Green bond

Investor report 2021

RIKSGÄLDEN
SWEDISH NATIONAL DEBT OFFICE

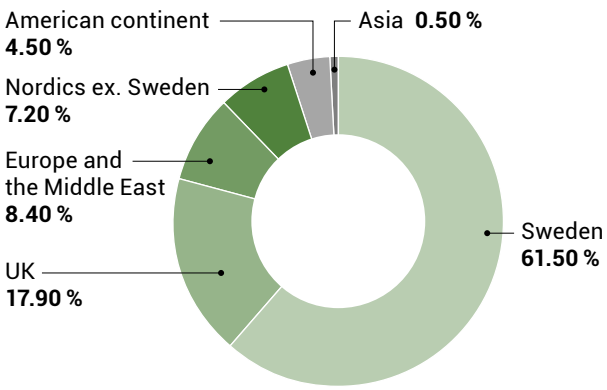
Contents

Executive Summary

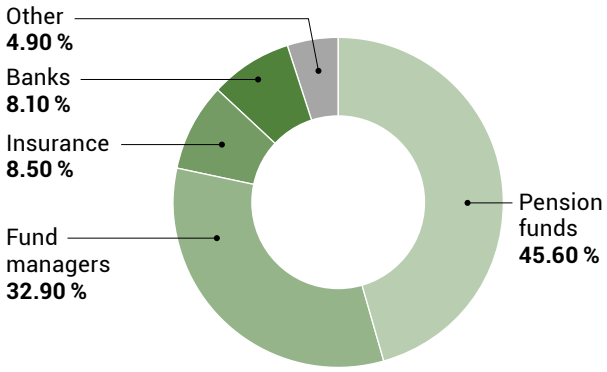
Portfolio ratio	
Renewable energy and energy efficiency	4.6 %
Pollution prevention and control	13.2 %
Environmentally sustainable management of living natural resources and land use	1.1 %
Terrestrial and aquatic biodiversity conservation	11.6 %
Clean transportation	62.3 %
Sustainable water and wastewater management	7.2 %
Total	**100.0 %**

Appropriations	2019	2020
Energy technologies	730	189
Climate bonus	1,280	482
Climate investments	569	234
Green Industry Leap	41	38
Measures to improve the environment in agriculture	180	39
Protection of valuable natural environments	977	204
Measures for valuable natural environments	862	266
Maintenance of state transport infrastructure, Railways	9,779	2,683
Measures for marine and aquatic environments	1,151	296
Total	**15,567**	**4,433**

Breakdown between regions



Breakdown between investor categories



Key facts:

- Sweden's first sovereign green bond
- Linked to appropriations or appropriation items in the Swedish central government budget adopted by the Riksdag
- Projects that contribute to fulfilling Sweden's environmental objectives, the Paris Agreement and the UN Sustainable Development Goals (SDGs).
- Based on existing reporting

16 %

Share of capital market funding 2020

Green bond ISIN	XS2226974504 (RegS)
Reporting period	2019 and 2020
Report publication date	22 November 2021
Green funding 2020	20 billion SEK

Introduction

In September 2020, the Swedish National Debt Office issued Sweden's first sovereign green bond as mandated by the Government. Using strict selection criteria, the Government allocated the proceeds of the bond to specific categories of green expenditures in the central government budget. The purpose of this report is to present how those funds have been distributed and describe the ways in which they help to achieve Sweden's environmental and climate objectives.

Sweden has declared its intention to become one of the world's first fossil-free welfare states. It is implementing measures that contribute to meeting the objectives of the United Nations 2030 Agenda for Sustainable Development, the Paris Agreement on climate change and other international environmental conventions. Sweden plans to be climate-neutral by 2045, whereas the EU is aiming for 2050. Sweden has high aspirations in other environmental areas as well, such as nature conservation, biodiversity and ecosystem services.

The financial market is playing a fundamental role in the transition required. In 2015, the Riksdag (the Swedish Parliament) set a goal for the financial system to contribute to a sustainable development. Accordingly, there is currently a focus on sustainable financing among actors in both the private and public sectors in Sweden, and the sovereign green bond forms part of the Government's efforts to support and promote such financing. The green bond issuance helps to illuminate Sweden's environmental and climate initiatives and their effects.

In June 2020, the Government adopted Sweden's sovereign green bond framework. The framework describes how eligible expenditure is defined, selected, presented and reported, as well as Sweden's view of the financial market's role in the transition towards reduced carbon emissions and sustainable development. The framework has been drawn up and prepared within the Government Offices in consultation with relevant expert agencies and follows the Green Bond Principles (GBP) market standard. Independent climate research institute the Centre for International Climate and Environment Research (CICERO) has reviewed the framework and given it a rating of "dark green" – the highest level of ambition. SEB has served as strategic advisor throughout the course of the framework's development, transaction and the reporting.

On 1 September 2020, the Debt Office issued Sweden's first sovereign green bond, with maturity of 10-year. The issue volume amounted to 20 billion SEK, and there was great interest from the market. The total order book exceeded SEK 47 billion and included 72 separate investors. The bond was issued through a syndication and the yield (interest rate) was set at 0.09 per cent.

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In accordance with the selection process described in the framework, the proceeds from the issue have been linked to expenditures in the central government budget that contributes to fulfilling Sweden's environmental and climate objectives, the UN Sustainable Development Goals (SDGs) and the Paris Agreement. This report presents how the proceeds are distributed among the different eligible areas of expenditure. The Debt Office's documentation concerning follow-up on proceeds from the issue will be presented in the Debt Office's annual report for 2021 and thus be audited by the Swedish National Audit Office in accordance with the audit procedures applying to Swedish government agencies.

The report also includes output and impact statements outlining the positive environmental impacts of the green expenditure if such information is available. The Debt Office's compilation is based on the reporting conducted by relevant agencies and county administrative boards within the environmental objectives system, which is followed up annually by the Government and reported to the Riksdag.

KEY REPORTING PRINCIPLES

- This report is based on existing reporting of the positive environmental impacts of the green expenditures
- First, recognised outputs (ex-post) are presented. Second, expected impacts (ex-ante) are presented when outputs are not available
- The reporting period refers to green bonds issued in the prior year
- If existing reporting do not contain quantitative assessment of impacts, available qualitative descrip-tions have been used instead.
- The proceeds are allocated such that they equal 100 per cent of eligible approved expenditure in 2019 and approximately 23 per cent of the expenditure in 2020. The allocation is presented in more detail in the allocation table on page 8
- The output and impact reporting has not been adapted to allocation shares. Rather, it is based on the overall statement of appropriations in accordance with the stipulations in the reporting section of the green framework
- Appropriations cover the disbursements made during the year in focus. Certain numbers differ from the allocation table because some projects span several years and their budget is thus charged to several fiscal years

Process for selecting eligible green expenditures

The Swedish environmental objectives system puts the environmental dimension of sustainable development into concrete terms and provides an important foundation for the national implementation of the United Nations 2030 Agenda for Sustainable Development, with its 17 global sustainable development goals. There are three dimensions to sustainability – economic, social and environmental. All three of these must be taken into account simultaneously for a sustainable societal transition to occur.

In terms of climate and the environment, the Swedish environmental objectives and the global goals involve the same challenges. Fulfilling the environmental objectives means that we fulfil the environmental dimension of the 2030 Agenda in Sweden.

The environmental objectives include the climate objectives, which stipulate that, by 2045, Sweden shall have net zero emissions of greenhouse gases to the atmosphere – and negative emissions thereafter. Sweden wants to be a pioneer in the necessary climate transition and contribute to an ambitious implementation of the Paris Agreement. The environmental objectives system and Sweden's climate policy framework are described in more detail in Appendix 1.

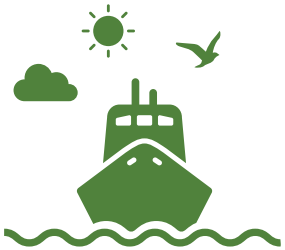
Green expenditure is quality-assured and prioritised

The environmental and climate objectives were the starting point in choosing the central government budget expenditure to which the green bond would be connected. The evaluation and selection process followed several quality assurance steps in accordance with the framework for Swedish sovereign green bonds. For an appropriation (or appropriation component) in the central government budget to qualify as eligible green expenditure, the appropriation must, according to the framework:

a. significantly contribute to at least one of the environmental quality objectives,
b. not significantly counteract another environmental quality objective,
c. be highly likely to contribute to long-term net positive environmental results and impacts.

Also, it is stipulated that each measure implemented within the environmental quality objectives framework shall be preceded by an overall assessment based on a number of different aspects from available information. In this, a life-cycle perspective is an important starting point as are the consequences for other social objectives and the risk of possible lockin effects. Based on these strict criteria and subsequent quality assurance and prioritisation, nine appropriations, or appropriation components, were selected:

- Energy technologies
- Climate bonus
- Climate investments
- Green Industry Leap
- Measures to improve the environment in agriculture
- Protection of valuable natural environments
- Measures for valuable natural environments
- Maintenance of state transport infrastructure, Railways
- Measures for marine and aquatic environments



The purpose of the appropriations and appropriation items is described in more detail in Appendix 2. How the appropriations are mapped against categories in the ICMA green bond principles and environmental objectives is shown in the allocation table on page 8.

