network equipment, consolidation and/or optimization technical sites and enhanced cooling solutions. For example, Telia has developed the "most energy efficient, secure and sustainable multitenant data center in Finland"³³. The data center is LEED Data Center v4 certified, and ISO 14001 certified. Telia will adopt technology for data centers using a "Green Room" design,³⁴ which has shown to be significantly more efficient than conventional data center designs and can achieve Power Usage Efficiency (PUE) values of well below 1.10. This is significantly lower than the average PUE of 1.68 for data centers in Sweden, and around 2.0 globally. Sustainalytics notes the importance of developing energy efficient data centers in the context of mitigating global GHG emissions, and views positively the eligible projects defined by Telia's Framework in this area.

In this context, Sustainalytics considers the range of projects financed by Telia's Green Bonds to have overall positive environmental impacts.

Alignment with and contribution to SDGs

The Sustainable Development Goals (SDGs) were set in September 2015 and form an agenda for achieving sustainable development by the year 2030. This Green Bond Framework advances the following SDG goals and targets:

| Use of Proceeds Category | SDG | SDG target |
|-------------------------------------|--|---|
| Renewable Energy, Energy Efficiency | 7. Affordable and Clean Energy | 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix 7.3 By 2030, double the global rate of improvement in energy efficiency |
| Green Digital Solutions | 9. Industry, Innovation and Infrastructure | 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities |
| Green Buildings | 11. Sustainable Cities and Communities | 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries |

³¹ Li, Y. et al., "Smart Choice for the Smart Grid: Narrowband Internet of Things (NB-IoT)", at: <https://ieeexplore.ieee.org/abstract/document/8170296>

³² PRWeb, "Data Centers Consume 2% of World's Energy—Hyper-Efficient New Solutions Usher in New Paradigm", (2018), at: http://www.prweb.com/releases/data_centers_consume_2_of_worlds_energy_hyper_efficient_new_solutions_usher_in_new_paradigm/prweb15925619.htm

³³ Telia, "Helsinki Data Center", (2018), at: <https://www.telia.fi/business/telia-helsinki-data-center>

³⁴ El Azzi, C. et al., "Green Room: A Giant Leap in Development of Green Datacenters", (2012), at: <https://www.seecooling.com/files/2016-02/green-room-kth-egi-2012-012msc.pdf>

Conclusion

Telia Company's Green Bond Framework will contribute to the Company's energy efficiency and GHG emissions reduction goals while simultaneously enabling further resource efficiency and GHG emissions abatements via customers' applications of IoT and high-speed mobile network technology. Sustainalytics believes that it is crucial for ICT companies to take a holistic approach to sustainability, including the deployment of high-speed telecommunications networks as well as IoT infrastructure and solutions that create pathways to sustainability through the types of energy efficiency and GHG reduction activities they enable, while also ensuring that network transformation occurs in tandem to reduce the energy demand and GHG emissions resulting from the provision of the enabling environment.

Telia is taking a holistic approach to the greening of their networks, products and services by funding renewable energy, operational improvements and network improvements. These efforts will contribute to SDGs related to sustainable cities and communities; industry innovation and infrastructure; and affordable and clean energy, while enabling the potential for much further impact through the implementation of IoT applications, cloud computing and data analytics. The Company's project evaluation and selection process, management of proceeds and reporting processes are all aligned with market practice. Based on the above, Sustainalytics is of the opinion that Telia Company is well positioned to issue Green Bonds and that the Telia Company Green Bond Framework is credible, impactful and aligned with the Green Bond Principles.

Appendices

Appendix 1: Comparison of Green Building Certification Schemes

| | LEED | BREEAM |
|---|--|---|
| Background | Leadership in Energy and Environmental Design (LEED) is a US Certification System for residential and commercial buildings used worldwide. LEED was developed by the non-profit U.S. Green Building Council (USGBC) and covers the design, construction, maintenance and operation of buildings. | BREEAM (Building Research Establishment Environmental Assessment Method) was first published by the Building Research Establishment (BRE) in 1990. Based in the UK. Used for new, refurbished and extension of existing buildings. |
| Certification levels | Certified Silver Gold Platinum | Pass Good Very Good Excellent Outstanding |
| Areas of Assessment: Environmental Performance of the Building | Integrative process, which requires, from the beginning of the design process, the identification and creation of synergies between the various project stakeholders regarding the construction choices and the technical systems. | Management (Man) addresses various aspects: project management, deployment, minimal environmental disturbance worksite and stakeholder engagement. |
| Areas of Assessment: Environmental Performance of the Building | Energy and atmosphere Sustainable Sites Location and Transportation Materials and resources Water efficiency Indoor environmental quality Innovation in Design Regional Priority | Energy Land Use and Ecology Pollution Transport Materials Water Waste Health and Wellbeing Innovation |
| Requirements | Prerequisites (independent of level of certification) + Credits with associated points These points are then added together to obtain the LEED level of certification There are several different rating systems within LEED. Each rating system is designed to apply to a specific sector (e.g. New Construction, Major Renovation, Core and Shell Development, Schools-/Retail-/Healthcare New Construction and Major Renovations, Existing Buildings: Operation and Maintenance). | Prerequisites depending on the levels of certification + Credits with associated points This number of points is then weighted by item ³⁵ and gives a BREEAM level of certification, which is based on the overall score obtained (expressed as a percentage). Majority of BREEAM issues are flexible, meaning that the client can choose which to comply with to build their BREEAM performance score. BREEAM has two stages/ audit reports: a 'BREEAM Design Stage' and a 'Post Construction Stage', with different assessment criteria. |
| Performance display |  |  |

