



# Sweden

## Green Bond Second Opinion

1 June 2020

**Sweden, a north European country of some 10 million people, has long been at the forefront of sound environmental policies.** Sweden aims at being greenhouse gas neutral by 2045 and having net negative emissions thereafter. The green bond framework is broad, covering several green bond principle categories and targets both climate and nature and marine preservation.

**The majority of funds in the first round of allocations are planned for clean transportation, with a focus on maintenance and operation of electrified railways.** Most direct fossil fuel projects are excluded, including diesel trains. Since 20 percent of the Swedish railway tracks are not electrified there could however be investments that indirectly support diesel driven railways. Also support to plug-in hybrids and gas powered vehicles that could run on natural gas and fossil fueled machinery and vehicles in the management of living resources and land use are eligible under the framework. The framework supports technological breakthroughs in fossil fuel sectors such as fossil-free steel production (through use of hydrogen), CCS in refineries and cement industry. The framework does not exclude expenditures used to finance emissions reductions projects in other countries as long as these projects fulfil the criteria specified in the framework. Projects in existing large hydro power are eligible while new large hydro- and geothermal-power as well as nuclear power are excluded from the framework.

**Sweden has a comprehensive and transparent regime for selecting and reporting on environmental targets with good use being made of independent oversight and advice.** Administrative costs (max 10 percent) associated with funded programs as well as support to NGOs and membership fees in international organisations, are eligible. Tax reduction schemes are excluded. The reporting scheme is good and comprehensive, although it does not follow the Green Bond Principle project categories. We encourage the issuer to highlight in the annual report fossil fuel aspects of eligible expenditures, such as maintenance of railway tracks that are not yet electrified. We find the governance procedures to be **Excellent**.

**Sweden has a comprehensive and ambitious set of environmental objectives.** The targets are backed up by a set of laws and regulations, advice and audit procedures as well as a detailed and transparent reporting regime. Overall, the framework of Sweden receives a **CICERO Dark Green** shading. The framework includes expenditures that also support medium and light green projects. The dark green shading assumes a vigorous implementation to follow the highest standards and to continue to allocate the majority of proceeds to dark green expenditures.

### SHADES OF GREEN

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



### GREEN BOND PRINCIPLES

Based on this review, this Framework is found to be 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 May 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

### Examples



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



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



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



Bridging technologies such as plug-in hybrid buses



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



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



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



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 Sweden's green bond framework and related policies

At 450,295 square kilometres, Sweden is the largest country in Northern Europe, the third-largest country in the European Union and the fifth largest country in Europe by area. The capital city is Stockholm. Sweden has a total population of 10.3 million and is a constitutional monarchy and a parliamentary democracy, with Legislative power vested in the 349-member unicameral Riksdag. It is a unitary state, currently divided into 21 counties and 290 municipalities. Sweden maintains a Nordic social welfare system that provides universal health care and tertiary education for its citizens. It has the world's eleventh-highest per capita income and ranks highly in quality of life, health, education, protection of civil liberties, economic competitiveness, equality, gender equality, prosperity and human development <sup>1</sup>.

Sweden has long been at the forefront of sound environmental policies and the Swedish Government pursues an ambitious political agenda in order to create sustainable financial markets that can contribute to fulfilling Sweden's environmental and climate objectives, the UN Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change.

### Environmental Strategies and Policies

Swedish environmental policy is based on the generational goals for environmental work and the national environmental quality goals that have been decided by the Riksdag. The environmental goals give a long-term signal to society as a whole about what the government and parliament want to achieve with environmental policy. From an international perspective, the Swedish environmental goals system is unique. Sweden's environmental objectives are adopted by the Riksdag and are at three levels. The highest level is the overall Generation goal – *to hand over to a next generation a society where the major environmental problems are solved, without causing increased environmental and health problems outside Sweden's borders*. The Generation goal is intended to provide guidance on environmental work at all levels of society and to demonstrate the transition of society that needs to take place within a generation to reach the environmental goals.

The second level consists of the environmental quality goals that show the environmental quality to be achieved. There are 16 environmental quality goals and for each goal there are a number of indicators that describe the state of the environment that environmental work should lead to.

In order to facilitate progress towards the generational target and the environmental quality targets in priority areas, the government (and the Riksdag in the area of climate change) has decided on stage goals, which is the third level of the environmental goals.

The work to achieve the environmental goals is done by a wide range of stakeholders at all levels of society. The targets are regularly followed up in annual reports to the government and in-depth evaluations carried out every four years, the latest in 2019. The reports contain assessments of whether decided instruments and planned measures will be sufficient to achieve the good environment described by the targets.

The in-depth evaluation of the environmental targets in 2019 shows a positive development in, among other things, air quality and acidification. In other important areas, including the recovery of ecosystems and the conservation

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<sup>1</sup> "2019 Human Development Report". United Nations Development Programme. Archived (PDF) from the original on 18 August 2013. <http://hdr.undp.org/en/countries/profiles/SWE>. <https://data.oecd.org/gdp/gross-domestic-product-gdp.htm>. Retrieved 19 March 2020.



of biodiversity, the development is heading in the wrong direction. The instruments and measures needed to improve the situation will not be in place until 2020. Greenhouse gas emissions need to decrease at a faster rate, ecological links in the landscape need to be strengthened, and the spread of dangerous substances needs to decrease.

