



# Latvenergo

## Green Bond Second Opinion

April 15, 2020

**Latvenergo Group is one of the largest power suppliers in the Baltic countries and it is owned by the Republic of Latvia.** Latvenergo AS is the parent company of six subsidiaries, including Sadales tīkls AS, the subsidiary in charge of electricity distribution networks. The group's operating segments are generation and trade, distribution, and lease of transmission system assets. Generation and trade operations include generation of electricity and thermal energy, electricity and natural gas trade in the Baltic States, and administration of the mandatory electricity procurement process in Latvia.

**The green bond framework lists eligible projects within renewable energy, energy efficiency and environmentally sustainable management of living natural resources and land use.** Up to 50% of proceeds are expected to be allocated to reconstruction of hydropower plants, up to 50% is expected to be allocated to improving the electric distribution grid and up to 1% is expected to be invested in biodiversity conservation projects and R&D. Latvenergo excludes from financing direct and indirect investments in fossil fuel and nuclear energy generation. New hydropower dams are also not included in Latvenergo's green bond framework.

**The issuer is aware of the increasing risks of extreme events due to climate change and has already taken steps to mitigate them.** Despite not reporting in line with TCFD recommendations, Latvenergo was involved in developing the national adaptation plan in Latvia and is planning activities in line with adaptation strategies that promote decentralized energy generation, avoidance of long distribution lines and replacement of above-ground power lines with underground cables. Some of these measures will be further developed under this green bond framework.

**It is notable that Latvenergo has a strategic goal to increase the share of renewable energy in the electricity produced but does not currently measure emissions linked to existing hydropower projects.** While renewable energy projects generally are considered to have positive climate impacts, there are nevertheless significant emissions associated with large hydropower dams. Latvenergo does not include construction of new dams under this green bond framework and considering that Latvia is positioned at high latitudes, emissions from dams are expected to be low. Nevertheless, CICERO Shades of Green encourages the issuer to systematically measure, report and manage emissions that are associated with existing dams and related construction projects.

Based on the overall assessment of the projects that will be financed under this framework, and governance and transparency considerations, Latvenergo's updated green bond framework receives a **CICERO Dark Green** shading and a governance score of **Excellent**.

### SHADES OF GREEN

Based on our review, we rate the Latvenergo'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 Latvenergo's framework to be **Excellent**.



### 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 April 06, 2020. 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 Latvenergo's green bond framework and related policies

Latvenergo Group is one of the largest power suppliers in the Baltics. The Republic of Latvia owns all the shares in the parent company of six subsidiaries, Latvenergo AS. The shares are held by the Ministry of Economics of the Republic of Latvia. The group's operating segments are generation and trade, distribution, and lease of transmission system assets. Generation and trade operations include generation of electricity and thermal energy, electricity and natural gas trade in the Baltic States, and administration of the mandatory electricity procurement process in Latvia. In 2019, the group's market share accounted for about 23% of the Baltic electricity market, holding 58% market share in Latvia, 11% in both Lithuania and Estonia.

In 2019, the total amount generated by the group's power plants comprised 4.9 TWh of electricity and 1.8 TWh of thermal energy. 42% of the total energy produced in 2019 was generated from renewable energy sources. The remaining energy is produced through combined heat and power plants (CHPPs), based on natural gas. In 2019, the group had 757,000 customers across the Baltics, including 35,000 outside of Latvia. Of these, 95% were households and 5% business customers. In 2019, the group sold 6.5 TWh of electricity to retail customers out of the total electricity consumption in the Baltic of around 28 TWh per year.