During the iterative selection process, appropriations are disqualified if, even after initially appearing eligible, they are deemed not to meet the same high standards of those appropriations that are ultimately recommended. This may be due to the risk of an appropriation containing unjustified administrative components or involving details that are difficult to confirm.

Allocation of expenditure

In accordance with the criteria set out in the framework, the eligible green expenditure has been selected from the previous year's realised expenditure and expenditure for the current year in the central government budget adopted by the Riksdag.

The size of the Swedish sovereign green bond issue must be accommodated within the eligible expenditure, with a safety margin that takes into account the uncertainty that always exists during the relevant fiscal year.

In preparation for issuing the first sovereign green bond, the Government adopted an expenditure limit, including a safety margin, of SEK 30 billion. The Debt Office then decided on the issue size of SEK 20 billion, using the objective and guidelines for central government debt management as the foundation.

The issue size has been allocated such that it equals 100 per cent of eligible expenditure in 2019 and approximately 23 per cent of expenditure in 2020. The breakdown is presented in more detail in the allocation table below.

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Allocation of proceeds

The table below presents how the proceeds from the issue have been allocated and how the appropriation items are sorted in relation to the Green Bond Principles and the environmental quality objectives. Eligible green expenditure shows the definitive outcome. The figures for 2020 in the green framework are forecast figures, and thus differ from the outcome.

		2019			2020				
Green Bond Principles categories	Eligible green expenditures	Outcome eligible green expenditures (million SEK)	Expenditures allocated from the green bond (million SEK)	Allocation, %	Outcome eligible green expenditures (million SEK)	Expenditures allocated from the green bond (million SEK)	Allocation, %	Environmental quality objective	SDG
Renewable energy and energy efficiency	Energy technologies	730	730	100 %	814	189	23 %		
Pollution prevention and control	Climate bonus	1,280	1,280	100 %	2,078	482	23 %		
	Climate investments	569	569	100 %	1,009	234	23 %		
	Green Industry Leap	41	41	100 %	165	38	23 %		
Environmentally sustainable management of living natural resources and land use	Measures to improve the environment in agriculture	180	180	100 %	169	39	23 %		
Terrestrial and aquatic biodiversity conservation	Protection of valuable natural environments	977	977	100 %	878	204	23 %		
	Measures for valuable natural environments	862	862	100 %	1,146	266	23 %		
Clean transportation	Maintenance of state transport infra-structure, Railways	9,779	9,779	100 %	11,557	2 683	23 %		
Sustainable water and wastewater management	Measures for marine and aquatic environ-ments	1,151	1,151	100 %	1,277	296	23 %		
		15,567	**15,567**		**19,093**	**4,433**			

Output and impact reporting

The compilation of outputs and impacts is based on the reporting available from other government agencies and is not necessarily exhaustive. Reporting can thus differ between each appropriation. The appropriation headings are sorted according to the Green Bond Principles.

Outputs and impacts in brief

Subsidies to promote the use of solar cell technology were disbursed to over 27,000 individuals, municipalities and businesses in 2019 and 2020.

The energy storage subsidy for self-generation of renewable electricity was disbursed to 1,041 private individuals.

The climate bonus (Bonus Malus) has helped to increase the proportion of plug-in electric vehicles and natural gas vehicles as a percentage of newly registered cars, from 6.5 per cent in the first half of 2018 to over 25 per cent in the first half of 2020.

The financed measures of the Climate Leap are expected to lead to an average reduction in emissions of 1.5 kg and 1.7 kg of carbon dioxide per invested krona for 2019 and 2020, respectively and reduce climate-impacting emissions by 133,571 and 405,030 tonnes of carbon dioxide equivalents per year for 2019 and 2020, respectively.

It is estimated that the **research grant of the Green Industry Leap** could contribute to negative emissions in the amount of 2 million tonnes of carbon dioxide equivalents annually, and its contribution to pilot and demonstration plants for fossil-free steel has the potential to reduce Sweden's total carbon emissions by 10 per cent annually.

Subsidies for methane gas reduction have helped to bring about a total reduction in emissions of over 53,000 tonnes of carbon dioxide equivalents.

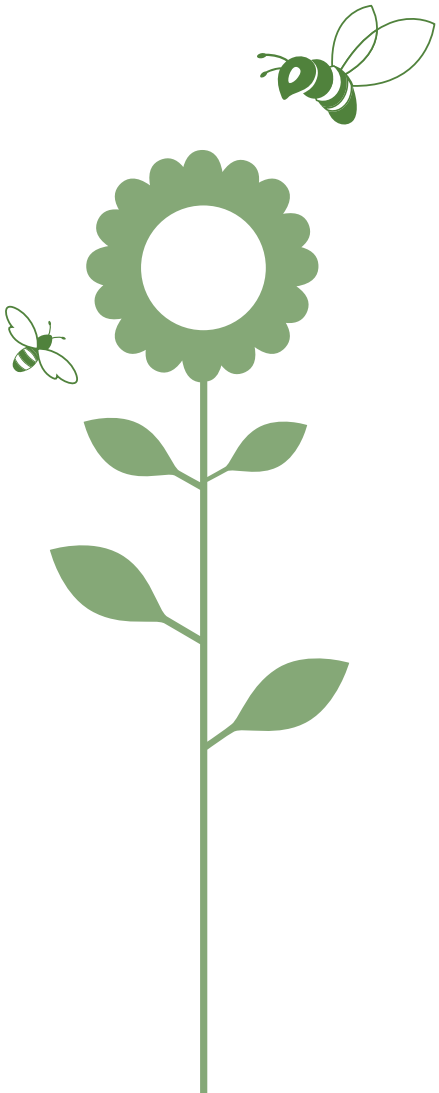
Subsidies for biogas production have helped to bring about a total reduction in emissions of 296,000 tonnes of carbon dioxide equivalents.

Protection of valuable natural environments has, in 2019 and 2020, contributed to the formation of 312 new nature reserves, covering 204,000 hectares, and the protection of 450 hectares through voluntary nature conservation agreements between the state and landowners.

Measures for valuable natural environments have helped to restore 10,600 hectares of wetlands and recover the pollinating anthophora plagiata bee species from its critical endangerment status.

Railway maintenance has been used for improving the standard and accessibility of railway transport by replacing 190 kilometres of track in 2019 and 2020, 130 kilometres of overhead contact wires and 19 bridges.

Measures for marine and aquatic environments have mainly been used for projects to reduce eutrophication. In 2019 and 2020, 595 projects were launched.



Energy technologies

The appropriation has been used mainly for investment subsidies for solar cells and energy storage.

Outcome of investment subsidies for solar cells
Investment subsidies for solar cells can be disbursed to private individuals, municipalities and businesses. The subsidy can be granted to all on-grid solar cell systems as far as funding allows and may amount to a maximum of 20 per cent of the costs eligible for the subsidy. The subsidy may not exceed SEK 1.2 million per system, and costs eligible for the subsidy may amount to a maximum of 37,000 per kW peak power.[1]

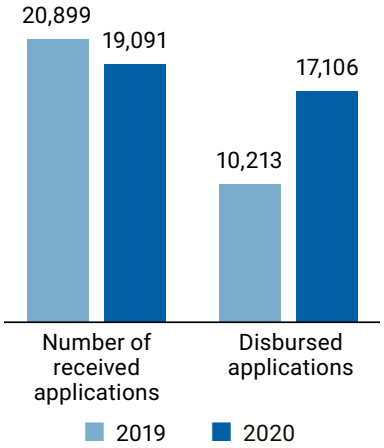
Environmental benefits of electricity production from solar cells
A solar facility generally has an estimated life of 25–30 years and contributes to a number of environmental benefits over its operational lifetime.[2] The greatest benefit is that the solar cells produce electricity from renewable energy, although the electricity production also has the advantage of being quiet and hence undisruptive to its surroundings. Additionally, electricity production and use take place in close proximity to each other, reducing transmission losses in the electricity grids. When solar cells are installed on rooftops, production does not require any additional land area either. In Sweden, it takes around two to three years for a solar facility to produce the amount of energy used in its production, transportation and operation. This is known as "energy payback time" and can vary depending on how the solar cells are manufactured and where they are used.

The impact of solar cells is difficult to estimate because it is not possible to identify exactly what electricity production they have replaced.[3] It is, however, possible to compare how much carbon dioxide solar cells generate per produced kilowatt-hour in relation to electricity from other energy sources. The UN Intergovernmental Panel on Climate Change (IPCC) presents average carbon emissions in electricity production from different energy sources in a report from 2014. According to the report, solar energy causes 41 grams of carbon dioxide per produced kilowatt-hour (gCO_2/kWh). This can be compared with electricity produced from coal, which releases 820 gCO_2/kWh, or electricity produced from natural gas, which releases 490 gCO_2/kWh. These types of calculations can differ depending on the assumptions made, and for this reason other reports may present different figures.