In order to achieve a broad political consensus on environmental issues that require overall and long-term political priorities a parliamentary committee, the Environment Goals Committee, was appointed in 2010 (M 2010:04) <sup>2</sup>. The Committee's task is to propose how the environmental quality objectives will be achieved through politically based proposals for strategies with stage objectives, instruments and measures.

In order to increase the pace of the work, the Government has also established the Environment Goals Council with a mission extending to 6 May 2022. The Council consists of managers from a number of different authorities and a representative of the county administrative boards. The Council's task is to work for a cost-effective increase in the pace of work to achieve the environmental quality objectives. Some of the major areas identified are climate, sea, water and biodiversity, and large parts of the state budget have also been allocated to these.

### *Climate*

Sweden has developed an ambitious climate policy framework consisting of three pillars: the climate targets, the Climate Act and the Climate Policy Council.

The overall climate target of the Swedish policy climate framework is net-zero greenhouse gas <sup>3</sup> emissions to the atmosphere by 2045, followed by negative emissions. This target covers all emissions within Sweden's borders – so-called territorial emissions. The goal does not include emissions from international transport (so-called international bunker fuels) or natural emissions and removals from land use, land use change and forestry (LULUCF).

The goal of net-zero emissions means that emissions should be reduced at least 85% by 2045 from 1990 levels. The remaining emissions may be offset by so-called supplementary measures. Examples of such measures are anthropogenically increased carbon sinks, bioenergy with carbon capture and storage, or investments in climate change mitigation projects in other countries. After 2045, the supplementary measures should exceed the remaining emissions in order to create "negative emissions".

In addition to the overall goal of achieving net-zero emissions by 2045, Sweden has set interim targets. Under these targets, emissions that are not part of the EU emission trading system (ETS) should be reduced by 40% by 2020, 63% by 2030 and 75% by 2040, compared with 1990 levels. Parts of the interim targets for 2030 and 2040 can be achieved by means of supplementary measures corresponding to a maximum of 8 and 2 percentage points of the emission reduction targets for 2030 and 2040, respectively. The national 2030 goal is more ambitious than the binding target included in the EU regulation (Effort Sharing Regulation, ESR). Finally, the Swedish climate framework contains a special target for reducing transport emissions by 70% by 2030 from 2010 levels.

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<sup>2</sup> <https://www.sverigesmiljomal.se/sa-fungerar-arbetet-med-sveriges-miljomal/vem-gor-vad-i-miljomalssystemet/miljomalsberedningen/>

<sup>3</sup> The so-called Kyoto gases: Carbon dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), Nitrous oxide (N<sub>2</sub>O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF<sub>6</sub>).



The second pillar of the climate policy framework consists of the Climate Act (2017:720)<sup>4</sup>, which provides that the government's climate policy must be based on the climate goals and specify how the work should be conducted. According to the law, the government presents every year a climate report in the budget bill. Every four years, the Government will present a climate policy action plan on how to achieve the climate goals. On December 18, 2019, the Government submitted the first Climate Policy Action Plan to Parliament, A Unified Policy for the Climate – Climate Policy Action Plan (Bill 2019/20: 65). In the Action Plan, the Government reports on how climate policy work should be conducted during the term of office, including the decided and planned measures that contribute to achieving the national and global climate goals.

The third pillar of the framework describes the establishment of the Climate Policy Council and its mandate. The Council was established in 2017 with the task to carry out an independent evaluation of how the overall policy presented by the Government is compatible with the climate goals. The Council shall evaluate whether the focus in various relevant policy areas favours or counteracts the possibility of achieving the climate goals<sup>5</sup>.

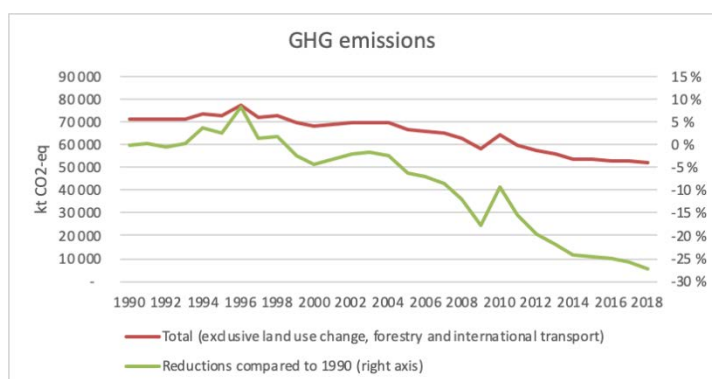


Figure 1 Total territorial GHG emissions and changes since 1990. Source: Statistics Sweden (<https://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Vaxthusgaser-territoriella-utslapp-och-upptag/>)

The total territorial greenhouse gas emissions and changes since 1990 are shown in Figure 1. Figure 2 shows the share of various emissions sources in 2018.

Manufacturing and transport are the main GHG emission sectors representing almost two thirds of Sweden's territorial emissions, followed by agriculture and electricity and district heating. Development to date has been impressive, but accelerated emission reductions are needed if the national target is to be met.