### Environmental Strategies and Policies

Latvenergo's strategic, operational, and financial goals and main development tasks for 2017-2022 are defined in the Latvenergo Group Strategy. The issuer is planning targeted investments that contribute to climate change mitigation. The main areas of investment are efficiency of energy generation and maximization of the share of renewable energy sources, reduction of losses in the electricity distribution system and developing and implementation of technologies to promote energy efficiency and low-emission products and services. Latvenergo ensures fulfillment of energy efficiency targets under Energy Efficiency Obligation Scheme (EEOS). Latvia will set energy efficiency targets under obligation schemes for EU ETS sectors, in line with the EU requirements, and specific EEOS targets for second period (2021-2025) should be set by 30 June 2020. As such, energy efficiency measures in EU countries will reduce their energy consumption by 0.8% cumulatively per year for the 2021-2030 period. Furthermore, the issuer has concrete cumulative energy saving targets of 1.5% per year until the end of 2020, in line with the EEOS of Latvia. According to the Latvenergo, the energy savings achieved so far show that by the end of the first EEOS period, Latvenergo will significantly exceed its savings target.

Direct emissions from the Latvenergo Group's activities are determined by fuel consumption, amount of energy generated and operating modes of the fossil fuel energy generation plants. Latvenergo's grid factor for electricity delivered to final consumers in 2019 is 0.15 kgCO<sub>2</sub>eq/kWh, compared to Latvia's electricity factor in 2019, 0.31 kgCO<sub>2</sub>eq/kWh<sup>1</sup>. Emissions from combustion plants reached a total of 1,243 ktCO<sub>2</sub> in 2018 and 1,244 ktCO<sub>2</sub> in 2019, which represents over 40% increase compared to 2017. This significant increase in emissions is attributed to dry weather conditions in 2018 and 2019, linked to low water inflow in the river, which caused hydropower shortages and a necessity to rely on natural gas, in order to meet the demand. To avoid such emission increase in the future, the issuer plans reconstruction of Daugava hydropower plants, diversification of existing generation

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<sup>1</sup> [https://www.carbonfootprint.com/docs/2019\\_06\\_emissions\\_factors\\_sources\\_for\\_2019\\_electricity.pdf](https://www.carbonfootprint.com/docs/2019_06_emissions_factors_sources_for_2019_electricity.pdf)



capacities and development of efficient networks. Emissions from transport fuel from own road vehicles amount to 8.1 ktCO<sub>2</sub> in 2019.

The issuer actively works to identify potential environmental risks and minimize adverse environmental impacts linked to their operations by promoting continuous improvement in their environmental performance, reducing emissions and waste production and adopting best available cleaner production techniques. Latvenergo was involved in developing the national adaptation plan in Latvia, as part of the national target group. The issuer has informed CICERO Green that activities planned, consider the recommendations of the national adaptation plan. Examples of adaptation strategies considered are promotion of decentralized generation, avoidance of long distribution lines and replacement of above-ground power lines with underground cables. The issuer's goal is to change up to 60-65% of its distribution network to underground power lines. The Latvian Civil Protection and Catastrophe Management Law (2016) and its subordinate Cabinet of Ministers regulates the civil protection commissions of 36 municipal cooperation territories, which now have to develop their own civil protection plans that include indicated risks, scenarios, matrices, mapping, prevention, preparedness, response and recovery measures for each risk. Flood risk management plans have been elaborated for all territories under significant flood risk.

The group is compliant with ISO 14001 standard and reports in line with the GRI standard. Furthermore, as part of integrated management system, Latvenergo performs project management according to ISO 10006 (Quality management in projects) standard requirements. Environmental risks are evaluated for each project and environmental impact and requirements are evaluated and supervised at all stages of the project development.

### Use of proceeds

Proceeds from the group's green bond will be allocated to projects falling under one of the three categories: renewable energy (1), energy efficiency (2) and environmentally sustainable management of living natural resources and land use (3). The current estimate for the upcoming bond programme is up to 50% of proceeds will be allocated to renewable energy projects and up to 50% to energy efficiency. Investments in environmentally sustainable management of living resources and land use will be up to 1% of the total use of proceeds. Green bond proceeds may be used for new or existing projects. Eligible projects may be funded in part or in full by the green bond proceeds. While the issuer does not report emissions from their hydropower production, the issuer confirms that renewable energy projects included under the green bond framework fall within the thresholds of the EU taxonomy: facilities operating at life cycle emissions lower than 100gCO<sub>2</sub>e/ kWh.