Outcome of investment subsidies for energy storage
Private individuals wishing to store their self-generated electricity can apply for a subsidy for the installation cost of an energy storage system. Grants may be given to a maximum of 60 per cent of costs for the system, although not exceeding SEK 50,000. To obtain a grant, the energy storage system must be connected to a self-generation facility of renewable electricity that is ongrid. Energy storage facilities are still relatively expensive investments, and for this reason the Swedish Energy Agency finds that the subsidy has been an important instrument for enabling private individuals and market participants to install, test and use the technology.[4]

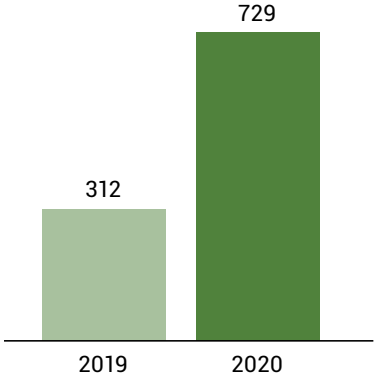
Interest in the subsidy has increased, with almost double the number of applications in 2020 than in 2019.[5]

Figure 1. Number of received and disbursed applications for solar cell subsidies per year in 2019 and 2020*



*Monthly statistics SOLEL (energimyndigheten.se)

Figure 2. Number of disbursed subsidies for energy storage

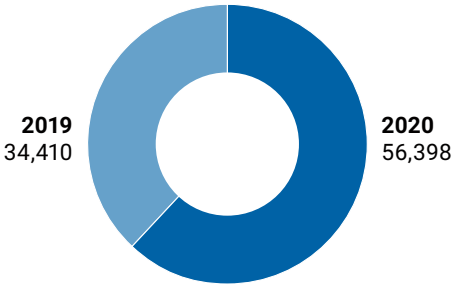


Climate bonus

The appropriation item is used for the disbursement of grants to natural and legal persons who have acquired a new climate bonus car as part of the "bonus-malus" system.

The aim is to accelerate the transition to low-emission cars and entails that new low-emission passenger cars, light buses and light goods vehicles can qualify for a bonus upon purchase, while high-emission vehicles are subject to elevated vehicle tax for the first three years (malus).[6] The transitional phase entails high costs, so forceful policy instruments are needed to overcome the cost threshold. In 2019 and 2020, the limit for obtaining the bonus was 70 grams of CO_2 per kilometre.

Figure 3. Number of vehicles for which a climate bonus has been granted



90,808

Total number of vehicles 2019–2020

In both 2019 and 2020, plug-in hybrids running on petrol/electricity represented the most common type of fuel out of vehicles that received a climate bonus, accounting for 55 per cent in 2019 and 58 per cent in 2020. Purely electric-powered cars represented the second most common fuel source (electricity is classified as a type of fuel), making up 37 per cent in 2019 and 31 per cent in 2020. The breakdown of fuels for 2019 and 2020 is shown in figure 4 and 5.

The impact of the bonus-malus system on the decisions of new car buyers can be measured by comparing newly registered cars before and after the introduction of the bonus-malus system. In the first six months of 2018, plug-in electric vehicles and natural gas vehicles made up 6.5 per cent of newly registered cars. In the first six months of 2020, the equivalent proportion was over 25 per cent.[7]

Direct climate effects of the climate bonus, expressed for example in tonnes of avoided carbon emissions, are difficult to quantify. The indirect effects are more distinct; for example, the bonus-malus system provides clear incentives that can influence the strategies of manufacturers and resellers, as well as buyers' attitudes concerning choice of vehicle, which speeds up the transition to a low-emission fleet.[8]

Figure 4. Breakdown of fuel types for vehicles that received a climate bonus in 2019

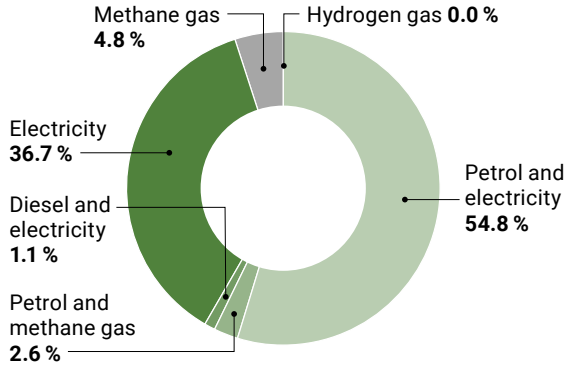
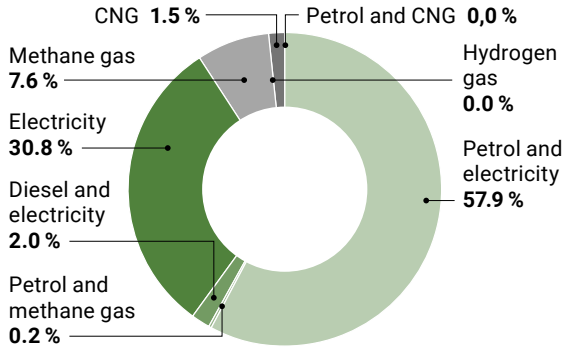


Figure 5. Breakdown of fuel types for vehicles that received a climate bonus in 2020



Climate investments

The appropriation has primarily been used for the Climate Leap, which is an investment subsidy for local and regional investments that reduce emissions of carbon dioxide and other greenhouse gases with a climate impact.

New green technology is often more expensive than conventional technology. In addition, the financial market considers the risks associated with green investment to be much higher, prompting higher interest rates and stricter lending terms. This can prevent companies from investing in green technologies and is a reason for why state subsidies should be granted for such investments over a limited period. The Climate Leap is an investment subsidy granted for aspects such as rolling out vehicle charging infrastructure across Sweden, for new or extended biogas facilities and for installing charging points in homes and workplaces. The Climate Leap supports the measures that reduce emissions the most per invested krona.[9] Besides the *Reduced climate impact* environmental quality objective, the granted measures help to achieve other environmental quality objectives and benefits to society, such as improved air quality, increased employment and the possibility of disseminating and introducing green technology throughout more areas of society.[10]

The Climate Leap helps to reduce emissions

Examples of granted measures are the production of biogas and accompanying filling stations, replacing oil with biofuels in industry and real estate, bike garages for commuters and charging stations for electric vehicles.

The Climate Leap supports the measures that reduce emissions the most per invested krona in each round of applications. On the whole, the average emissions reduction ratio for the measures for which the subsidy was granted was 1.5 kg of carbon dioxide[11] per invested krona in 2019 and 1.7 kg of carbon dioxide per invested krona in 2020. The annual reduction in emissions corresponds to around 4 per cent of Sweden's total emissions.[12]

It is estimated that the granted measures in 2019 will reduce climate-impacting emissions by 133,571 tonnes of carbon dioxide equivalents per year.[13] The categories of measures that reduce emissions the most are energy conversions, primarily in switching from fossil to non-fossil fuel (totalling 26,395 tonnes of carbon dioxide equivalents per year), production of biogas for replacing fossil fuels (43,677 tonnes) and transport-related measures (48,596 tonnes). Transport-related measures mainly encompass the construction of filling stations for biofuels, which are needed to enable the fossil-free transition, chiefly for the heavy goods transportation sector.[14]

It is estimated that the granted measures in 2020 will reduce climate-impacting emissions by 405,030 tonnes of carbon dioxide equivalents per year.[15] The categories of measures that reduce emissions the most are energy conversions (totalling 89,830 tonnes of carbon dioxide equivalents per year), waste-related measures (209,684 tonnes annually) and the production of biogas to replace fossil fuels (95,112 tonnes per year). The energy efficiencies and waste categories include measures for battery recycling, increased plastics recycling and waste heat treatment.[16]

Figure 6. Granted investment subsidies through the Climate Leap[17]

Year	2019	2020
Applications	185	509
Decided funds, SEKk[18]	706,283	2,329,545
Allocated funds, SEKk[19]	466,888	649,141

Home charging subsidies

Within the Climate Leap budget, the Swedish Environmental Protection Agency has also processed grants for private individuals for installing electric vehicle charging stations in order to facilitate the transition to clean transportation. In 2019, SEK 45.9 million was paid to 5,918 recipients of such grants.[20] In 2020, SEK 172.2 million was paid to 21,200 recipients of "home charging" grants. The grants amounted to 50 per cent of the cost up to SEK 10,000 per property. The average grant has amounted to SEK 8,091. Furthermore, a total of SEK 119.7 million was allocated for over 2,500 measures, to organisations such as businesses and tenant-owner associations wishing to install charging stations for their own use.[21]

MASKOT

CASE

Manure and industrial waste converted into biogas

At the end of 2019, Gasum AB was granted SEK 158 million from the Climate Leap to construct a biogas production facility in Götene. The biogas will be produced from manure and industrial waste and be used to replace diesel in heavy goods vehicles. Annual production capacity will be around 100 GWh of liquid biogas. According to Gasum's calculation, this equals the annual consumption of around 200 heavy goods vehicles. The facility is expected to lead to a 24,000-tonne carbon dioxide reduction annually.