³⁵ BREEAM weighting: Management 12%, Health and wellbeing 15%, Energy 19%, Transport 8%, Water 6%, Materials 12.5%, Waste 7.5%, Land Use and ecology 10%, Pollution 10% and Innovation 10%. One point scored in the Energy item is therefore worth twice as much in the overall score as one point scored in the Pollution item.

Appendix 2: Green Bond / Green Bond Programme - External Review Form

Section 1. Basic Information

| | |
|---|------------------------------------|
| Issuer name: | Telia Company |
| Green Bond ISIN or Issuer Green Bond Framework Name, if applicable: <i>[specify as appropriate]</i> | Telia Company Green Bond Framework |
| Review provider's name: | Sustainalytics |
| Completion date of this form: | 11/7/19 |
| Publication date of review publication: <i>[where appropriate, specify if it is an update and add reference to earlier relevant review]</i> | |

Section 2. Review overview

SCOPE OF REVIEW

The following may be used or adapted, where appropriate, to summarize the scope of the review.

The review assessed the following elements and confirmed their alignment with the GBPs:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Use of Proceeds | <input checked="" type="checkbox"/> Process for Project Evaluation and Selection |
| <input checked="" type="checkbox"/> Management of Proceeds | <input checked="" type="checkbox"/> Reporting |

ROLE(S) OF REVIEW PROVIDER

- | | |
|---|--|
| <input checked="" type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other <i>(please specify):</i> | |

Note: In case of multiple reviews / different providers, please provide separate forms for each review.

EXECUTIVE SUMMARY OF REVIEW and/or LINK TO FULL REVIEW *(if applicable)*

Please refer to Evaluation Summary above.

Section 3. Detailed review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Overall comment on section *(if applicable)*:

The eligible categories for the use of proceeds are aligned with those recognized by the Green Bond Principles. Sustainalytics considers the financing of Renewable Energy, Green Digital Solutions, Energy Efficiency, and Green Buildings to lead to positive environmental impacts and advance the UN Sustainable Development Goals (7) Affordable and Clean Energy; (9) Industry, Innovation and Infrastructure and; (11) Sustainable Cities and Communities.

Use of proceeds categories as per GBP:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Renewable energy | <input checked="" type="checkbox"/> Energy efficiency |
| <input type="checkbox"/> Pollution prevention and control | <input type="checkbox"/> Environmentally sustainable management of living natural resources and land use |
| <input type="checkbox"/> Terrestrial and aquatic biodiversity conservation | <input type="checkbox"/> Clean transportation |
| <input type="checkbox"/> Sustainable water and wastewater management | <input type="checkbox"/> Climate change adaptation |
| <input type="checkbox"/> Eco-efficient and/or circular economy adapted products, production technologies and processes | <input checked="" type="checkbox"/> Green buildings |
| <input type="checkbox"/> Unknown at issuance but currently expected to conform with GBP categories, or other eligible areas not yet stated in GBPs | <input checked="" type="checkbox"/> Other <i>(please specify)</i> : <ul style="list-style-type: none"> • Green Digital Solutions |

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section *(if applicable)*:

Telia Company's internal process in evaluating and selecting projects is aligned with market practice. Telia Company has established a Green Bond Committee to manage the project evaluation and selection process. The GBC is comprised of representatives from Telia Company's Treasury, Strategy, Technology and Sustainability teams and will meet at least annually to ensure the ongoing eligibility of selected Green Bond projects throughout the life of all Green Bonds.

Evaluation and selection

- | | |
|--|--|
| <input checked="" type="checkbox"/> Credentials on the issuer's environmental sustainability objectives | <input checked="" type="checkbox"/> Documented process to determine that projects fit within defined categories |
| <input checked="" type="checkbox"/> Defined and transparent criteria for projects eligible for Green Bond proceeds | <input type="checkbox"/> Documented process to identify and manage potential ESG risks associated with the project |

- Summary criteria for project evaluation and selection publicly available
- Other (*please specify*):

Information on Responsibilities and Accountability

- Evaluation / Selection criteria subject to external advice or verification
- In-house assessment
- Other (*please specify*):

3. MANAGEMENT OF PROCEEDS

Overall comment on section (*if applicable*):

Telia Company's processes for management of proceeds is handled by the Treasury department. An amount equal to the net proceeds raised through green financing instruments will be allocated to eligible projects. Allocation will be tracked through the Treasury management system. Pending full allocation, an amount equal to the unallocated balance will be maintained in cash, cash equivalents and/or short-term liquid assets.