Latvenergo Group explicitly excludes direct and indirect investments in fossil fuel and nuclear energy generation from their green bond framework.

### 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 bond funding. The broader the project categories, the more importance CICERO Green places on the governance process.

The environmental and occupational health and safety department will select and recommend projects that comply with the green bond eligibility criteria. The selected projects, together with justification of eligibility is submitted to the treasury department for review. Eligible projects will be analyzed and selected on a quarterly basis. The list of selected eligible projects is finally approved by the Chief Financial Officer (CFO). According to the issuer, this selection process ensures that the environmental and health and safety department, the treasury department and



the CFO reach consensus on selected eligible projects. The treasury department of Latvenergo is responsible for keeping an updated list of allocated projects. The list is regularly revisited and evaluated to ensure the full allocation of the green bond proceeds to eligible projects. The issuer does not expect resistance from local communities on any of the projects covered by this framework.

### Management of proceeds

CICERO Green finds the management of proceeds of Latvenergo to be in accordance with the Green Bond Principles. The issuer will manage green bond proceeds on a portfolio level. To ensure that proceeds will be allocated to the selected green projects, net green bond proceeds will be credited to a separate sub-account. At the end of each quarter, following the eligible project selection process, proceeds will be transferred to company's standard account in the amount of selected and approved eligible projects. The management of proceeds and the compliance of the selection process to the green bond framework will undertake Latvenergo's internal audit.

In the unlikely case that green bond proceeds exceed the pool of eligible projects, the excess will be placed in liquidity reserves. The issuer does not expect unallocated proceeds in the upcoming bond issue as the portfolio of green projects is larger than the size of upcoming bond program, but if such situation will arise, the issuer will disclose balance of unallocated proceeds.

### 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.

Latvenergo Group will report on the allocation of proceeds from green bonds on an annual basis. The green bond report will include the total amount of green bonds issued, share of proceeds used for financing and refinancing, share of proceeds used by category, the share of allocated proceeds and examples of eligible green projects.

Three departments are designated as responsible for the green bond reporting, each with its own tasks. Environmental and occupational health and safety department and the treasury department are responsible for submitting respective data and information to business planning and control department, which is responsible for development of the final green bond report to be published as part of the sustainability report.

Impact metrics will be reported by category, when applicable. The issuer reports saved or avoided emission amount estimations, based on the evaluation of how much CO<sub>2</sub> emissions could have been released if the saved energy would be generated based on natural gas. Examples of impact metrics for renewable energy category are: plant capacity for energy generation (MW), annual renewable energy generation (kWh) and annual estimated reduction or avoidance of GHG emissions. Examples of impact metrics under the energy efficiency category are annual energy savings and/or estimated annual reduced or avoided GHG emissions. The environmentally sustainable management of living natural resources and land use category may include improvements in biodiversity and ecosystems (quantified when possible) and biodiversity monitoring and conservation programmes. These programmes include activities for conservation of protected bird species (white storks) and fish resources (mostly in Daugava river basin). Potential metrics for this category are the number of prepared spawn nests, kilometers of rivers cleaned or the number of monitored white storks.



The green bond report will be published as part of the sustainability and annual report, which will be made public on the issuer's [website](#), every year in April. The green bond report will be evaluated internally before publication but will not undergo an external review.