The investment subsidy from the Climate Leap has led to tremendous progress, encouraging more investment in biogas in the heavy goods transportation sector and thereby accelerating the transition to clean transportation.[22]

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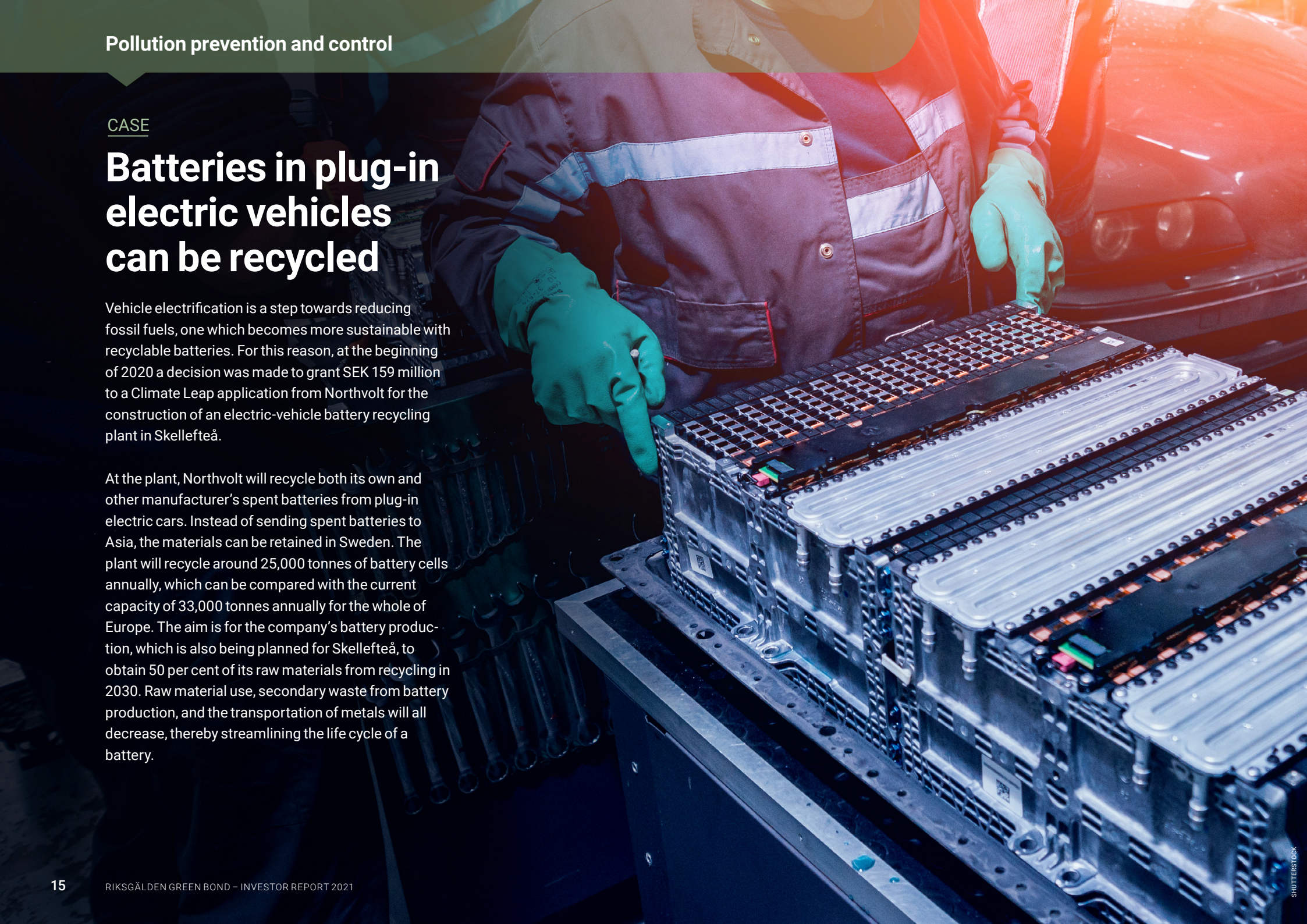
CASE

Batteries in plug-in electric vehicles can be recycled

Vehicle electrification is a step towards reducing fossil fuels, one which becomes more sustainable with recyclable batteries. For this reason, at the beginning of 2020 a decision was made to grant SEK 159 million to a Climate Leap application from Northvolt for the construction of an electric-vehicle battery recycling plant in Skellefteå.

At the plant, Northvolt will recycle both its own and other manufacturer's spent batteries from plug-in electric cars. Instead of sending spent batteries to Asia, the materials can be retained in Sweden. The plant will recycle around 25,000 tonnes of battery cells annually, which can be compared with the current capacity of 33,000 tonnes annually for the whole of Europe. The aim is for the company's battery production, which is also being planned for Skellefteå, to obtain 50 per cent of its raw materials from recycling in 2030. Raw material use, secondary waste from battery production, and the transportation of metals will all decrease, thereby streamlining the life cycle of a battery.



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Green Industry Leap

Realising the climate objectives of net zero emissions requires extensive investment in innovative and technology-shifting solutions. The Green Industry Leap initiative aims to foster the transition, in which industry has a pivotal role to play, both through reducing its own emissions and by contributing to the climate transition of the rest of society.[23]

The majority of the projects that have received subsidies so far within the Green Industry Leap concern research projects, pilot and demonstration plants, feasibility studies and preliminary studies for pilot plants and investments.[24] The projects concern technology and system considerations and other aspects that are necessary for reduced processing-related emissions or negative emissions.

Processing-related emissions
In 2019, funds were granted for eight projects to reduce processing-related emissions totalling SEK 86.2 million. In 2020 funds were granted for 17 projects totalling SEK 179 million.[25] The granted projects span several years and their budgets are thus charged to multiple fiscal years since disbursements follow how funds are amassed in the projects.

Examples of pilot and demonstration projects for which funds were granted in 2019 are PREEM CCS and HYBRIT. Preem has a project for the capture and storage of carbon dioxide, in which large-scale capture of carbon dioxide from the refinery in Lysekil will be demonstrated. The project is being run alongside Norwegian entities to illuminate the entire value chain from capture to storage.[26]

Negative emissions
In 2019, seven applications totalling SEK 9.7 million were granted for projects within negative emissions, and in 2020, 18 applications totalling SEK 61 million were granted.[27] The area is mainly focused on companies with biogenic greenhouse gas emissions within for instance the pulp and paper industry and power and heating plants.

It is estimated that the negative emissions that could be attained through Green Industry Leap projects amount to two million tonnes of carbon dioxide equivalents per year according to a compilation of the companies' own estimations.[28]

CASE

HYBRIT – fossil-free iron and steel production

Since it was established in 2018, the Green Industry Leap has supported the HYBRIT initiative (Hydrogen Breakthrough Ironmaking Technology) – a technology and development project aimed at devising a fossil-free value chain for iron and steel production with fossil-free electricity and hydrogen gas, thus minimising carbon emissions throughout the entire value chain.[29] In the HYBRIT technique, the blast furnace process, which uses coke and coal to remove oxygen from the iron ore, is replaced by a direct reduction process that uses fossil-free hydrogen gas produced from water with electricity from fossil-free energy sources. Instead of carbon dioxide, water vapour is formed.[30]

In 2019, the project was granted a subsidy of SEK 47.6 million from the Green Industry Leap to construct a pilot-scale subterranean hydrogen gas store in Luleå.

In 2020, the initiative made further progress and HYBRIT was granted SEK 22 million for a feasibility study ahead of constructing an industrial-scale demonstration plant. Construction of the demonstration plant is planned to start in 2023 and be operational in 2025. HYBRIT will then be able to demonstrate full-scale production with capacity of just over 1 million tonnes of iron annually. That equals one-fifth of LKAB's total processing capacity at Malmberget and around half of the production capacity of SSAB's blast furnace in Luleå. The goal is to be the first producer of fossil-free steel globally in 2026.[31]

A crucial aspect of the HYBRIT project is that the Swedish state has shared the financial risk, and this will be of tremendous importance for a long time to come. Around 10 per cent of Sweden's carbon emissions come from the blast furnaces of the steel industry. The HYBRIT initiative thus has the potential to reduce Sweden's total carbon emissions by 10 per cent annually.[32]

GETTY IMAGES/BLOOMBERG

Measures to improve the environment in agriculture

The appropriation has been used mainly for subsidies for methane gas reduction and biogas production.

Subsidies for manure gas reduce methane gas emissions
The purpose of the subsidies is to increase manure-based biogas production. By decomposing manure at a biogas facility, environmental and climate benefits are generated in two ways: methane gas emissions from manure decrease, and fossil energy sources can be replaced. The subsidy is aimed at compensating for this dual environmental benefit, as producing biogas costs more than producing fossil energy.[33] The subsidy amounted to SEK 0.4 per kWh, which is the estimated subsidy level required to make it profitable for producers.