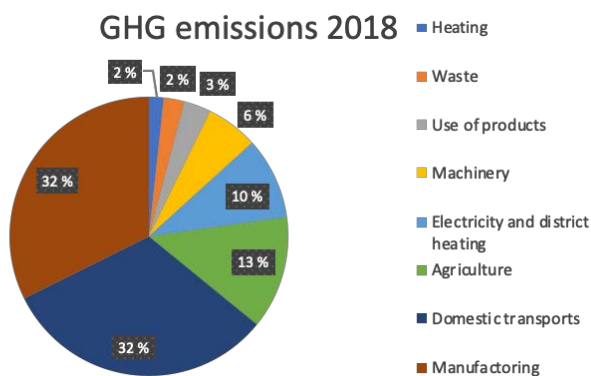


Figure 2 Share of GHG emissions in 2018. Source: Statistics Sweden (<https://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Vaxthusgaser-territoriella-utslapp-och-upptag/>)

### *Ocean, water and biodiversity*

The Baltic sea is the largest brackish water system in the world. Its only connections to more open seas are the shallow sounds between Sweden and Denmark. The sea is slowly shrinking because of geological uplifting of land after the last glaciation. The main threats to biodiversity in the Baltic Sea are eutrophication, fisheries, and pollution by contaminants and oil. A number of international policy instruments are in effect regulating the use of the Baltic sea, e.g. The Helsinki Convention of 1974 (HELCOM),

<sup>4</sup> [https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/klimatlag-2017720\\_sfs-2017-720](https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/klimatlag-2017720_sfs-2017-720)

<sup>5</sup> The Climate Policy Council is an independent, interdisciplinary expert body tasked with evaluating how well the Government's overall policy is aligned with the climate goals established by the Parliament and the Government.



the 1973 International Baltic Sea Fishery Commission (IBSFC), the 1991 Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS), the Ramsar Convention (Convention on Wetlands), the EU Birds and Habitats Directives, the Bern Convention (the Convention on the Conservation of European Wildlife and Natural Habitats), and EU's Natura 2000. To tackle this and other water related problems, the Swedish Government is implementing comprehensive measures to achieve the oceans and water- related environmental quality objectives. Powerful efforts are needed to rectify eutrophication, hazardous substances, litter and other threats to Sweden's lakes, seas and coastal areas. Protection is important to ensure and preserve biodiversity in coastal and marine areas. The Government has commissioned the Environmental Objectives Committee to propose further actions, including potential new interim targets for the conservation and sustainable use of marine and marine resources, by 1 December 2020.

### Use of proceeds

Eligible green expenditures are defined as government expenditures that contribute to achieving the environmental goals described above. Eligible expenditures may include, for example, expenditure aimed at limiting climate change, strengthening biodiversity, promoting renewable energy projects or lowering carbon dioxide emissions in public transport. An eligible green expenditure must contribute to at least one of the environmental quality objectives, which in turn is consistent with the categories specified in Green Bond Principle. Eligible green expenditures are limited to expenditures in the state budget and do not include any foregone state tax revenue due to environmental or climate considerations; or expenditures financed by state-owned companies, regions or municipalities.

Expenditure related to nuclear power, fossil energy, large-scale new hydropower or purely administrative expenditures are not included, but some administrative costs related to other eligible projects under the framework are included.<sup>6</sup> Since 20 percent of the Swedish railway tracks are not electrified there could however be investments that support diesel driven railways. Also support to plug-in hybrids and gas powered vehicles that could run on natural gas and fossil fueled machinery and vehicles in the management of living resources and land use are eligible under the 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 finance funding. The broader the project categories, the more importance CICERO Green places on the governance process.

In line with the government's mandate to the Debt Office, the choice of justified green spending is based on the environmental goals system and the climate policy framework. Corresponding to the criteria stated in the framework, eligible green expenditures are selected from realised expenditure from the previous year and expected expenditure for the current year in the central government budget that have been passed by the parliament.

The selection work is carried out within the Government Offices coordinated by the Ministry of the Environment and, if necessary, in consultation with relevant expert authorities. The selection process includes ensuring that an

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<sup>6</sup> In the framework, large-scale hydropower is defined as plants with an output of more than 10 MW. The exclusion relates to investments in new facilities and does not include investments in maintenance, improvement and efficiency of existing facilities.



amount that corresponds to the proceeds from the issuance of the Swedish government green bonds is only linked to the eligible expenses that qualify based on the predetermined criteria.

The selection of justified green expenditures is based on an assessment of the criteria set out in this framework. The evaluation and selection process consists of three steps:

1. An expenditure appropriation (or part of appropriations) in the state budget only qualify for green bond funding if it meets the strict following criteria:
  - a. Expenditure significantly contributes to at least one of the environmental quality objectives.
  - b. Expenditure does not significantly offset any other environmental quality goal.
  - c. The expenditure is very likely to contribute to long-term net positive environmental results and environmental effects.
2. A draft portfolio of justified green spending is prepared within the Government Offices. The process of joint preparation within the Government Offices, i.e. obtaining the views and approval of the ministries concerned ensures that the government's decisions are expressions of values that are covered by the government as a whole.
3. The portfolio of justified green expenditures is determined by government decisions.

The starting point for measures within the framework of Swedish environmental and climate policy is that they should contribute to achieving the environmental goals. Each measure implemented within the framework of the environmental quality objectives has been assessed holistically, in which the life-cycle perspective is an important starting point, as are the consequences for other social goals and the risk of potential lock-in effects.

In the selection process, grants are also selected that may initially qualify as eligible, but which during the iterative selection process were not deemed to meet the corresponding high standards as the final recommended grants. Possible reasons for this may be the availability of web-based reporting, the risk of containing unmotivated administrative components or lack of data availability in order to determine eligibility under the selection criteria.