### 3 Assessment of Latvenergo's green bond framework and policies

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

#### Eligible projects under the Latvenergo'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
<b>Renewable Energy</b> 	<ul style="list-style-type: none"><li>Hydro power – reconstruction of the existing capacities</li><li>Biomass energy (non-food) and wind energy</li></ul>	<b>Dark Green</b> <ul style="list-style-type: none"><li>✓ This category includes upgrades at the Daugava hydropower plants.</li><li>✓ Improvements in the hydropower plants are expected to increase the share of renewable energy in the grid by 1.5-2.5%, depending on the water volume in the river (weather conditions).</li><li>✓ After reconstruction, the hydropower plants are expected to increase their capacity, leading to an additional generated energy of 45000 MWh per year.</li><li>✓ Hydropower production is highly depended on weather patterns as dry</li></ul>



seasons can affect the yield in water reservoirs and thus create shortages of supply. Systematic climate risk management and mitigation are paramount to ensure emissions remain low even in unfavorable weather conditions.

- ✓ Life-cycle thinking is incorporated in hydropower project management with considerations for all phases of the project: concept and design, project planning, project implementation and management and finalization of projects.
- ✓ Subcontractors' onsite activities is supervised by environmental specialists, systematically.
- ✓ The issuer does not operate run-of-river hydropower plants. No new dams will be built under this green bond framework.
- ✓ Latvenergo intends to focus primarily on reconstruction of existing hydropower capacity. Wind and biomass (wood chips) projects will potentially be included in the future.
- ✓ All construction projects can have adverse local environmental impacts.
- ✓ Be aware that complex environmental impacts related to burning of biomass, including wood chips, include CO2 emissions and equivalents and raise health concerns related to local air pollution. If such projects should be implemented, material sourcing options and safeguards should be considered.

**Energy efficiency**



- Distribution networks
  - Construction of new networks
  - Reconstruction of existing networks
- Sustainable infrastructure for low carbon transportation

**Medium to Dark Green**

- ✓ Construction and reconstruction of networks includes, inter alia, changing from above-ground power lines to underground cables. This is a climate adaptation measure against extreme events, such as strong winds, storms and heat waves.



- ✓ The distribution network services provided by the group currently cover 99% of the territory of Latvia, with a total length of 92 958 km. The issuer aims to move 60-65% of the total network to underground cables, from 37% at the end of 2019.
- ✓ Through efficiency improvements in the distribution network, the issuer expects a decrease in the grid factor in the medium term.
- ✓ Beware that grids run on mix fuel sources and this category also supports more efficient distribution of fossil fuel-based electricity.
- ✓ Energy recovery and storage technologies are not considered under the green bond framework.
- ✓ Sustainable infrastructure for low-carbon transportation represents a minor amount of investments and it refers to electric vehicle charging stations.
- ✓ Sustainable infrastructure for low carbon transportation refers to chargers for electric vehicles, which will be installed on the issuer's premises for public access granted in exchange for a fee.

**Environmentally sustainable management of living natural resources and land-use**

- R&D investments for nature conservation and biodiversity programmes
- Protection and restoration of biodiversity in land and aquatic ecosystems



**Dark Green**

- ✓ This category includes research on the possibility of migration and the restoration of natural reproduction of the migratory fish in the Daugava River basin and impact assessment of river cleaning works on aquatic biodiversity.
- ✓ Apart from R&D, Latvenergo supports initiatives for aquatic and land ecosystems protection, such as replenishment of fish resources and bird protection.

Table 1. Eligible project categories



## Background

Global electricity demand increased 4% in 2018, with low-carbon generation expanding 6% to meet a considerable share of this growth. Nevertheless, power sector CO<sub>2</sub> emissions rose by 2.5%, with coal responsible for 80% of this increase. In 2018, 42% of all energy-related CO<sub>2</sub> emissions came from the power sector, causing it to remain the largest source of energy-related CO<sub>2</sub> emissions. Investments in the rapid transition to renewable energy powered economies are therefore increasingly critical.