Outcome 2019
58 plants received subsidies during the period of eligibility, which was 1 October 2018 to 30 September 2019. The total volume of produced energy from these plants was 163.27 GWh, and subsidies of SEK 60 million were disbursed. The reported volume (163.2 GWh) gives, with a conversion factor of 157 g/kWh[34], a reduction in emissions of 25,600 tonnes of carbon dioxide equivalents.

Outcome 2020
65 plants received subsidies during the period of eligibility, which was 1 October 2019 to 30 September 2020. The total volume of energy produced by these plants was 177.7 GWh. Subsidies of SEK 29.9 million were disbursed in total. The reported volume (177.7 GWh) gives, with a conversion factor of 157 g/kWh[35], a reduction in emissions of 27,800 tonnes of carbon dioxide equivalents.

While it is difficult to establish the size of the reduction in emissions attributable to the subsidies, in previously conducted evaluations the subsidies have been crucial to the long-term profitability of manure-based biogas production.

Subsidies for biogas
Subsidies for biogas aim to support fossil-free energy production and are disbursed as an advance. The subsidies are disbursed for the gas that is upgraded to vehicle gas and provided as remuneration per kWh.[36]

Outcome 2019
SEK 100 million was disbursed as an advance to 32 plants with total production of 418 GWh. The subsidy amounted to SEK 0.24 per kWh of produced biogas. The reported volume (418 GWh) gives, with a conversion factor of 326 g/kWh[37], a reduction in emissions of 136,000 tonnes of carbon dioxide equivalents.

Outcome 2020
Subsidies of SEK 151.7 million were disbursed for biogas to 36 biogas facilities that have produced 491.5 GWh of vehicle gas. The recognised volume (491.5 GWh) gives, with a conversion factor of 326 g/kWh, a reduction in emissions of 160,000 tonnes of carbon dioxide equivalents.

It is difficult to judge the size of the reduction in emissions each year that is attributable to the subsidy. The subsidy was created to put Swedish biogas on an equal footing with imported biogas. The subsidy has thus been crucial for the profitability of Swedish biogas production.

> Methane gas emissions from manure decrease, and fossil energy sources can be replaced

Protection of valuable natural environments

Sweden's land and freshwater area covers 44.7 million hectares. 15 per cent of the hectares in this area were protected according to one of the permanent forms of protection at the end of 2020.[38]

Areas of great natural assets need to be preserved and protected from measures that would risk harming them. Protection can consist of establishing national parks, acquiring land, easement, or contractual solutions on behalf of the central government. Loss or destruction of natural environments are the biggest causes of threats to biodiversity. Restoration is very costly, if at all possible. By protecting the valuable natural environment; that is by preventing the destruction of remaining assets, the objectives are attained in a cost-efficient manner.[39]

Voluntary nature conservation agreements

Nature conservation agreements are voluntary contracts between the state and landowners to protect nature.[40] In 2019 and 2020, a total of 20 voluntary nature conservation agreements were entered into between the state and landowners to protect nature. The total land area covered by the nature conservation agreements is approximately 450 hectares. Two of the nature conservation agreements in 2019 were entered into to preserve and develop the habitats of a number of red-listed species.[41]

A total of 48,800 hectares of land is secured

In 2019 29,500 hectares of land was secured, including the area covered by nature conservation agreements. In 2020 19,300 hectares of land was secured.[42]

Work in progress on forming national parks

Forming national parks is part of efforts to fulfil the environmental quality objectives and the outdoor recreation goals related to the natural environment, as well as to conduct overall nature conservation policy. National park status is the strongest protection that an area can obtain, and national parks are established in areas designated as being particularly important to protect and preserve. Forming a national park takes several years and efforts include purchasing land and making the area available to visitors by laying out walking trails as well as entry points and other outdoor recreational facilities.[43] In 2019 and 2020, two new projects have been in progress to form new national parks – one on northern Gotland[44] and one in the Nämdö archipelago in Stockholm County.[45]

New nature reserves provide a greater protected area

in 2019, 181 new nature reserves were established and the total area covered by nature reserves increased by 45,000 hectares.[46] In 2020, 131 new nature reserves were established and the total area increased by 159,000 hectares, 133,000 of which are marine environments.[47] Thanks to the newly established nature reserves, valuable forests and waters, mountains and swamps, fields and meadows and their plethora of species are now protected for the future. At the turn of 2020–2021, the total number of nature reserves in Sweden was 5,241, equalling an area of 5,010,404 hectares.[48]

The effect of protecting areas as nature reserves is primarily the conservation of the living space needed for biodiversity in the form of species and natural ecosystems. Nature reserves also make it easier for people to experience and learn about valuable natural environments.[49]

312

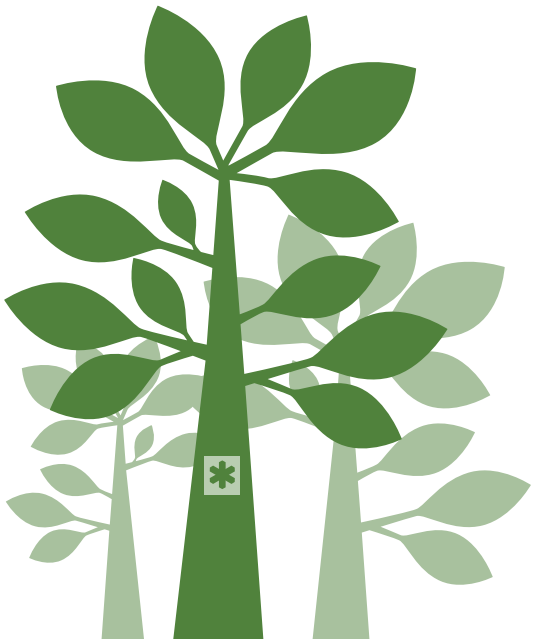
New nature reserves

Total area increased by 204,000 hectares

20

Voluntary nature conservation agreements

450 hectares



Measures for valuable natural environments

The protected areas require management so as to preserve the natural assets and enable satisfactory access to the areas.

The appropriation finances measures to preserve natural assets within protected areas – but also throughout the rest of the landscape by means of action programmes for endangered species as well as the Swedish Local Nature Conservation Programme (LONA), measures to restore wetlands and green infrastructure efforts. The appropriation is also used to create conditions for outdoor recreation in the protected areas, in urban/suburban natural environments and on the national mountain trails, and to broaden awareness and knowledge about Sweden's natural environment, through, for example, nature centres. The appropriation also contributes to game management efforts such as inventories of and information on predators.[50]

The Swedish Local Nature Conservation Programme – the LONA grant

LONA enables municipalities to apply for grants to carry out projects that benefit nature conservation, outdoor recreation and public health. LONA is the greatest national initiative to date aimed at attaining heightened proactivity at the local level in local nature conservation efforts. There are three LONA grant areas – standard LONA, LONA wetlands and, for 2020–2022, pollination projects too.[51] For many municipalities, the LONA grant is of tremendous importance in enabling an extra focus on both outdoor recreation and nature conservation. Through its wide span of projects, the LONA grant contributes to fulfilling at least 12 of 16 national environmental quality objectives and bolstering 2030 Agenda-related efforts.[52]

Standard LONA

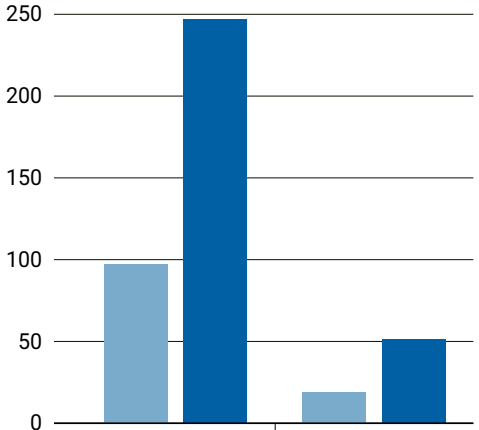
The boost to central government LONA funding is positive, as local co-funding is required equalling the amount of the grant at minimum.[53] The project applications granted in 2019 are, for example, expected to generate improvements and new installations of several hundred picnic areas, information signs, bird-watching towers and guided nature excursions. Also, inventories and mapping of different species and their habitats have been carried out, as well as restoring old meadow and grazing land. Several projects are also expected to contribute to the formation of nature reserves.

LONA wetlands

LONA wetlands has the specific aim of stimulating projects that help to increase inflows into groundwater, or which bolster the capacity of the landscape itself to retain and balance water flows – to increase biodiversity, reduce the impact on the climate and curb eutrophication.[54]

The projects are expected to contribute to a multitude of important ecosystem services such as improved water management, protection against flooding by levelling flows, reduced eutrophication (wetlands also help to absorb nutrients), and to some extent increased groundwater formation.[55] Wetlands projects in organogenic soil can also help to reduce carbon emissions.[56]

Figure 7. Standard LONA, number of projects and allocated funds



	Number of projects	Allocated funds
2019	97	18.7 million[57]
2020	247	51.3 million[58]

In 2019 and 2020, there have been initiatives in 159 LONA wetlands projects consisting of 276 measures.