## Management of proceeds

CICERO Green finds the management of proceeds of Sweden's green bonds to be in accordance with the Green Bond Principles.

The Debt Office is responsible for issuing Swedish government green bonds. The proceeds from the issuance of the green bonds must fit within the amount framed by the eligible green expenditure and a necessary margin, taking into account the uncertainty that prevails during the current budget year. Furthermore, the appropriate size of the issue shall be decided by the Debt Office on the basis of the central government borrowing objective and regular debt management policies.

The proceeds are monitored and documented by the National Debt Office according to specific procedures and managed within the framework of the ongoing liquidity and debt management. When the Swedish government green bonds have been issued, the follow-up includes that an amount corresponding to the proceeds is fictitiously allocated to the portfolio of eligible green expenses that have been selected and approved in accordance with this framework. The Debt Office uses a register/virtual account for this.

After the Government submits the Annual Report for the State for the year when the Swedish government green bonds were issued, the Swedish National Debt Office will publish the final balance for the register/virtual account for the proceeds for the Swedish government green bonds.





## 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.

The Debt Office shall publish an investor report no later than the fourth quarter of the year following the issue of the Swedish government green bonds and thereafter annually, if deemed necessary.

The report shall indicate the final distribution of the proceeds from the Swedish government green bonds between the eligible expenses, the report shall also, if feasible, include impact reporting on the positive environmental effects of green spending. Such reporting is judged to be feasible to the extent that it is included in the existing regular environmental target reporting, or other available reporting, and will be aligned with the expenditure targets. For example, the impact reporting for greenhouse gas emissions reductions will be measured in avoided greenhouse gas emissions (carbon dioxide equivalents) at an aggregate level, rather than directly corresponding effects from funded projects under a spending area. Based on existing reporting, a high degree of transparency, realistic assumptions and robust governance is sought.



### 3 Assessment of Sweden’s green bond framework and policies

The framework and procedures for Sweden’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 Sweden should be aware of potential macro-level impacts of investment projects.

#### Overall shading

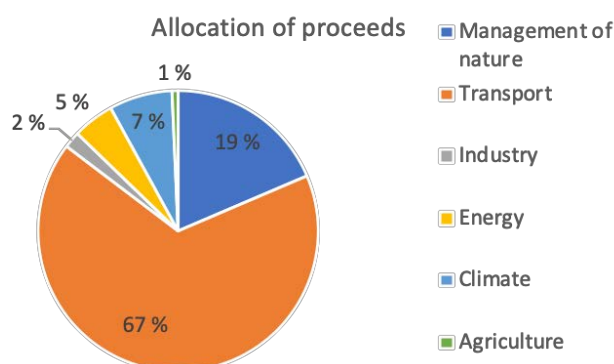
Based on the project category shadings detailed below, and consideration of environmental ambitions and governance structure reflected in Sweden’s green bond framework, we rate the framework **CICERO Dark Green**. The overall shading is based on the expenditures presented to us that have been selected to be funded in the first round of issuance. In this first round, proceeds will be allocated to all shades of green investments from light to dark green. The overall shading is based on the majority of funded projects being Dark Green.

#### Eligible projects under the Sweden’s green bond framework

At a 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”.

The proceeds of the Green Bond of the Swedish government are allocated to certain budget posts under various directorates and agencies. The budget proposition describes the use of these budget posts and hence the criteria for use of proceeds under the framework.




These budget posts have been selected following the selection procedure of the green bond framework. We note the dominance of allocation to transport related projects (mainly rail) and projects associated with management and protection of nature. According to the issuer, also costs related to administration of the programs are eligible for green bond funding.



In **table 1** below, we assign the main expenditures described above to categories as defined by the Green Bond Principles. We provide some comments to the categories and assign a separate shade of green to each of them. A more detailed description of the expenditures follows after the table.

**Figure 3** Allocation of proceeds to some main categories for the first allocation round.



Category	Environmental Quality Objective	Examples of eligible expenditures	Green Shading and some concerns
<b>Renewable energy and energy efficiency</b>  	<ul style="list-style-type: none"> <li>• Reduced Climate Impact</li> </ul>	<ul style="list-style-type: none"> <li>○ Energy efficiency (Klimatklivet)</li> <li>○ Support to solar cells, biogas and energy storage (Energiteknik and Klimatklivet)</li> <li>○ Fuel switch including connecting to district heating network (Klimatklivet)</li> </ul>	<b>Dark to Medium green</b>
<b>Pollution prevention and control</b>  	<ul style="list-style-type: none"> <li>• Reduced Climate Impact</li> <li>• Clean Air</li> <li>• Natural Acidification Only</li> <li>• A Non-Toxic Environment</li> <li>• A Protective Ozone Layer</li> <li>• A Safe Radiation Environment</li> <li>• Zero Eutrophication</li> <li>• Good-Quality Groundwater</li> <li>• Flourishing Lakes and Streams</li> <li>• A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos</li> </ul>	<ul style="list-style-type: none"> <li>○ Reduction of process-related greenhouse gas emissions from industry (Industriklivet and Klimatklivet)</li> <li>○ Supporting methane emissions reductions through production of bio methane in agriculture (Swedish Board of Agriculture and Klimatklivet)</li> </ul>	<b>Dark to Medium green</b>
<b>Environmentally sustainable management of living natural resources and land use</b>  	<ul style="list-style-type: none"> <li>• Natural Acidification Only</li> <li>• A Non-Toxic Environment</li> <li>• Flourishing Lakes and Streams</li> <li>• A Balanced Marine Environment, Flourishing</li> </ul>	<ul style="list-style-type: none"> <li>○ Measures and protection for valuable nature</li> <li>○ Measures for marine and aquatic environment</li> </ul>	<b>Dark to Medium green</b>