Despite these positive trends in the expansion of renewable electricity generation (especially with PV), additional efforts are needed in renewable power generation to meet the targets set out in the IEA's SDS. According to the IEA, the share of renewables in global electricity generation must reach 47% by 2030, up from 25% in 2017<sup>2</sup>. The IEA's Sustainable Development Scenario (SDS) suggests a global wind power generation of 14,100TWh in 2040 up from 1,500TWh in 2017.<sup>3</sup>

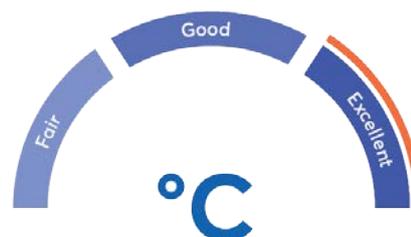
Latvia's agriculture, forestry and fishery account for a larger share of the economy than in most other OECD Europe countries. Natural resource-intensive products (wood products and paper, agricultural and food products) account for 40% of merchandise exports. With more than half its territory covered in forests, Latvia is among the world's leading exporters of wood pellets, and woody biomass is its major domestic energy source. Transportation is the most emission intensive sector, accounting for 30% of the country's GHG emissions in 2016. This was followed by agriculture, with little over 20% of national GHG emissions and energy (accounting for up to 18% of emissions).<sup>4</sup>

Renewable energy sources account for 40% of the Latvia's primary energy supply and more than half of electricity generation, on average – one of the highest shares in the OECD. Solid biofuels (wood pellets, wood chips, charcoal, wood waste and residue, and straw) account for a third of the energy mix, the highest share in the EU. Hydropower is the other main renewable source and delivers most of the country's electricity. Wind and solar power generation remains negligible despite good potential. Fossil fuels, mostly natural gas and oil cover the remaining energy needs. The national grid also includes some nuclear energy estimated at 6% and coal energy estimated at 1%. The share of renewables in the energy mix has grown in the last decade due to a generous feed-in tariff system that fostered the use of solid biofuels in combined heat and power (CHP) plants. This has brought Latvia on track to reach its overall 2020 EU renewable energy target, and to exceed the indicative target in the heating and cooling sector. However, additional power generation is needed to meet the indicative renewable electricity target<sup>4</sup>.

## Governance Assessment

Four aspects are studied when assessing the Latvenergo'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.

Latvenergo has in place a sound management and governance structure as well as regular and transparent reporting on own activities and green bond projects. The issuer has set pragmatic goals, to contribute to climate change mitigation by investing in efficiency of energy generation and maximization of the share of renewable energy sources, reduction of losses in the electricity



<sup>2</sup> <http://www.iea.org/tcep/power/renewables>

<sup>3</sup> <https://www.iea.org/weo2018/scenarios/>

<sup>4</sup> [OECD Environmental Performance Reviews, 2019](#)



distribution system and developing and implementation of technologies to promote energy efficiency and low-emission products and services. Concrete targets and ambitions fall in line with EU ETS and national binding requirements. The issuer has in place a sound selection process, where the environment and health and safety department is at the core of the selection process. Despite not reporting according to TCFD, Latvenergo has identified key physical climate risks and has been proactive in gaining access to information on scenario stress-testing. The overall assessment of Latvenergo's governance structure and processes gives it a rating of **Excellent**.

### Strengths

It is a clear strength that Latvenergo participates in the national adaptation plan of Latvia. Through this approach, the issuer gains access to information regarding foreseeable climate risks, screening for flooding prone areas and scenario stress-testing. The issuer has informed CICERO Green that strategies and activities are planned with considerations to the recommendations of the national adaptation plan.

Latvenergo has already started to implement climate adaptation measures. Switching to underground power lines has resulted reducing the negative impact of weather conditions on electricity networks and the number of disruptions on lines. The volume of electricity not supplied to customers as a result of failures has decreased by 8% during the last five years. In 2019, electricity losses in the distribution system have decreased by 18% compared to 2018 while the share of losses was only 3.7%, which is the lowest figure, historically.