In addition to LONA wetlands, there has been a separate wetlands initiative in 2019 and 2020. Restoring wetlands is important for preserving more species and natural ecosystems. It also forms part of society's climate adaptation, as wetlands are a key to retaining water in the landscape, which can reduce effects of flooding or drought.

In 2019, measures were implemented to restore or install more than 5,500 hectares of wetlands in protected areas.[59] In 2020 5,100 hectares in protected areas were restored.[60]

The LONA pollination initiative

Pollination is a function that contributes to heightened seed production among 90 per cent of wild plant species globally. Numerous wild pollinators such as bees, butterflies and flies are under threat. This prompted the introduction of the pollination initiative, aimed at improving the situation for wild pollinators and pollination. The approved projects are considered to be able to improve biodiversity by creating conditions for dwelling places for endangered pollinators and also by making it easier for people to get out and enjoy nature, improve their knowledge and preserve and restore natural environments worthy of protection.[61]

In 2020, 118 projects were granted that benefit wild pollinators.[62] An additional SEK 11 million was allocated in 2020 to save some of Sweden's most endangered wild bees.[63]

Figure 8. LONA wetlands 2019–2020*

Categories of measures	Number of measures	Total sum of awarded grants
Preparation of source documentation	5	462,000
Information, measures to educate the public	10	198,290
Capacity-building	5	65,000
Restoration	11	1,448,000
Care and management	11	157,500
Wetlands projects – preparatory work	125	19,062,988
Wetlands projects – execution of restoration and installation	109	37,292,906

*A detailed description of various initiatives within LONA can be read on the Swedish Environmental Protection Agency's website.

Action programme for endangered species

Efforts within the action programme for endangered species and natural ecosystems focus on attaining a good conservation status for the species and habitats that are under particular threat or which serve as umbrella species; that is, species with habitat requirements encompassing the needs of many other species worthy of protection. In 2019, measures were implemented within 113 of 132 terrestrial action programmes in progress.[64] In 2020, action was taken in 119 out of 132 programmes.[65]

> The anthophora plagiata bee has been critically endangered, but after action programmes it is expected to be reclassified from "critically endangered" to "severely endangered".[66]

Maintenance of state transport infrastructure, Railways

The appropriation is used to maintain the function of existing railway infrastructure.
Railways currently represent 20 per cent of freight transport and 12 per cent of passenger transport.

To reach the goal of climate-smart transport, there needs to be a shift in use from road to rail. An advanced and reliable railway system is fundamental to the ability to transport more passengers and freight by rail rather than road.[67] Improved punctuality is one of the most effective measures that improve reliability, also enabling more efficient use of railway infrastructure.[68] Consequently, services can become greater in number and more frequent using existing rail capacity. In 2019, the punctuality of passenger trains was improved, while railway traffic simultaneously increased.[69]

Investments included in the appropriation primarily encompass maintenance, reinvestment and traffic control. For example, they cover upgrades of tracks and switches, highway protection installations, signalling systems, bridge replacements and snow clearance.

Railway initiatives will generally help to improve the standard and accessibility of rail transport. In turn, this can encourage groups to travel to a greater extent by rail rather than road or air.[70]

Impacts of the investments are difficult to quantify in the absence of knowledge about quantitative relationships. A substantial part of the climate benefit of the subsidy is indirect because maintaining railways is considered to be essential for enabling fulfilment of the climate objectives. Furthermore, it can be ascertained that maintaining railways and their capacity for freight transport with low emissions is considered an essential part of a national energy-efficient transport system and therefore important to enabling fulfilment of the climate objectives.

2019	2020	
57	133	tracks were replaced
70	60	contact wires were replaced
7	12	replaced bridges

Measures for marine and aquatic environments

Expenditure for the appropriation has been used for initiatives and measures to improve, preserve and protect our seas, lakes and watercourses. The largest share of the funds has been allocated to work on water management, liming, fishery management, action programmes for endangered species, local water conservation projects (LOVA), eutrophication with a focus on coastal waters and remedial measures for marine and aquatic environments.[71]

595 LOVA projects launched in 2019 and 2020

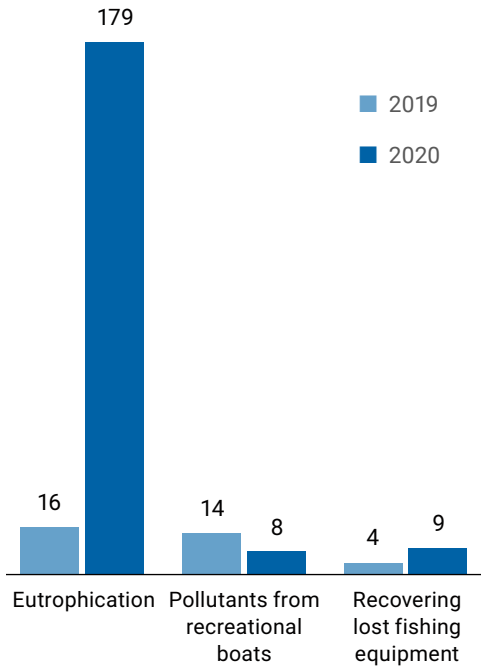
The need to improve the aquatic environment in Swedish lakes, watercourses and coastal waters is great. The LOVA grant is an important tool in the efforts of county administrative boards for improving and protecting the aquatic environments in their counties with local and regional participants. Eutrophication remains the highest-priority area, as this is considered to be one of the most severe problems in our marine environments.[72]

LOVA grants have been awarded to projects that promote reducing the internal phosphorus load, increasing nutrient uptake and recirculation, or to measures that help reduce the spread of environmentally hazardous substances from recreational boats into the aquatic environment. Grants can also be awarded for recovering lost fishing equipment or for other water-related measures aimed at attaining a good ecological status or good environmental status in the marine environment according to the marine and water management system.[73] In 2019, 233 new LOVA projects were initiated, and in 2020 efforts were intensified with the launch of 362 new projects.[74]

The projects contribute to fulfilling the environmental quality objectives *Zero eutrophication, A balanced marine environment and flourishing coastal areas and archipelagos*, and *A non-toxic environment*. In addition to these, 70 new projects were launched in 2019 and 152 in 2020 aimed at helping to achieve the environmental quality objective Sustainable lakes and watercourses. The measures can vary widely, although they must contribute to the cost-efficient attainment of a good ecological status or good environmental status in the marine environment.[75]

Follow-up on measures launched to combat eutrophication has demonstrated that the measures are effective and that nutrient levels have fallen. However, developing national monitoring of environmental impacts needs to be enhanced to enable the follow-up of effects of measures on a larger scale.[76] Methodology enhancement is also under way to improve the planning of measures by means of identifying the most cost-efficient measures locally.[77]

Figure 9. Examples of actions and number of projects



A project concluded in 2020 reports that 3,400 kilos of phosphorous have been reduced or fixed by means of aluminium deposits and phosphorous fixation.[78] Phosphorous fixation measures aim to bring the aquatic environment to a more natural state in terms of eutrophying substances, with a greater depth of visibility, lower algal bloom and contribution to a lower nutrient load on downstream watercourses.[79]

Out of the 24 projects that were launched in 2020 focusing on increased nutrient recirculation, grants have been awarded for mussel cultivation, blue cover crops or other recirculation methods. The total expected environmental impacts of these projects have either been presented in number of harvested cubic metres (a total of 1,227 cubic metres) or in total weight expressed in tonnes (a total of 1,090 tonnes).

Subsidies for fishery management

Grants have been awarded for measures that promote fishery management, primarily in waters with public fishing rights.[80] The measures are crucial for both fishery management and for preserving biodiversity, sustaining natural ecosystem services and for functioning green infrastructure. Grants to 50 per cent of the approved cost of the measure are commonly awarded, although higher grants can be awarded if special grounds exist. Special grounds could be that the measure is of significant public interest, such as preserving an endangered species, or measures that promote fishery management in areas with free fishing using handheld equipment.

The fishery management grant in 2019 amounted to SEK 20 million, and SEK 29 million in 2020.[81] The grant has enabled cooperation over county borders, such as pikeperch surveys in lakes Hjälmaren and Mälaren. Completed fishery management projects have resulted in, for example, the reintroduction of salmon in the river Dalälven, the reintroduction of the freshwater pearl mussel in the river Lärjeån, culling of whitefish to preserve char in lake Grundsjön and ecosystem-based fishery management in lake Hjälmaren.