- Coastal Areas and Archipelagos
- Thriving Wetlands
- Sustainable Forests
- A Varied Agricultural Landscape
- A Magnificent Mountain Landscape
- A Rich Diversity of Plant and Animal Life
- Good-Quality Groundwater
- Zero Eutrophication
- No Fertilizer Overuse.
- Reduced Climate Impact

**Terrestrial and aquatic biodiversity conservation**

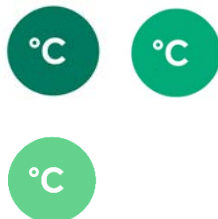


- Flourishing Lakes and Streams
- A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos
- Thriving Wetlands
- Sustainable Forests
- A Varied Agricultural Landscape
- A Magnificent Mountain Landscape
- A Rich Diversity of Plant and Animal Life

- Measures for marine and aquatic environment
- Measures and protection for valuable nature

**Dark to Medium green**

**Clean transportation**





- Reduced Climate Impact
- Clean Air
- A Well-Built Environment

- Operation, maintenance and reinvestments on the state railway network
- Support for low emission vehicles (Klimatbonus and Klimatklivet)
- Low carbon transportation infrastructure such as charging

**Dark to Light green**



			stations (Klimatklivet)
<p><b>Sustainable water and wastewater management</b></p> 	<ul style="list-style-type: none"> <li>• Good-Quality Groundwater</li> <li>• A Non-Toxic Environment</li> <li>• Flourishing Lakes and Streams</li> <li>• A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos</li> <li>• Zero Eutrophication</li> </ul>	<ul style="list-style-type: none"> <li>○ Measures for marine and aquatic environment</li> </ul>	<b>Dark green</b>
<p><b>Green buildings</b></p> 	<ul style="list-style-type: none"> <li>• A Well-Built Environment</li> <li>• Reduced Climate Impact</li> </ul>	<ul style="list-style-type: none"> <li>○ Energy efficiency such as district heating and renewable energy such as solar cells (Energiteknik and Klimatklivet)</li> </ul>	<b>Medium green</b>

**Table 1.** Eligible project categories and examples of eligible projects.

The expenditures presented in the table above are described in more details below in an abridged, and hence slightly incomplete and simplified form. The percentages refer to share of total green bond funding for the first issuance.

*Renewable energy and energy efficiency (5 % Dark green)*

**Energiteknik (5%)**; Proceeds may be allocated to cover expenditures to stimulate the dissemination of certain energy related technical solutions such as solar cells, biogas and energy storage that are considered to have positive effects on the climate. (*Dark Green*)

*Pollution prevention and control (3 % Dark to Medium green)*

**Industriklivet (2%)** is administered by the Swedish Energy Agency. Proceeds are allocated to cover expenditures related to policy measures that aims at reducing process-related greenhouse gas emissions from industry as well as negative emissions technologies. Industriklivet is a program to support Swedish industry in the transition to zero emissions of greenhouse gases by supporting the development of transformational zero and negative emission technologies. The program for 2020 have a budget of 600 million SEK divided in two parts. One part is 500 million SEK allotted to research, feasibility studies and investments (includes also pilots and demos) to reduce process-



related emissions in industry. The idea is that it should support technological breakthroughs and not aid incremental emission reduction activities such as energy efficiency in fossil fuel use. This has so far included projects such as fossil-free steel production (through use of hydrogen), biochar use in production of metal powder, hydrogen production in refineries, fossil-CCS in refineries, carbon capture technologies in cement industry, and fuel switch in cement industry. A second part is 100 million SEK allotted to negative emission technologies (research, development, test, demo and investments of). So far it has supported various bio-CCS projects amongst them at a bioenergy-based combined heat and power (CHP) plant in the district heating industry and at a sulphate factory in the pulp and paper industry. CICERO Shades of Green sees this program as an important initiative to support real transitional change also within typical fossil fuel sectors such as refineries. Support in these sectors are however for zero emission solutions such as hydrogen and carbon capture and storage which are part of the long term solution. There are however a risk that e.g. CCS projects that capture emission from production of fossil fuels, if not combined with zero emission solutions in the whole value chain, emissions from fossil fuel consumption (gasoline and diesel) still exists. (*Dark to Medium green*)

**Agriculture (1%)** accounts for 13% of Sweden's GHG emissions. The Swedish Board of Agriculture is allocated 1% of the total green bond funding (50 MSEK). 30 MSEK is allocated to supporting methane emissions reductions through production of bio methane, which can be used as fuel in e.g. transport, after it has been refined. Methane accounts for nearly half of agricultural GHG emissions in Sweden, when measured in CO<sub>2</sub> equivalents. This measure is therefore expected to be effective in reducing the sector's GHG emissions. Other eligible expenditures are targeted at providing a wider set of environmental benefits, and thus less directly targeted at GHG emissions. Just over 17 MSEK is allocated to research and development aimed at fulfilling the sector-relevant environmental quality goals, in particular A Varied Agricultural Landscape, No fertilizer overuse, A Non-Toxic Environment, and Reduced Climate Impact. The remaining expenditure (2.5 MSEK) is targeted at supporting sustainable use of pesticides.