It is also a strength that Latvenergo invests in nature conservation and related R&D. The issuer partners with relevant organizations ("Mēs zivīm" (=We for fishes) and the Latvian Ornithological Society) to conduct research on the possibility of migration and the restoration of natural reproduction of the migratory fish and birds in the Daugava River basin. Existing programmes already include activities for conservation of protected bird species (white storks) and fish resources such as river clean-ups and spawn nests creation for fish and monitoring certain bird species (e.g. white storks). Furthermore, Latvenergo invests in the reconstruction of existing hydropower plants instead of building new ones and thus minimizing environmental impacts.

### Weaknesses

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

### Pitfalls

Renewable energy projects generally are considered to have positive climate impacts. Nevertheless, there are significant emissions associated with large hydropower dams. While Latvenergo does not include construction of new dams under this green bond framework, the issuer currently has no strategy in place to monitor emissions from existing dams. Much attention has been paid to negative impacts of dams on fish and other riverine biota, but the indirect effects on biogeochemical cycling are also important to consider. Elevated GHG emissions from young (less than 10 years) reservoirs are commonly observed but some reservoirs may continue to generate high levels of GHG emissions at least 20 years after flooding. CICERO Shades of Green encourages Latvenergo to systematically measure, report and manage emissions that are associated with existing dams. Any electricity generation technology can be included in the taxonomy if it can be demonstrated, using an ISO 14067 or a GHG Protocol Product Lifecycle Standard-compliant Product Carbon Footprint (PCF) assessment, that the allocated life cycle impacts for producing 1 kWh of electricity are below the declining threshold. Hydropower facilities with a power density above 5 W/m<sup>2</sup> are currently derogated from conducting the PCF or GHG Lifecycle Assessment (subject to regular review in accordance with the declining threshold). The issuer does not calculate power density and therefore cannot confirm compliance with this threshold.



Hydropower production is highly dependent on weather patterns. The electricity yield is based on the level of water in the reservoirs. Dry seasons lead to increased emissions as electricity production then relies more on natural gas resources, to meet the demand.

CICERO Green encourages Latvenergo to fully implement TCFD recommendations to more systematically report on potential climate risks. This pitfall is partially mitigated as Latvenergo has already identified key physical climate risks on hydrological performance, such as changes in precipitation patterns, water scarcity, flooding and ecosystem services. This includes continuous adaptation and long-term planning measures for the assets.

CICERO Green takes a long-term view on climate change, and thus, recommends excluding projects that support prolonged use of fossil-fuel based infrastructure that will contribute to GHGs in the long run. The framework is exposed to fossil fuels through its funding of nationwide distribution networks which carry fossil fuel-based energy due to Latvia's current energy mix. Distribution grid upgrades are as green as the emission factor of the grid. CICERO Green encourages Latvenergo to avoid grid upgrades that are directly linked to fossil fuels. Efficiency improvements also present a risk for rebound effects. When the cost of energy is reduced, there will be tendencies to consume more. Investments to reduce network losses, which decrease emissions from losses may not decrease the overall consumption of energy. CICERO Green encourages to screen for potential rebound effects and avoid green bond funding of projects where the risk of rebound effects is particularly high.



# Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	Latvenergo Group's Green Bond Framework	Framework dated April, 2020
2	Latvenergo's Sustainability and Annual Report	Report dated April 2020, relevant for the period January 2019 – December 2019
3	Latvenergo's Environmental Policy	Report valid until January 2021
4	Legislative acts of the Republic of Latvia	The document provides a summary of the national legislative acts that are relevant for the issuer
5	National Environmental Policy and Guidelines for Sustainable Development	The document provides a summary of the national environmental policies and guidelines that are relevant for the issuer
6	Latvenergo's Corporate Social Responsibility Policy	The report defines activities and operating principles of corporate social responsibility (CSR) at Latvenergo Group.
7	Latvenergo's Corporate Governance Report	Report dated April, 2019
8	Measures to align Latvenergo Group's business with the EU frameworks	The document provides a summary of the EU frameworks that are relevant for the issuer



## 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).