Liming of lakes and watercourses

The grant helps to fulfil the environmental quality objectives *Sustainable lakes and watercourses* and *A rich diversity of plant and animal life*.[82] In 2019, the total cost of liming activities was just over SEK 158,000 thousand, and in 2020 funds of just over SEK 173,096 thousand were used to this end.[83] In total, 97,256 tonnes of lime were spread in 2019 and 100,536 tonnes in 2020.[84]

The counties' liming actions are aimed at maintaining values-in-use and preserving endangered species and biodiversity. According to the county administrative boards, the activities take high priority and are an important measure in sustaining populations of fish, crayfish and freshwater pearl mussels that are worthy of protection. Liming is also of great importance to recreational fishing. According to the county administrative boards, an average of 70–80 per cent of limed objects help to sustain recreational and sport fishing. Liming, fishery management and measures to improve the physical environment could boost tourism thanks to better fishing opportunities and good aquatic environments in general, which could have the indirect effect of curbing depopulation in rural areas.[85]

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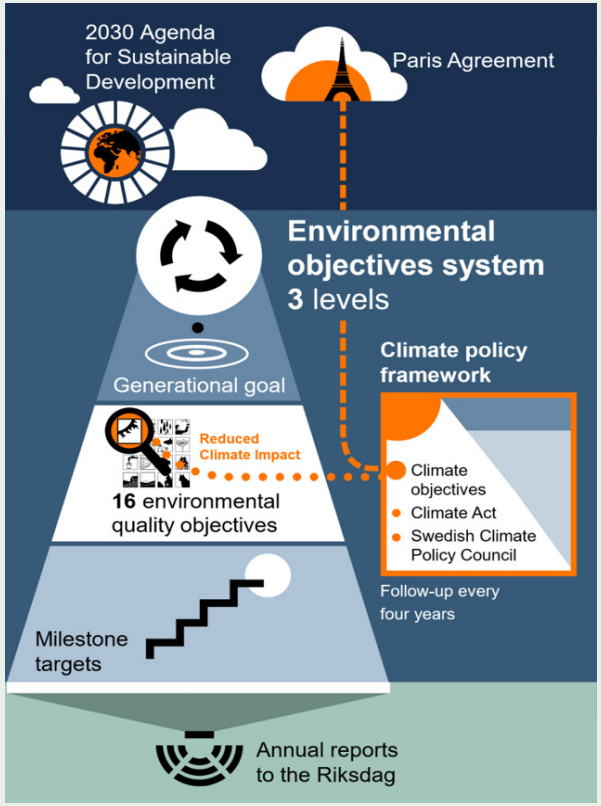
Appendices

Appendix 1: **Sweden's environmental and climate objectives**

Sweden's environmental policy is based on 16 national environmental quality objectives and an overarching generational goal. Sweden's environmental objectives are pivotal for leading the way in sustainable development and the 2030 Agenda. The Swedish climate objectives form part of the environmental objectives system, with the long-term climate goal for Sweden to have zero net greenhouse gas emissions by 2045.

Sweden's environmental objectives system

Since the Swedish environmental objectives were established by the Riksdag in 1999, they have collectively defined the environment that Swedish policy is to focus on attaining. The environmental objectives, with their specifications, describe what constitutes a good environment in Sweden and lead the way towards sustainable development and the 2030 Agenda. They are a starting point for various policy instruments and for society's environmental efforts. From an international perspective, the Swedish environmental objectives system is unique.[86]



Sustainability always has three dimensions – economic, social and environmental. For a sustainable transition of society, all three of these are taken into account simultaneously. When it comes to the environment, Sweden's environmental objectives and the global goals of the 2030 Agenda focus on addressing the same challenges. Fulfilment of the environmental objectives means reaching the environmental dimension of the 2030 Agenda in Sweden.[87]

The Swedish environmental objectives system consists of a generational goal and 16 environmental quality objectives, as well as a number of milestone targets within the areas of waste, biodiversity, hazardous substances, sustainable urban development, air pollution and climate. The 16 environmental quality objectives describe the state that the environment in Sweden needs to attain for society to be environmentally sustainable. The milestone targets will make it easier to reach the generational goal and meet the environmental objectives as well as to identify a desired transition for society.[88]

The environmental objectives system is intended to be subject to regular follow-up, with annual follow-up with the Government and an in-depth evaluation once every four years – once per term of office. A number of Swedish government agencies are responsible for following up on and evaluating specific environmental quality objectives. The Swedish Environmental Protection Agency cooperates with all the government agencies that have a responsibility within the environmental objectives system, and compiles an overall report for the Government. The results are presented each year at sverigsmiljomal.se.[89]

The generational goal

The overarching goal for environmental policy is to hand over to the next generation a society in which the major environmental problems are resolved, without causing greater environmental and health problems beyond Sweden's borders. To reach the overarching goal, environmental policy must be aimed at attaining the following state:

- Ecosystems have recovered, or are in the process of recovering, and their ability to generate ecosystem services in the long term is secured.
- Biodiversity and the natural and cultural environment are preserved, promoted and used sustainably.
- Human health is subjected to minimal adverse environmental impact, while at the same time the positive impact of the environment on human health is fostered.
- Eco-cycles are resource-efficient and, as far as possible, free of hazardous substances.
- Natural resources are managed prudently.
- The proportion of renewable energy is on the rise, and energy use is effective, with minimal environmental impact.
- Consumer patterns in goods and services cause as little environmental and health problems as possible.

The 16 environmental quality objectives

Reduced climate impact

The ultimate objective of the UN Framework Convention on Climate Change is to achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. This objective will be achieved in such a way and at such a pace as to ensure that biodiversity is preserved, food production is assured and other sustainable development objectives are not jeopardised. Together with other countries, Sweden is responsible for ensuring that the global objective can be achieved.

The Riksdag has adopted a specification of the objective: The global average temperature increase is limited to far below 2 degrees Celsius above pre-industrial levels and efforts are made to keep the increase below 1.5 degrees Celsius above pre-industrial levels. Sweden shall work internationally to ensure that global efforts are directed towards reaching this objective.

Clean air

The air shall be so clean so as to not endanger human health, plants and cultural assets. The focus is on reaching the environmental quality objective within a generation.

Natural acidification only

The acidifying effects of fallout and land use shall be below the level that land and water can tolerate. Neither shall the fallout of acidifying substances increase the corrosion rate in technological materials in the ground, irrigation systems, archaeological objects and petroglyphs.

A non-toxic environment

The presence of substances in the environment that have been created in or extracted by society shall not threaten human health or biodiversity. Levels of foreign substances are close to zero and their impact on human health and ecosystems is negligible. Concentrations of substances that naturally occur in the environment are close to the background concentrations.

A protective ozone layer

The ozone layer shall be nurtured so that it provides protection against harmful UV radiation in the long term.

A safe radiation environment

Human health and biodiversity shall be protected against the harmful effects of radiation.

Zero eutrophication

Levels of eutrophying substances on land and in water shall not have any adverse impact on human health, conditions for biodiversity or possibilities of a balanced use of land and water.

Sustainable lakes and watercourses
Lakes and watercourses shall be ecologically sustainable and their wealth of habitats shall be preserved. Natural production capacity, biodiversity, cultural heritage assets and the landscape's ecological and water management function shall be preserved, while at the same time conditions for recreation are safeguarded.

High-quality groundwater
Groundwater shall provide a safe and sustainable supply of drinking water and contribute to healthy habitats for plants and animals in lakes and watercourses.

A Balanced marine environment, flourishing coastal areas and archipelagos
The sea off the west coast of Sweden (Skagerrack, Cattegat and North Sea) and the Baltic Sea shall have long-term sustainable productive capacity and biodiversity shall be preserved. Coastal areas and archipelagos must be characterised by a high degree of biodiversity and a wealth of recreational, natural and cultural assets. Industry, recreation and other utilisation of marine environments, coastal areas and archipelagos must be compatible with the promotion of sustainable development. Particularly valuable areas must be protected against encroachment and other disturbance.

Flourishing wetlands
The ecological and water management function of wetlands in the landscape shall be preserved, and valuable wetlands shall be preserved for the future.

Sustainable forests
The value of forests and forestland for biological production shall be protected, while at the same time biodiversity is preserved and cultural heritage assets and social assets are safeguarded.

A varied agricultural landscape
The value of the agricultural landscape and farmlands for biological production and food production shall be protected, while at the same time biodiversity and cultural heritage assets are preserved and bolstered.

A magnificent mountain landscape
There shall be a high degree of originality in mountainous regions, in terms of biodiversity, and a wealth of recreational, natural and cultural assets. Mountain activities shall be run with due consideration for these assets and in a manner that promotes sustainable development. Particularly valuable areas must be protected against encroachment and other disturbance.

A good built environment
Cities, towns and other built environments shall provide surroundings for sound and healthy living and help attain a healthy regional and global environment. Natural and cultural assets shall be harnessed and developed. Buildings and plants shall be located and designed in a green manner so as to promote prudent management and use of land, water and other resources in the long term.

A rich diversity of plant and animal life
Biodiversity shall be preserved and used sustainably, for today's and tomorrow's generations. The habitats and ecosystems of species, and their functions and processes, shall be safeguarded. It shall be possible for species to survive in long-term viable populations with sufficient genetic variation. People shall have access to a good natural and cultural environment with a wealth of biodiversity, as a basis for health, quality of life and welfare.