Overall, the expenditures in the agricultural sector are targeted narrowly at reducing environmental impacts, meaning that there is low risk of rebound effects or lock-in, which could be problems with more general support to agriculture, particular when livestock is involved. Given the positive expected climate and environmental impacts, this category is rated *Dark Green*.

### *Marine and Water Management (7 % Dark green)*

The budget post **Measures for marine and aquatic environment** accounts for 9% of total green bond funding. The major threats to marine and aquatic environment are eutrophication, acidification, pollution, and invasive species<sup>7</sup>. There are particular challenges in The Baltic Sea on Sweden's east coast. It is the world largest brackish water system and it takes 25-35 years for all its the water be replenished through the shallow sounds between Sweden and Denmark. Many of the marine species there are at the limit of their distributions due to the above-mentioned environmental threats and overfishing<sup>8</sup>. There is a goal that Sweden's target for renewable energy production does not come at a cost in terms of marine and aquatic environment.

The majority of expenditure under this post is on measures to protect, restore, and improve marine and aquatic environments. This post includes a wide variety of measures, with major expenditures on local aquatic environmental protection, avoiding over-use of fertilizers, measures addressing the environmental impact of hydropower installations, safe drinking water, and combating invasive species. Expenditure may include state support, co-financing of EU grants, membership in international organizations and evaluation of the above-

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<sup>7</sup> <https://www.havochvatten.se/hav/fiske--fritid/miljopaverkan.html>

<sup>8</sup> [https://www.eea.europa.eu/publications/report\\_2002\\_0524\\_154909/regional-seas-around-europe/page141.html](https://www.eea.europa.eu/publications/report_2002_0524_154909/regional-seas-around-europe/page141.html)



mentioned measures. Smaller expenditures to support the Meteorological and Hydrological institutes and the Geological Survey are also included.

Remaining expenditure are targeted at treating wastewater from pharmaceutical drug residues and for reducing microplastic emissions to aquatic environments (170 MSEK); and to regional authorities' (länsstyrelserna) work on implementing the EU Water Framework Directive, implementing protection of marine areas, strengthening the work on conservation plans, and on monitoring wastewater treatment facilities (180 MSEK).

These expenditures are expected to generate a wide set of improvements in marine and aquatic environments. We see no particular risk of rebound or lock-in.

#### *Valuable nature (11 % Dark to Medium green)*

**Measures for valuable nature (6%):** Three budget posts under the Swedish government's eligible budget items are allocated to the Swedish Environmental Protection Agency. The appropriation item will be used for costs related to conservation work, species protection, green infrastructure, including regional action plans, wildlife and predator management, the Swedish wildlife management strategy, prevention of the introduction and spread of invasive species, and special investment to strengthen the conditions for wild pollinators. Also included are costs related to maintenance, property management, building investments, and monitoring of national parks, nature reserves, areas included or proposed to be included in the Natura 2000 network, other areas with area protection, Royal National City Parks, and Ramsar (wetland) areas. Grants to non-profit organizations that work with natural, environmental or outdoor life issues to disseminate information about the public right, are also eligible under this framework, as are membership fees and support to international organizations promoting biodiversity work. This category might include fossil fuel elements hence the Medium Green shading. These elements are linked to the use of fossil fueled machinery and vehicles in the preservation work.

**Protection of valuable nature (5%):** The appropriation item may be used for governments costs linked to expropriation of land with the aim of protecting valuable natural areas according to the Environmental Code.

#### *Transportation (67 % - majority of Dark green but also Medium and Light green)*

**Expenditure on traffic management, operation, maintenance and reinvestments on the state railway network (58 %).** The main part of the green bond funding will be allocated to maintenance and reinvestment costs for railway tracks. Also, expenses to be able to use and collaborate with the common radio communication system Raket will be eligible. Maintenance activities may include support for fossil fuel machinery through the supply chain. The transport agency ("Trafikverket") has however environmental requirements for sub-contractors in line with the national goal of having net-zero greenhouse gas emissions by 2045 at the latest. There might also be some support for a few specialized vehicles owned by the agency such as a diesel driven snow blower or other maintenance equipment where no cleaner alternatives exist.

In Sweden, the transport sector is responsible for approximately 30% of all CO<sub>2</sub> emissions. The official aim is to transfer more of the goods from road to rail and sea transport. Regarding emissions from domestic transport, Sweden has as a target that emissions shall be reduced by at least 70% by year 2030 compared to the 2010 level. Shipments by electric trains are the most eco-friendly alternative available in the market.

80 percent of the Swedish railroad is electrified. According to the issuer diesel driven trains ran 2053 tkm of 36201 tkm for goods and 5102 tkm of 128894 tkm passenger transport in 2018, about 4% of total. There are no government plans to phase-out diesel trains.



Table 2 shows some emission factors related to goods transport, illustrating the environmental advantages of rail transport. Note however that expenditures under this budget post is not for rail transport, only management, operation and maintenance of the tracks. No railway stations will be funded.