Tracking of proceeds:

- Green Bond proceeds segregated or tracked by the issuer in an appropriate manner
- Disclosure of intended types of temporary investment instruments for unallocated proceeds
- Other (*please specify*):

Additional disclosure:

- Allocations to future investments only
- Allocations to both existing and future investments
- Allocation to individual disbursements
- Allocation to a portfolio of disbursements
- Disclosure of portfolio balance of unallocated proceeds
- Other (*please specify*):

4. REPORTING

Overall comment on section (*if applicable*):

Telia Company intends to report on the allocation of proceeds on an annual basis, the report will be made available on the Company's website. Allocation reporting will include total allocation to eligible project categories, a list of corresponding eligible projects and the amount of unallocated proceeds. The Company will employ an independent party to provide an examination of a management assertion on the allocation reporting, a strong practice. In addition, Telia Company is committed to reporting on relevant impact metrics. Sustainalytics views Telia Company's allocation and impact reporting as aligned with market practice.

Use of proceeds reporting:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Project-by-project | <input type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other (<i>please specify</i>): |

Information reported:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Allocated amounts | <input type="checkbox"/> Green Bond financed share of total investment |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Frequency:

- | | |
|---|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Impact reporting:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Project-by-project | <input type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other (<i>please specify</i>): |

Frequency:

- | | |
|---|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Information reported (expected or ex-post):

- | | |
|---|--|
| <input checked="" type="checkbox"/> GHG Emissions / Savings | <input checked="" type="checkbox"/> Energy Savings |
| <input type="checkbox"/> Decrease in water use | <input type="checkbox"/> Other ESG indicators (<i>please specify</i>): |

Means of Disclosure

- | | |
|---|--|
| <input type="checkbox"/> Information published in financial report | <input type="checkbox"/> Information published in sustainability report |
| <input type="checkbox"/> Information published in ad hoc documents | <input checked="" type="checkbox"/> Other (<i>please specify</i>): In a separate report on the Company's website |
| <input type="checkbox"/> Reporting reviewed (if yes, please specify which parts of the reporting are subject to external review): | |

Where appropriate, please specify name and date of publication in the useful links section.

USEFUL LINKS (e.g. to review provider methodology or credentials, to issuer's documentation, etc.)

<https://www.teliacompany.com/globalassets/telia-company/documents/reports/2018/annual-report/telia-company--annual-and-sustainability-report-2018.pdf>

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE

Type(s) of Review provided:

- | | |
|--|--|
| <input type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification / Audit | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Review provider(s):

Date of publication:

ABOUT ROLE(S) OF INDEPENDENT REVIEW PROVIDERS AS DEFINED BY THE GBP

- i. **Second Party Opinion:** An institution with environmental expertise, that is independent from the issuer may issue a Second Party Opinion. The institution should be independent from the issuer's adviser for its Green Bond framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.
- ii. **Verification:** An issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from Green Bond proceeds, statement of environmental impact or alignment of reporting with the GBP, may also be termed verification.
- iii. **Certification:** An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against a recognized external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.
- iv. **Green Bond Scoring/Rating:** An issuer can have its Green Bond, associated Green Bond framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialized research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the GBP, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.

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Sustainalytics

Sustainalytics is a leading independent ESG and corporate governance research, ratings and analytics firm that supports investors around the world with the development and implementation of responsible investment strategies. With 13 offices globally, the firm partners with institutional investors who integrate ESG information and assessments into their investment processes. Spanning 30 countries, the world's leading issuers, from multinational corporations to financial institutions to governments, turn to Sustainalytics for second-party opinions on green and sustainable bond frameworks. Sustainalytics has been certified by the Climate Bonds Standard Board as a verifier organization and supports various stakeholders in the development and verification of their frameworks. In 2015, Global Capital awarded Sustainalytics "Best SRI or Green Bond Research or Ratings Firm" and in 2018 and 2019, named Sustainalytics the "Most Impressive Second Party Opinion Provider. The firm was recognized as the "Largest External Reviewer" by the Climate Bonds Initiative as well as Environmental Finance in 2018, and in 2019 was named the "Largest Approved Verifier for Certified Climate Bonds" by the Climate Bonds Initiative. In addition, Sustainalytics received a Special Mention Sustainable Finance Award in 2018 from The Research Institute for Environmental Finance Japan and the Minister of the Environment Award in the Japan Green Contributor category of the Japan Green Bond Awards in 2019.

For more information, visit www.sustainalytics.com

Or contact us info@sustainalytics.com