Climate policy framework

Besides the environmental objectives system, in 2017 Sweden adopted a climate policy framework consisting of a Climate Act, climate objectives and a Climate Policy Council. The purpose of the framework is to create a clear and consistent climate policy to secure long-term conditions for the business sector and society to implement the transition needed for Sweden to fulfil its climate objectives and the environmental quality objective concerning reduced climate impact.[90]

The climate objectives
By 2045, Sweden shall have zero net emissions of greenhouse gases to the atmosphere, and thereafter achieve negative emissions. The objective entails that greenhouse gas emissions from Swedish territory shall be at least 85 per cent lower in 2045 than they were in 1990. The remaining emissions down to zero can be achieved by supplementary measures. To fulfil the objective, capture and storage of fossil carbon dioxide may count as a measure in the absence of reasonable alternatives.

Milestone targets by 2030 and 2040

The milestone targets towards the long-term objective include greenhouse gas emissions in the non-trading sector (greenhouse gases covered by the EU's allocation of responsibilities). Greenhouse gas emissions covered by the EU Emissions Trading System are not included in the milestone targets. According to the milestone targets, emissions in

- 2020 should be 40 per cent lower than emissions in 1990
- 2030 should be 63 per cent lower than emissions in 1990
- 2040 should be 75 per cent lower than emissions in 1990.[91]

The Climate Act

Sweden's Climate Act came into force on 1 January 2018.[92] The Act makes it incumbent upon today's and tomorrow's governments to pursue policies that are based on the climate objectives and regularly report on developments. A core pillar of the Climate Act is that it shall be possible for climate policy and budget policy objectives to interact with each other.

Under the Climate Act, the Government is to present a climate report every year in its Budget Bill. The report facilitates follow-up on and assessment of the collective climate effects of all policy areas and shall contain a description of how emissions are progressing in relation to the objectives. The report shall also describe the most important decisions during the year and their implications for the progression of greenhouse gas emissions, as well as contain an opinion on whether additional measures are needed.

The Climate Act also stipulates that the Government, once every four years, shall prepare a Climate Policy Action Plan. The purpose of the action plan is to demonstrate how the Government's collective policies within all relevant expenditure areas contribute on the whole to attaining the milestone targets by 2030 and 2040 and the long-term emissions target by 2045. If the Government finds that adopted objectives cannot be attained with current policy instruments, the action plan shall contain an account of the reasons for this and the additional measures that the Government intends to take. The plan shall also contain a description of how other decisions and measures, both at the national and international level, affect the possibility of fulfilling the climate objectives.[93]

The Climate Policy Council

The Climate Policy Council was established in 2017 and is a multidisciplinary expert body tasked with providing the Government with an independent evaluation of whether the Government's overall policies are consistent with the climate objectives. The Council shall illuminate effects of adopted and proposed policy instruments within a broad societal context, and analyse whether the objectives – in both the short and long term – can be attained in a way that lays down sound conditions for cost efficiencies, while duly observing at the same time the three dimensions of the concept of sustainability (environmental, economic and social). The Council's members possess prominent scientific expertise within the fields of the environment, environmental policy, economics, social science and behavioural science.

The Climate Policy Council shall, by the end of March each year, submit a report to the Government with its opinion of how climate efforts and the emissions trend are progressing, an assessment of whether the Government's policies are consistent with the climate objectives as well as other analyses and assessments performed by the agency. In addition, the Council shall, three months after the Government has presented its climate policy action plan, submit a report to the Government with an opinion of the action plan. The Climate Policy Council shall also contribute to a heightened climate policy debate in society.[94]

Appendix 2: **Appropriations in the central government budget**

Energy technologies

Purpose

The appropriation may be used for expenditure to stimulate the dissemination of certain energy technology solutions that are considered to have a positive impact on the climate. The appropriation may also be used for the administrative charges this generates.[95]

Appropriation items

- Subsidies for solar cells, biogas and energy storage
- Energy technologies, part for Örebro County Administrative Board

Climate bonus

Ändamål

The appropriation may be used for expenditure for the climate bonus; that is, for grants for natural and legal persons who have acquired a climate bonus car.[96] Green vehicles initially registered on or after 1 July 2018 with carbon dioxide emissions up to a certain value count as climate bonus cars.[97]

Climate investments

Purpose

The appropriation can be used for climate investments at the local and regional level and in support of installing charging infrastructure for electric vehicles. The appropriation may be used for central government grants to this end. The appropriation may also be used for expenditure for the work performed by the relevant agencies to this end.[98]

Examples of categories of measures within the appropriation item

- The Climate Leap
- Charging infrastructure
- Energy conversion
- Transport, infrastructure, vehicles
- Energy efficiencies
- Biogas production and waste management
- Reduced gas emissions

Green Industry Leap

Purpose

Anslaget får användas för utgifter kopplade till åtgärder The appropriation may be used for expenditure linked to measures such as research, preliminary studies and investment, which help to reduce processing-related greenhouse gas emissions of the industrial sector, including other types of greenhouse gases related thereto. The appropriation may also be used for expenditure linked to measures that help attain negative emissions of greenhouse gases, such as research, development, testing, demonstration and investment. The appropriation may also be used for expenditure linked to strategically important initiatives within industry that contribute to the climate transition, such as research, preliminary studies and investment. The appropriation may also be used for expenditure for the work performed by the relevant agencies associated with such support.[99]

Appropriation items

- The Green Industry Leap
- Negative emissions

Measures to improve the environment in agriculture

Purpose

The appropriation may be used for expenditure for trial and development activities and other initiatives aimed at steering developments within agriculture and horticulture towards reduced nutrient losses, reduced ammonia release, safer and reduced use of pesticides, preservation of biodiversity and harnessing cultural assets, for organic production and for climate and energy initiatives within the cultivation sectors (agriculture, forestry, livestock, animal husbandry and fishery). The appropriation may be used to support methane gas reduction. The appropriation may be used to support biogas production and administration of the subsidy. The appropriation may be used for expenditure for following up on and evaluating common agricultural policy, and for the effects of the activities funded under the appropriation.[100]

Appropriation items

- Trial and development activities
- Sustainable use of pesticides
- Subsidy for methane gas reduction
- Subsidy for biogas production

Protection of valuable natural environments

Purpose

The appropriation may be used for expenditure for the protection and preservation of valuable natural environments for biodiversity and outdoor recreation[101]. The appropriation may be used for central government grants within these areas. The appropriation may be used

- for compensation according to Chapter 31 of the Environmental Code, area of responsibility of the Swedish Environmental Protection Agency,
- for expenditure, on behalf of the central government, for acquisitions of and contractual solutions for valuable natural environments,
- for expenditure in connection with securing valuable natural environments,
- for central government grants for municipalities and municipal foundations for the protection of valuable natural environments.

Appropriation items

- Access to land, easement, purchase, exchange, etc.
- Grants for municipalities
- Execution, negotiation, etc.
- Grants for work performed at county administrative boards
- Work with new national parks
- Cartography and analysis assignments
- IT support VicNatur
- Other IT expenses
- Other expenses

Measures for valuable natural environments

Purpose

The appropriation may be used for expenditure for initiatives for tending to and managing protected natural assets, preservation and restoration of biodiversity and initiatives for outdoor recreation. The appropriation may be used particularly for expenditure

- for tending to protected areas, nature conservation administration and property management,
- for the preservation of species and game management, and
- in connection with tending to and other management of valuable natural environments.[102]

Appropriation items

The money within the appropriation Measures for valuable natural environments is used for initiatives within the following appropriation items:

- Tending to protected areas
- Property management, buildings, plants
- Predator and game management
- Inventory of predators and other know-how
- Inventory and knowledge support
- The Swedish Local Nature Conservation Programme (LONA)
- LONA wetlands
- Green infrastructure
- Invasive alien species
- Nature centre activities
- Outdoor recreation and the right of public access
- Other
- Programme of measures for endangered species
- Measures for valuable natural environments – part for the Örebro County Administrative Board.

Maintenance of state transport infrastructure, Railways

The appropriation Maintenance of state transport infrastructure, appropriation item Railway maintenance. The appropriation item Railway maintenance may be used for operation, maintenance and traffic control.

Measures for marine and aquatic environments

Purpose

The appropriation may be used for expenditure for initiatives and measures to improve, preserve, plan, restore and protect marine and aquatic environments. The appropriation may also be used for central government grants, co-financing of EU funds, membership in international organisations and for the evaluation of the aforementioned initiatives and measures.[103]

Appropriation items

- Implementation of the programme of measures within marine/aquatic environments and fishery
- IT and information initiatives that support work on the measures
- Green technologies and innovations for more efficient work on the measures
- Data collection and scientific advice within fishery
- Knowledge syntheses and expert support for national and regional efforts
- HELCOM, OPAR and in European and global collaboration
- Ordinance (1982:840) concerning central government grants for the liming of lakes and watercourses
- Ordinance (1998:840) concerning support for fishery management.

Footnotes

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18 Refers to the sum of the amount of subsidies for new decisions made during a certain year
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