Transport mode	Emission factor (gCO <sub>2</sub> /tonkm)
Electrical trains	0,0022
Diesel trains	19.75
Trucks (Trucks with trailers 50-60 t)	64
Ocean freight (RoRo 14 000 dwt)	40

**Table 2.** Emission factors from transport of goods. Sources: NTM, Vattenfall

**Climate bonus car scheme (9 %):** The climate bonus applies to cars and light trucks that emit <70 gCO<sub>2</sub>e/km (WLTP). The bonus is currently 60 000 SEK for zero-emissions cars, and reduced by 714 SEK per gCO<sub>2</sub>e/km, thus it is 10 020 SEK for a vehicle emitting 70g/km. The list of eligible vehicles for 2020 includes models fuelled by electricity, plug-in hybrid technology, hydrogen, methane, and methane – gasoline hybrid technology. In the period Jan 2019 – Feb 2020 the electric vehicles share was 33%, the plug-in hybrids share was 54% and the methane vehicles share was 12,4%.

While the methane vehicles can run on natural gas, 94% of methane gas used for transport in Sweden is biomethane<sup>9</sup>, and policies seek to increase biomethane production further. Biomethane is produced mainly from food waste, wastewater, and manure, which can be considered renewable sources. We encourage the issuer to continually report on the share of biomethane in the transport sector. Plug-in hybrid vehicle can run on gasoline and will not be a part of an emissions free transport system. However, they may play a role in reducing emissions while the charging infrastructure is developing. The climate bonus does not promote vehicles using bioethanol or biodiesel, which can have large life-cycle emissions.

The plug-in hybrid vehicles with the shortest battery range and - to the extent natural gas is used - methane vehicles are considered Light Green solutions.

While expected to contribute to reducing transport emissions, the expenditure on this scheme covers all Shades of Green from Dark to Light green.

*Cross category initiative (Dark to Light green).*

**Klimatklivet (7%):** The appropriation item may be used to support for climate initiatives in, for example, transport, industry, housing, premises, city building and energy. This can include support for everything from charging stations for electrical vehicles, biogas and infrastructure such as bicycle lanes to the destruction of nitrous oxide and the exchange of oil with district heating. Support can be given to everyone except private individuals. Those who have been granted support are, for example, companies, municipalities, county councils, tenant-owner associations and other organizations. Support for biogas and natural gas as transport fuels may be included.

Applications submitted to Klimatklivet are first reviewed by the county administrative board after the application round has closed. When the county administrative board has submitted an opinion on the application, the final review will continue with the Swedish Environmental Protection Agency, which also makes all decisions.

<sup>9</sup> <https://www.energigas.se/fakta-om-gas/fordonsgas-och-gasbilar/statistik-om-fordonsgas/>

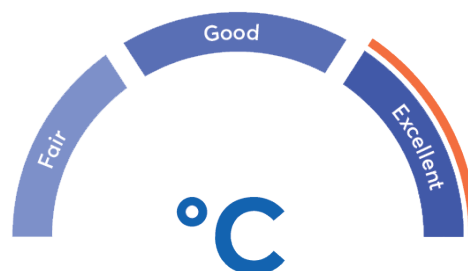




## Governance Assessment

Four aspects are studied when assessing the Sweden'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.

Sweden's environmental targets, climate targets in particular, are among the most ambitious in the world today. The selection process of eligible funding under the green bond framework is well organized, however the selection criteria is mostly qualitative and difficult to define precisely. Management of proceeds are of a very high standard, while reporting on use of proceeds and impacts will follow official Swedish reporting guidelines which are comprehensive, although it does not follow the Green Bond Principles when it comes to categories. The overall assessment of Sweden's governance structure and processes gives it a rating of **Excellent**.



## Strengths

Sweden has a comprehensive and ambitious set of environmental objectives. The climate change targets are backed up by a set of laws and regulations, advice and audit procedures as well as a detailed and transparent reporting regime. It is clear strength that the framework has a broad scope targeting both climate and nature and marine preservation. A further strength is that one of the criteria for budget posts to be eligible for the green bond is that they do not impede or counteract any other environmental quality objectives.

From a climate perspective the transport sector is a major challenge in Sweden (as well as most other countries). The use of a major portion of the proceeds from the green bond on this sector is therefore well justified. It is a clear strength of the framework that expenditures on eligible projects includes assessment of potential rebound and lock-in effects as well as life cycle aspects. Exclusion of direct fossil fuel energy projects as well as nuclear power, is also a strength.

There are also several examples of support for technological breakthroughs in heavy emitting sectors such as iron and steel, cement and CCS and hydrogen in refineries that go beyond incremental emission reduction activities such as energy efficiency in fossil fuel use. Industriklivet is such an example.

It is further a strength that the investor report will leverage existing reporting capabilities with respect to the set up for annual reporting of Sweden's Environmental Objectives System and other available reporting. In this way, well-established reporting procedures within the Swedish climate- and environmental policy framework will be utilised. The report is compiled in collaboration with the Environmental Protection Agency.

## Weaknesses

We note the inclusion of fossil fuel elements in the Clean transportation category (Climate bonus car scheme and Klimatklivet) where natural gas powered and plug in hybrid vehicles can get support. The Government of Sweden argues that the transport sector is the single biggest challenge in breaking Sweden's dependence on fossil fuels. Domestic transport accounts for one third of Sweden's total emissions. In order to achieve both the climate goal and the goal of fossil-free vehicle fleet in 2030, efforts are needed that accelerate the transition. The plug-in hybrids, although partially depending upon fossil fuels, constitute an important part of the transition during a period when the Swedish charging infrastructure is growing. There may also be elements of fossil fuel use in the



investments and maintenance of railway networks and in management of ecosystems and natural living resources (machinery and vehicles). We encourage the government to apply the highest standards for all its activities such as buying zero emission vehicles where feasible and apply strict environmental requirements in the supply chains.

### Pitfalls

Management and protection of various valuable nature types is the second largest receiver of proceeds from this green bond. That is excellent and receives a dark to medium green shading but may have uncertain impacts on e.g. greenhouse gas emissions. This should be followed carefully when implementing projects under this category.

The broad scope of the framework creates some uncertainty when it comes to the specific type of future projects that can be found eligible under the framework, although the overall intention of the green bond programme is excellent. Much will therefore depend on a vigorous selection procedure aiming for the highest standards.

Industriklivet is an important initiative to support real transitional change also within typical fossil fuel sectors such as refineries. Support in these sectors are for zero emission solutions such as hydrogen and carbon capture and storage which are part of the long-term solution. There is however a risk that for e.g. CCS projects that capture emission from production of fossil fuels, if not combined with zero emission solutions in the whole value chain, emissions from fossil fuel consumption (gasoline and diesel) still exist.

We note the inclusion of some administrative costs, support to NGOs and membership fees in an international organisation working for biodiversity conservation in the eligible cost categories under this framework. The impact of these costs may be difficult to assess. Furthermore, the budget post for railway support is not part of the overall framework of the environmental goals and as such the budget post is no part of the existing reporting regime within the framework of the environmental targets. The issuer is exploring to what extent adequate reporting could be produced for investment and maintenance in railway networks. Other than that, the investor report will leverage on existing reporting capabilities with respect to the set up for annual reporting of Sweden's Environmental Objectives System and other available reporting. In this way, well-established reporting procedures within the Swedish climate- and environmental policy framework will be utilised. We note that this way of reporting is not in accordance with Green Bond Principles guidelines, but we assess it to be adequate. Information about most of the initiatives including impacts are made accessible on the internet (mostly in Swedish). We encourage Sweden to make the reporting transparent on the extent to which the expenditures include fossil fuel elements, the share between expenditures that cover the government's administration costs (including salary to government officials) versus allocations to green projects.



# Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	Framework	The green bond framework dated April 2020
2	En introduktion till miljömålen	An introduction to the environmental targets, <a href="https://www.naturvardsverket.se/Om-Naturvardsverket/Publikationer/ISBN/8800/978-91-620-8821-7/">https://www.naturvardsverket.se/Om-Naturvardsverket/Publikationer/ISBN/8800/978-91-620-8821-7/</a>
3	Vem gör vad inom miljömålsarbetet?	Who does what within environmental work? <a href="http://www.sverigesmiljomal.se/sa-fungerar-arbetet-med-sveriges-miljomal/vem-gor-vad-i-miljomalssystemet">http://www.sverigesmiljomal.se/sa-fungerar-arbetet-med-sveriges-miljomal/vem-gor-vad-i-miljomalssystemet</a>
4	Årlig uppföljning av miljömålen	Annual reporting on environmental targets, <a href="http://www.naturvardsverket.se/Miljoarbete-i-samhallet/Sveriges-miljomal/Miljomalssystemet/Arlig-uppfoljning/">http://www.naturvardsverket.se/Miljoarbete-i-samhallet/Sveriges-miljomal/Miljomalssystemet/Arlig-uppfoljning/</a>
5	Klimatpolitiska ramverket	Climate policy framework, <a href="https://www.klimatpolitiskaradet.se/det-klimatpolitiska-ramverket/">https://www.klimatpolitiskaradet.se/det-klimatpolitiska-ramverket/</a>
6	Klimatpolitiska handlingsplanen - fakta PM	Climate policy action plan, <a href="https://www.regeringen.se/4af76e/contentassets/fe520eab3a954eb39084aced9490b14c/klimatp-oli-tiska-handlingsplanen-fakta-pm.pdf">https://www.regeringen.se/4af76e/contentassets/fe520eab3a954eb39084aced9490b14c/klimatp-oli-tiska-handlingsplanen-fakta-pm.pdf</a>
7	Indikatorer som används för att följa upp miljömålen (not necessarily the indicators used in Sovereign Green Bond reporting)	Indicators used for environmental targets (not necessarily the indicators used in Sovereign Green Bond reporting), <a href="http://www.sverigesmiljomal.se/indikatorer/">http://www.sverigesmiljomal.se/indikatorer/</a>
8	Independent evaluation of Sweden's environmental measures and overall condition	<a href="https://epi.envirocenter.yale.edu/epi-country-report/SWE">https://epi.envirocenter.yale.edu/epi-country-report/SWE</a>  <a href="https://www.climate-change-performance-index.org/">https://www.climate-change-performance-index.org/</a>



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9	Nettolista Cicero_Final	A spreadsheet with references to the 2020 budget of the Swedish government and with links to several governmental documents.
10	Klimatbonusbilar 2020	Eligibility criteria for the climate bonus car scheme for 2020

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## Appendix 2: About CICERO Shades of Green

CICERO Green is a subsidiary of the climate research institute CICERO. CICERO is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international cooperation. CICERO has garnered attention for its work on the effects of manmade emissions on the climate and has played an active role in the UN's IPCC since 1995. CICERO staff provide quality control and methodological development for CICERO Green.

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green bond investments. CICERO Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO Green is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure. CICERO Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

We work with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions (ENSO). Led by CICERO Green, ENSO contributes expertise to the second opinions, and is comprised of a network of trusted, independent research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University and the International Institute for Sustainable Development (IISD).

